# Altech Corp.®

*Your Source for Automation & Control Components*

# Product Guide



## Your Altech B2B Companion

Download PDF files.




## A Message from the President

*On behalf of everyone at Altech, thank you for your hard work, your commitment, and your continued partnership.*

*Altech's success has always been built on strong relationships, and you are the people who develop and maintain those relationships every day. You are our face in the marketplace. You introduce Altech to new customers, support our distributors, solve problems, identify opportunities, and help us earn business that simply would not exist without your efforts.*

*We also recognize that much of what you do happens behind the scenes. It takes persistence, product knowledge, follow-up, and sometimes a lot of patience to turn an opportunity into an order. That work matters, and we appreciate it.*

*As we look ahead, I believe the opportunity in front of us is significant. Altech continues to expand our product offering, improve our inventory position, and invest in the technical and sales support you need to compete effectively. But having the right products on the shelf is only part of the equation.*

*Growth comes from getting in front of customers. It comes from asking the right questions, finding applications we may not currently be involved in, and showing customers why Altech deserves the opportunity to earn their business.*

*That is really what this training is about. My hope is that you leave here with a better understanding of what Altech has to offer, a few more tools in your toolbox, and some new ideas you can take back into your territory and put to work.*

*We should be proud of what we have accomplished, but we should never become satisfied with where we are today. There are more customers to reach, more applications to uncover, more specifications to win, and more opportunities for all of us.*

*Thank you again for everything you do and for your continued partnership with Altech. We appreciate it, and we look forward to continuing to grow and win together.*

Mario Meise
President, Altech Corporation

Contacts ..... 4-5
Busbars ..... 6-9
Cable Glands (cord grips / strain reliefs) ..... 10-13
Circuit Breakers ..... 14-17
Contactors ..... 18-25
DC-UPS
- AKKUTEC ..... 26-29
- CBI DC-UPS ..... 30-33
- Ultra Capacitor ..... 34-37

DIN Enclosures ..... 38-41
Disconnect Switches ..... 42-47
Eurostrips® ..... 48-49
Ferrules ..... 50-53
Foot Switches ..... 54-57
Industrial Enclosures ..... 58-61
Industrial Relays ..... 62-65
Limit Switches ..... 66-77
Modbus ..... 78-81
Monitoring Relays ..... 82-83
PCB Terminal Blocks ..... 84-91
Power Distribution Blocks ..... 92-95
Pin & Sleeves ..... 96-99
Power Supplies ..... 100-103
Push Buttons ..... 104-107
Safety Products ..... 108-111
Safety Relays ..... 112-115
Sensor Cables ..... 116-119
Sensors ..... 120-121
Smart Safety ..... 122-131
Terminal Blocks
- CY Series (Screw Clamp Connection) ..... 132-133
- CP Series (Push-in Connection) ..... 134-135
- CX Series (Spring (Cage) Connection) ..... 136-137
- CT Series (Screw Clamp Connection) ..... 138-139

Timers & Smart Relays ..... 140-143

## CONTACTS

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### Management and Sales



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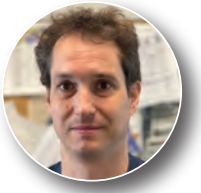
Flexible Busbars, Busbars, Circuit Protection Devices, Motor Disconnect Switches and Power Distribution Blocks



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## Marketing



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Naomie Meise
**MARKETING ASSISTANT**



Anna Petrillo
**MARKETING ASSOCIATE**

## Warehouse



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**SHIPPING SUPERVISOR**



Eric Orellana
**RECEIVING SUPERVISOR**

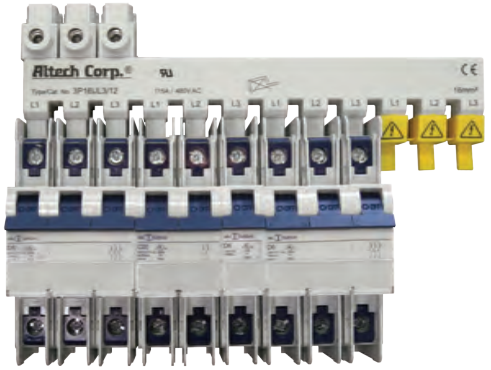
## Assembly



Rob Perkovich
**ASSEMBLY MANAGER**

## Advantages of these busbar systems

- Better and cleaner than wiring
- 50% Installation time savings
- UL 489 Busbars with ratings up to 115A
- UL 508/ UL 1077 Busbars is rated up to 200A
- Panel space savings
- Reduced maintenance
- High electrical ratings
- Universal - fits all Doepke miniature molded case circuit breakers, manual motor controllers and supplementary protectors



**Save Space, Time & Money**

**50% Assembly Time Saved?**

**Watch the video youtu.be/OppmdmTzkOU**



**Shown UL 489 Busbar**

## UL 489 Busbar & UL 489 Cuttable

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



**Shown UL 489 Cuttable Busbar**

| Technical Specifications | Busbars UL 489 |
|---|---|
| Material of Busbar | Copper |
| Material of Insulation (Housing) | Polyamide |
| Electrical Ratings | 115A/600V AC/DC |
| Short Circuit Withstand Rating | 10kA |
| Applying Standards | UL 489, VDE 0660 Part 100, IEC 60749, DIN EN 60947-1 |

## BUSBAR 16mm² for 115A

### 1 PHASE

| Type/ Cat. No. | No. of Pins |
|---|---|
| 1P16UL3/6 | 6 |
| 1P16UL3/12 | 12 |
| 1P16UL3/18 | 18 |



6 Pin

### 2 PHASE

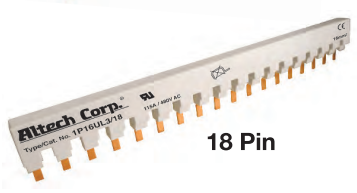
| Type/ Cat. No. | No. of Pins |
|---|---|
| 2P16UL3/6 | 6 |
| 2P16UL3/12 | 12 |
| 2P16UL3/18 | 18 |



12 Pin

### 3 PHASE

| Type/ Cat. No. | No. of Pins |
|---|---|
| 3P16UL3/6 | 6 |
| 3P16UL3/12 | 12 |
| 3P16UL3/18 | 18 |



18 Pin

## Accessories for UL 489 & Cuttable UL 489 Busbars



Power Feed Lug



Modular Direct Power Feed



Insulation Cap



Endcap (Cuttable Version Only)

| | Power Feed Lug | Modular Direct Power Feed | Insulation Cap | Endcap (Cuttable Version Only) |
|---|---|---|---|---|
| UL 489 | P35ULT | P50ULB | BRUL | N/A |
| UL 489 Cuttable | P35ULCT | P50ULB | BRULC | 18/25CAP3PULC |

**Part Number Nomenclature for UL 489 Cuttable**

| 3 | P | 18 | ULC | 3 | /1-57 |
|---|---|---|---|---|---|
| No. of Phases: 1 - 1 Phase, 2 - 2 Phase, 3 - 3 Phase | Pin Type | mm²: 18 - 18 mm² for 80A, 25 - 25 mm² for 100A | ULC: UL489 Cuttable | 3 Phase Insulation | NO. of pins/lugs |

**COMPETITORS**

| Manufacturer | Series |
|---|---|
| ABB | SU200MR |
| Allen Bradley/Rockwell | 1492-M Series D |
| | PS...BP-CR |
| Carlo Gavazzi | GSBB |
| Eaton | FAZ |
| Cutler Hammer | BB- Series |
| Mersen | USBB |
| Phoenix Contact | TMC 9 |
| Schneider | GV2, TeSys |
| Square D | Acti 9, Multi 9 |



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## Cuttable UL 508 / UL 1077 Busbar System




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

| Technical Specifications | Busbars UL 1077/ 508 |
|---|---|
| Material of Busbar | Copper |
| Material of Insulation (Housing) | Polyamide |
| Electrical Ratings | 18mm²: 80A/600V AC/DC<br>25mm²: 100A/600V AC/DC |
| Short Circuit Withstand Rating | 10kA |
| Applying Standards | UL 508, VDE0660 Part 100 and 502, VDE 0606, VDE 0659 |

- 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 Doepke's DLS7 Supplementary Protectors and DLS8 MA Series of Manual Motor Controllers
- UL recognized and listed for use with most popular UL 1077 supplementary protectors and UL 508 Manual Motor Controllers in the market.
- Customers can cut the Busbar without losing the UL approval

## Accessories for UL 508 / UL 1077 Busbars



**P50UT-LP**
Power Feed Lug
(1 phase only)



**P50UT**
Power Feed Lug
(2-3 phase only)



**P50UB**
Modular Direct Power Feed



**P95UB**
Power Feed Block



**BRB5W**
Insulation Cap

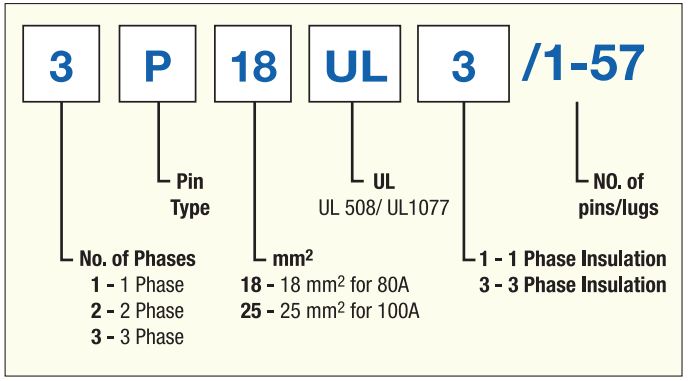


**18/25CAP1P**
End Cap
1 Phase



**18/25CAP3P**
End Cap
3 Phase

### Part Number Nomenclature




**COMPETITORS**

| Manufacturer | Series |
|---|---|
| ABB System | S200MR |
| Allen Bradley/Rockwell | 1492-SPM Series A |
| Carlo Gavazzi | GSBB |
| Eaton | FAZ |
| Cutler Hammer | BB- Series |
| Mersen | USBB |
| Phoenix Contact | TMC 8, TMC 7 |
| Schneider | GV2, Acti9, TeSys |
| Square D | Multi 9 |

**Altech's competitive advantages**

- Busbars are being treated as standalone product line
- Universal fit to competitor's circuit breakers/ supplementary protectors/manual motor controllers
- Used as a tool to capture circuit breaker business
- Available in a custom cut-able configurations 1, 2, and 3 phases from 1 to 57 pins

# Altech®

# Cable Glands AT A GLANCE

Order Catalog PN- 365

**Liquid Tight Strain Reliefs seal cable entries and keep contaminants from entering. They also provide strain relief to reduce stress on components.**

**Most Stock**

- **Innovative** design
- **Compact**
- **Compression** seal
- **High strain** relief
- **Long lasting** sealing

## Standard Straight Through



- Most common series
- PG / Metric / NPT Threads
- Polyamide / Nickel Plated Brass / Stainless Steel
- IP68 seal rating
- PG / Metric seal IP68 without O-rings
- Wide clamping range
- Locknuts sold separately
- Sealing plugs and multi-hole inserts available

PROTECTION IP68 RATING

Metric Only

E184471

## Industrial Straight Through

- Greater cable retention
- PG / Metric threads
- Polyamide / Nickel Plated Brass / PVDF
- IP68 seal rating



## Flat Cable

- Sealing for flat cable - rounded or oval
- Insert size very specific for exact cable size
- PG / Metric threads
- Polyamide / Nickel Plated Brass
- IP68 rating



## Multi-Conductor

- Sealing for multiple cables of same size in one gland
- Hole sizes must be within 1mm of cable size to seal
- PG / Metric threads
- Polyamide / Nickel Plated Brass
- IP68 seal rating



## ATEX

- Explosion endangered area glands - device Group II, Category 2 & 3 Zones 1, 2, 21, 22
- NPT / Metric threads
- Polyamide
- IP68 seal rating



## EMC

- Provides EMI/RFI grounding to inner cable braid
- Tin plated plastic grounding clamp or pressure ring / spring grounding
- PG / Metric threads
- Nickel Plated Brass
- IP68 seal rating



## Traction Relief

- Extra traction relief through additional clamping section
- PG / Metric threads
- Nickel Plated Brass
- IP65 seal rating



## Bend Protection

- Extended sleeve to protect cable from bending and abrasions
- PG / Metric / NPT threads
- Polyamide
- IP68 seal rating



## Corrugated Tubing

- PA6 standard corrugated tubing
- Unslit • 6.7mm to 47.7mm ID
- IP65 without O-rings / IP68 with O-rings
- Straight and 90° connectors • Mounting clips
- Other materials / styles / slit versions available but not stocked



## Accessories

- Locknuts
- O-rings
- Thread Reduces / Enlargers / Adapters
- Hole Plugs



**COMPETITORS**

Heyco
Sealcon
Olflex
T&B



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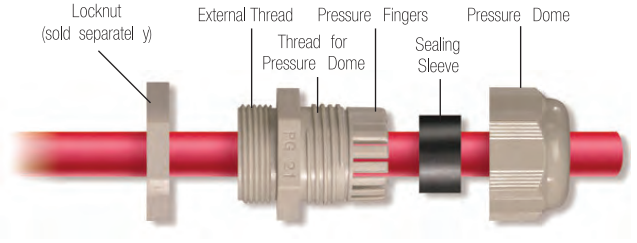
# Cable Gland Standard Straight-Through-Polyamide

Material:
- Body: Polyamide 6
- Seal: Neoprene

Applications:
- Machines and devices

Technical properties:
- Maximum strain relief through clamping range
- IP68 achieved without seal rings (PG and metric only)[1]
- Trapezoidal thread with high torque guarantees tight and permanent fit of the dome nut
- Gas-tight and watertight

**Our most popular parts.**
**Most kept in stock.**






PROTECTION IP68 RATING

Metric Only

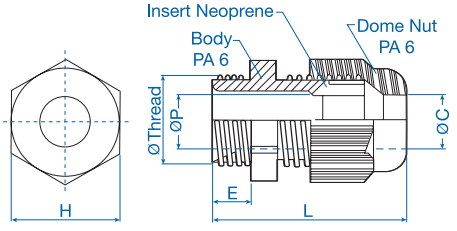
C UL US E184471

**Temperature Range**
-40 to 100°C
(-40 to 212°F)

| | Outer thread | Clamping range mm | Cat. No. Light Grey | Cat. No. Black | Std. Pk. |
|---|---|---|---|---|---|
| PG Thread | PG 7 | 1.5-5 | 5309 107 | 5309 207 | 50 |
| | PG 7 | 2.5-6.5 | 5308 707 | 5308 507 | 50 |
| | PG 9 | 1.5-6 | 5309 109 | 5309 209 | 50 |
| | PG 9 | 2.5-8 | 5308 709 | 5308 509 | 50 |
| | PG 11 | 2-7 | 5309 111 | 5309 211 | 50 |
| | PG 11 | 3.5-10 | 5308 711 | 5308 511 | 50 |
| | PG 13.5 | 3-9 | 5309 113 | 5309 213 | 50 |
| | PG 13.5 | 5-12 | 5308 713 | 5308 513 | 50 |
| | PG 16 | 5-12 | 5309 116 | 5309 216 | 50 |
| | PG 16 | 7-14 | 5308 716 | 5308 516 | 50 |
| | PG 21 | 7-16 | 5309 121 | 5309 221 | 25 |
| | PG 21 | 9-18 | 5308 721 | 5308 521 | 25 |
| | PG 29 | 11-21 | 5309 129 | 5309 229 | 20 |
| | PG 29 | 14-25 | 5308 729 | 5308 529 | 20 |
| | PG 36 | 13-26 | 5309 136 | 5309 236 | 10 |
| | PG 36 | 18-32 | 5308 736 | 5308 536 | 10 |
| | PG 42 | 17-31 | 5309 142 | 5309 242 | 5 |
| | PG 42 | 24-38.5 | 5308 737 | 5308 537 | 5 |
| | PG 48 | 26-39 | 5309 148 | 5309 248 | 5 |
| | PG 48 | 35-48 | 5308 738 | 5308 538 | 5 |
| NPT Thread | NPT 3/8" | 1.5-6 | 5308 904 | 5308 924 | 50 |
| | NPT 3/8" | 2.5-8 | 5308 900 | 5308 920 | 50 |
| | NPT 1/2" | 3-9 | 5308 905 | 5308 925 | 50 |
| | NPT 1/2" | 5-12 | 5308 901 | 5308 921 | 50 |
| | NPT 3/4" | 7-16 | 5308 906 | 5308 926 | 20 |
| | NPT 3/4" | 9-18 | 5308 902 | 5308 922 | 20 |
| | NPT 1" | 11-21 | 5308 907 | 5308 927 | 20 |
| | NPT 1" | 14-25 | 5308 903 | 5308 923 | 20 |
| Metric Thread* | M 12 x 1.5 | 1.5-5 | 5309 612 | 5309 712 | 50 |
| | M 12 x 1.5 | 2.5-6.5 | 5308 950 | 5308 940 | 50 |
| | M 16 x 1.5/9 | 1.5-6 | 5309 615 | 5309 715 | 50 |
| | M 16 x 1.5/11 | 2-7 | 5309 616 | 5309 716 | 50 |
| | M 16 x 1.5/9 | 2.5-8 | 5308 958 | 5308 948 | 50 |
| | M 16 x 1.5/11 | 3.5-10 | 5308 951 | 5308 941 | 50 |
| | M 20 x 1.5/13 | 3-9 | 5309 619 | 5309 719 | 50 |
| | M 20 x 1.5/16 | 5-12 | 5309 620 | 5309 720 | 50 |
| | M 20 x 1.5/13 | 5-12 | 5308 959 | 5308 949 | 50 |
| | M 20 x 1.5/16 | 7-14 | 5308 952 | 5308 942 | 50 |
| | M 25 x 1.5/16 | 5-12 | 5309 624 | 5309 724 | 50 |
| | M 25 x 1.5/21 | 7-16 | 5309 625 | 5309 725 | 25 |
| | M 25 x 1.5/16 | 7-14 | 5308 960 | 5308 962 | 50 |
| | M 25 x 1.5/21 | 9-18 | 5308 953 | 5308 943 | 25 |
| | M 32 x 1.5 | 11-21 | 5309 632 | 5309 732 | 20 |
| | M 32 x 1.5 | 14-25 | 5308 954 | 5308 944 | 20 |
| | M 40 x 1.5 | 13-26 | 5309 640 | 5309 740 | 10 |
| | M 40 x 1.5 | 18-32 | 5308 955 | 5308 945 | 10 |
| | M 50 x 1.5 | 17-31 | 5309 650 | 5309 750 | 5 |
| | M 50 x 1.5 | 24-38.5 | 5308 956 | 5308 946 | 5 |
| | M 63 x 1.5 | 26-39 | 5309 663 | 5309 763 | 5 |
| | M 63 x 1.5 | 35-48 | 5308 957 | 5308 947 | 5 |

Dimensions

| Thread Size | H mm | E mm | L mm | ØC mm | ØP mm | ØThread mm | Locknuts Light Gray | Locknuts Black |
|---|---|---|---|---|---|---|---|---|
| PG7 | 15 | 8 | 32 | 6.7 | 6.8 | 12.5 | 7211 881 | 7211 851 |
| PG9 | 19 | 8 | 35 | 8.5 | 8.7 | 15.2 | 7211 882 | 7211 852 |
| PG11 | 22 | 8 | 37 | 10.5 | 10.5 | 18.6 | 7211 883 | 7211 853 |
| PG13.5 | 24 | 9 | 39 | 12.5 | 12.5 | 20.4 | 7211 884 | 7211 854 |
| PG16 | 27 | 10 | 43 | 14.5 | 14.5 | 22.5 | 7211 885 | 7211 855 |
| PG21 | 33 | 11 | 50 | 18.5 | 18.5 | 28.3 | 7211 886 | 7211 856 |
| PG29 | 42 | 11 | 53 | 25.5 | 25.5 | 37.0 | 7211 887 | 7211 857 |
| PG36 | 53 | 13 | 65 | 32.5 | 32.5 | 47.0 | 7211 888 | 7211 858 |
| PG42 | 60 | 13 | 68 | 39.0 | 39.0 | 54.0 | 7211 889 | 7211 859 |
| PG48 | 70 | 14 | 70 | 48.5 | 48.5 | 59.3 | 7211 890 | 7211 860 |
| NPT 3/8 | 19 | 11 | 38 | 8.5 | 8.7 | 17.1 | 7211 485 | 7211 495 |
| NPT 1/2 | 24 | 14 | 44 | 12.5 | 12.5 | 21.2 | 7211 486 | 7211 496 |
| NPT 3/4 | 33 | 15 | 54 | 18.5 | 18.5 | 26.7 | 7211 487 | 7211 497 |
| NPT 1 | 42 | 18 | 60 | 25.5 | 25.5 | 33.3 | 7211 488 | 7211 498 |
| M12x1.5 | 15 | 8 | 32 | 6.7 | 6.8 | 12.0 | 7211 979 | 7211 974 |
| M16x1.5/9 | 19 | 10 | 37 | 8.5 | 8.5 | 16.0 | 7211 980 | 7211 975 |
| M16x1.5/11 | 22 | 10 | 39 | 10.5 | 10.5 | 16.0 | 7211 980 | 7211 975 |
| M20x1.5/13 | 24 | 10 | 40 | 12.5 | 12.5 | 20.0 | 7211 981 | 7211 976 |
| M20x1.5/16 | 27 | 10 | 43 | 14.5 | 14.5 | 20.0 | 7211 981 | 7211 976 |
| M25x1.5/16 | 27 | 10 | 45 | 14.5 | 14.5 | 25.0 | 7211 982 | 7211 977 |
| M25x1.5/21 | 33 | 10 | 49 | 18.5 | 18.5 | 25.0 | 7211 982 | 7211 977 |
| M32x1.5 | 42 | 10 | 52 | 25.5 | 25.5 | 32.0 | 7211 983 | 7211 978 |
| M40x1.5 | 53 | 10 | 62 | 32.5 | 32.5 | 40.0 | 7211 984 | 7211 990 |
| M50x1.5 | 60 | 12 | 67 | 39.0 | 39.0 | 50.0 | 7211 985 | 7211 991 |
| M63x1.5 | 70 | 12 | 68 | 48.5 | 48.5 | 63.0 | 7211 986 | 7211 992 |




* *Extended thread available consult Altech.*

[1] *Seal rings for NPT sold separately.*

***Locknuts sold separately.***


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# UL 489 Miniature Molded Case Circuit Breakers

## DLS9 Series (AC/DC)

- Thermal magnetic
- DIN Rail mountable
- 17.5 mm width per pole
- Available in 1, 2 & 3 poles (4 poles upon request)
- HACR Type 40°C
- Line/Load Reversible



LISTED C.B. E329510

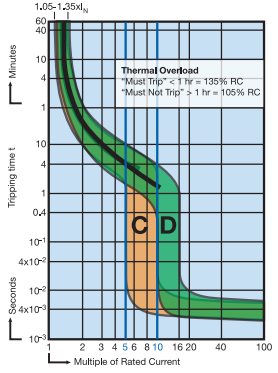
IEC 60947-2 Short Circuit Tested

| | | |
|---|---|---|
| **Current/Voltage Rating** | UL Series<br>DL Series | 0.3-63A / 240V AC, 0.3-32A / 480Y / 277V AC<br>0.3-63A / 125 / 250V DC (1 & 2 poles) |
| **Trip Curve** | C (5-10 times RC), D (10-16 times RC),<br>Upon Request: B (3-5 times RC) and Z (2-3 times RC) | |
| **Short Circuit Interrupting Capacity** | 10KA | |
| **Ambient Temperature** | -25°C to +70°C (-40F to 158°F) | |
| **Storage Temperature** | -40°C to +70°C (-40°F to 158°F) | |
| **Calibration Temperature** | 40°C (104°F) | |
| **Electrical Life** | 6,000 switching cycles ON/OFF | |
| **Mechanical Life** | 10,000 switching cycles ON/OFF | |
| **Accessories** | • Auxiliary Switches<br>• Cooling Spacer | • Touch Protection Caps<br>• Shunt Trip<br>• Neutral Pole<br>• Lockout Adapter |
| **Applications** | • **Branch Protection**<br>• Receptacle circuits (internal / external)<br>• Motor control circuits<br>• Power supplies | • Control instrumentation<br>• Power conditioners<br>• Relays |

**COMPETITORS**

**Manufacturer Series**

ABB.....S200U, S200UP, SU200M
Allen Bradley...1489-M
Eaton.....FAZ-NA, WMZT
GE.....EP100ULH12
Schneider.....C60UL489




**C & D AC Trip Curves**

For all trip curves visit altechcorp.com/breakers

# UL 508 Manual Motor Controllers

## "Suitable as Motor Disconnect"

## DLS8 Series

- Thermal Magnetic
- DIN Rail Mounted
- 17.5mm width per pole
- Available in 1, 2 & 3 poles (4 poles upon request)



E137938

up to 25A B,C,D curve

up to 25A B,C,D curve

| | |
|---|---|
| **Current/Voltage Rating** | 0.3-60A / 480Y / 277V AC<br>0.3-25A: 1 pole - 42V DC; 2 pole - 80V DC<br>30-60A: 1 pole - 24V DC; 2 pole - 60V DC |
| **Trip Curve** | B (3-5 times RC), C (5-10 times RC), D (10-16 times RC),<br>E (14-18 times RC), G (8-10 times RC) and Z (2-3 times RC) |
| **Short Circuit Withstand Rating** | 0.3-60A(RC): 10kA with UL listed<br>RK5 backup fuse or MCCB |
| **Operating Temperature** | -25°C to +70°C (-40F to 158°F) |
| **Storage Temperature** | -40°C to 70°C (-40°F to 158°F) |
| **Calibration Temperature** | 40°C (104°F) |
| **Accessories** | • Auxiliary switches<br>• Cooling spacer<br>• Touch protection caps<br>• Shunt Trip<br>• Neutral pole<br>• Lockout adapter |
| **Applications** | • AC Motor Starting, Across the Line<br>• AC General Use<br>• AC Resistance<br>• AC discharge lamps (ballast)<br>• AC incandescent lamps (tungsten) |

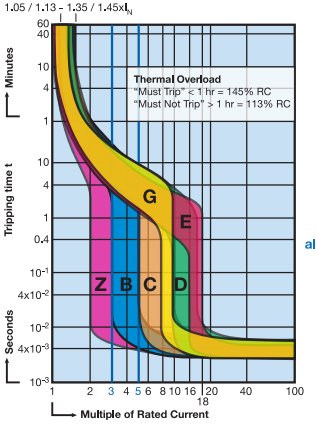
**COMPETITORS**

▶ **NO REAL COMPETITION**

Market offers large MCCB motor starter protectors which are only offered in 3 phase.



Siemens Motor Starter
$421.50




**B, C, D, E, G & Z AC Trip Curves**

For all trip curves visit altechcorp.com/breakers

**Altech's competitive advantages**

- Built-in dual terminal for bare wire/ferruled wire, spade and ring tongue lugs
- UL 489, UL 508 and UL 1077 series all in uniform design
- Industry unique UL 508 manual motor controller in supplementary protector design foot print

35 Royal Road • Flemington, NJ 08822-6000 • t 908-806-9400 • f 908-806-9490 • altechcorp.com

# UL 1077 Supplementary Protectors

## DLS7 Series

- Thermal magnetic
- DIN Rail mountable
- 17.5 mm width per pole
- Available in 1, 2 & 3 poles (4 poles upon request)

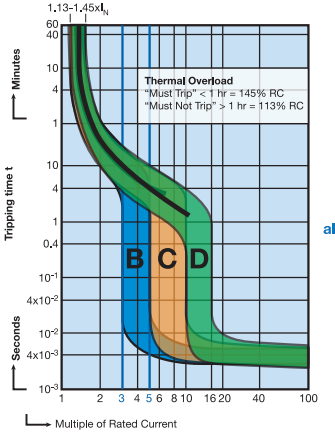


C UL US E137915 CE

| | |
|---|---|
| **Current/Voltage Rating** | 0.3-63A / 480Y / 277V AC |
| **Trip Curve RC-Rated Current** | B (3-5 times RC), C (5-10 times RC), D (10-16 times RC) |
| **Short Circuit Withstanding Rating** | 0.3-60A(RC): 10kA with UL listed RK5 backup fuse or MCCB |
| **Ambient Temperature** | -25°C to +70°C (-40F to 158°F) |
| **Storage Temperature** | -40°C to 70°C (-40°F to 158°F) |
| **Calibration Temperature** | 30°C (86°F) |
| **Electrical Life** | 6,000 switching cycles ON/OFF |
| **Mechanical Life** | 10,000 switching cycles ON/OFF |
| **Accessories** | • Auxiliary Switches • Touch Protection Caps • Neutral Pole • Cooling Spacer • Shunt Trip • Lockout Adapter |
| **Applications** | • Sensitive Electronics • Power Supplies • Appliance Circuits |

**COMPETITORS**

| Manufacturer | Series |
|---|---|
| ABB | S200, S200P, S200PR |
| Allen Bradley | 1492-SP, 1492-SPM |
| Eaton | FAZ-SP, WMTS |
| GE | EP60UL, EP100UL |
| Schneider | C60UL 1077 |




**B, C, & D AC Trip Curves**

For all trip curves visit altechcorp.com/breakers

## Trip Curve Selection Guide

UL489 UL508 UL1077

| Trip-Characteristics | Applications | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Characteristic Trip Boundaries | Lighting Wiring Protection Control Circuits | Business Equipment Appliances | Transformers | Power Supplies Heaters | Motors: General | Motors: Low Inrush | Motors: High Inrush | Motors: High Efficiency | General Electronics | Solenoid | Semi-conductors Components devices with low surge-current and short circuit withstand capabilities | Reactive Load |
| B-Characteristics | ■ | ■ | | | | | | | ■ | | | |
| C-Characteristics | ■ | ■ | | | | ■ | | | | | | |
| D-Characteristics | | | ■ | ■ | | | ■ | | | | | ■ |
| E-Characteristics | | | ■ | ■ | | | | ■ | | | | |
| G-Characteristics | ■ | | ■ | | ■ | ■ | | | | ■ | | |
| Z-Characteristics | | | | | | | | | ■ | | ■ | |

## Part Number Builder

**UL489** 2 (No. Poles 1, 2, or 3) C (Trip Curves C or D) 15 (AMP) UL (Series)

- UL - standard UL489, AC
- DL - standard UL489, DC
- PL - standard UL489, AC with LOCK OUT
- HL - standard UL489 DC with LOCK OUT

Example: 2C15UL, 2C15DL, 2C15PL, 2C15HL

**UL508** 2 (No. Poles 1, 2, or 3) C (Trip Curves B, C, D, E, G or Z) 15 (AMP) UM (Series)

Example: 2C15UM

**UL1077** 2 (No. Poles 1, 2, or 3) C (Trip Curves B, C or D) 15 (AMP) UR (Series)

Example: 2C15UR

## DLS9 (AC, DC), DLS8, DLS7




1 Hinged terminal cover design allows easy access to terminal screws with a broad range of screwdrivers

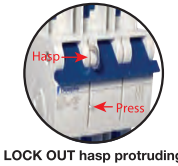
2 Individual Part Number is shown on each circuit breaker and is legible when installed in the panel.

3 DIN Clip can be released when necessary.

4 Flexible replaceable terminal barriers reduce the possibility of breakage if accidentally dropped

**Now Available**

**LOCK OUT Feature Available**




LOCK OUT hasp protruding



**Shown with lock installed**
*Lock not included*

Altech® Miniature Circuit Breakers AT A GLANCE

Order Catalog PN- 345

# Altech PC Series Contactors

- Minimum size & maximum performance
- Ambient temperatures – 40°C up to + 90°C
- Designed for the operation under extreme conditions (heat, dust, sand, high humidity, vibrations, shock)
- Bounce-free, self-cleaning aux. contacts, suitable for switching electronic circuits => highest contact reliability
- Current ratings from 10A to 115A
- Adjustable Overload Relays from 0.18A to 85A



ND Frame | 40A Frame | 74A Frame | 115A Frame

## 3 Pole Contactors (Normally Open)

| Amperage AC-3 Rating | Auxiliary NO | Auxiliary NC | Coil Voltage 24 V AC | 24 V DC | 110-120 V AC | 110 V DC | 200-240 V AC |
|---|---|---|---|---|---|---|---|
| 10 A | 1 | 0 | A16PC3-10ND10-AC24V | A16PC3-10ND10-DC24V | A16PC3-10ND10-AC110V | A16PC3-10ND10-DC110V | A16PC3-10ND10-AC180V |
| 14 A | 1 | 0 | A16PC3-14ND10-AC24V | A16PC3-14ND10-DC24V | A16PC3-14ND10-AC110V | A16PC3-14ND10-DC110V | A16PC3-14ND10-AC180V |
| 18 A | 1 | 0 | A16PC3-18ND10-AC24V | A16PC3-18ND10-DC24V | A16PC3-18ND10-AC110V | A16PC3-18ND10-DC110V | A16PC3-18ND10-AC180V |
| 22 A | 1 | 0 | A16PC3-22ND10-AC24V | A16PC3-22ND10-DC24V | A16PC3-22ND10-AC110V | A16PC3-22ND10-DC110V | A16PC3-22ND10-AC180V |
| 24 A | 1 | 0 | A16PC3-24A00-AC24V | A16PC3-24A00-DC24V | A16PC3-24A00-AC110V | A16PC3-24A00-DC110V | A16PC3-24A00-AC180V |
| 32 A | 0 | 0 | A16PC3-32A00-AC24V | A16PC3-32A00-DC24V | A16PC3-32A00-AC110V | A16PC3-32A00-DC110V | A16PC3-32A00-AC180V |
| 40 A | 0 | 0 | A16PC3-40A00-AC24V | A16PC3-40A00-DC24V | A16PC3-40A00-AC110V | A16PC3-40A00-DC110V | A16PC3-40A00-AC180V |
| 50 A | 0 | 0 | A16PC3-50A00-AC24V | A16PC3-50A00-DC24V | A16PC3-50A00-AC110V | A16PC3-50A00-DC110V | A16PC3-50A00-AC180V |
| 62 A | 0 | 0 | A16PC3-62A00-AC24V | A16PC3-62A00-DC24V | A16PC3-62A00-AC110V | A16PC3-62A00-DC110V | A16PC3-62A00-AC180V |
| 74 A | 0 | 0 | A16PC3-74A00-AC24V | A16PC3-74A00-DC24V | A16PC3-74A00-AC110V | A16PC3-74A00-DC110V | A16PC3-74A00-AC180V |
| 90 A | 0 | 0 | A16PC3-90A00-24V | - | A16PC3-90A00-110V | - | A16PC3-90A00-230V |
| 115 A | 0 | 0 | A16PC3-115A00-24V | - | A16PC3-115A00-110V | - | A16PC3-115A00-230V |

## Overload Relays (Class 10)





| Setting Range | Standard | Manual Reset |
|---|---|---|
| 0.12-0.18 A | APOL3/32-0.18 | APOL12/16E-0.18-C3 |
| 0.18-0.27 A | APOL3/32-0.27 | APOL12/16E-0.27-C3 |
| 0.27-0.4 A | APOL3/32-0.4 | APOL12/16E-0.4-C3 |
| 0.4-0.6 A | APOL3/32-0.6 | APOL12/16E-0.6-C3 |
| 0.6-0.9 A | APOL3/32-0.9 | APOL12/16E-0.9-C3 |
| 0.8-1.2 A | APOL3/32-1.2 | APOL12/16E-1.2-C3 |
| 1.2-1.8 A | APOL3/32-1.8 | APOL12/16E-1.8-C3 |
| 1.8-2.7 A | APOL3/32-2.7 | APOL12/16E-2.7-C3 |
| 2.7-4 A | APOL3/32-4 | APOL12/16E-4-C3 |
| 4-6 A | APOL3/32-6 | APOL12/16E-6-C3 |
| 6-9 A | APOL3/32-9 | APOL12/16E-9-C3 |
| 8-11 A | APOL3/32-11 | APOL12/16E-11-C3 |
| 10-14 A | APOL3/32-14 | APOL12/16E-14-C3 |
| 13-18 A | APOL3/32-18 | APOL12/16E-18-C3 |
| 14-20 | - | APOL3/42 20 |
| 17-24 A | APOL3/32-24 | APOL12/16E-23-C3 |
| 20-28 A | - | APOL3/42 28 |
| 23-32 A | APOL3/32-32 | APOL12/16E-30-C3 |
| 28-42 A | - | APOL3/16E-30-C4 |

## Auxiliary Contacts

Front Mounting
For all Frames

Low Level Switching



1 NO = AP-HN10

Up to 25 A Switching



1 NO = AP-HA10

Side Mounting
For 24A and Larger

Low Level Switching



1NC/1NO = AP-HB11
2NC = AP - HB02



1 NC = AP-HN01



1 NC = AP-HA01



## Coil Suppression (RC Circuits)

for A16PC3-10 to A16PC3-74

| For Coil Voltage | Part Number |
|---|---|
| 12-48 VAC/DC | AP-RC-C3N24 |
| 48-127 VAC/DC | AP-RC-C3N110 |
| 110-230 VAC/DC | AP-RC-C3N230 |
| 230-415 VAC/DC | AP-RC-C3N400 |

## Indicators

| Coil Voltage Indication |
|---|
| 24-120V AC/DC |
| AP-C2UNR |
| Coil Current Indication |
| 24-660V AC/DC |
| Green = AP-C2ING |
| Red = AP-C2INR |


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## Altech MC Contactors


includes UA-1-11 Auxiliary switch, (1NO/1NC)

**22AF Frame**


includes 2 x UA-1-11 Auxiliary switch, (2NO/2NC)

**40AF Frame**


includes 2 x UA-1-11 Auxiliary switch, (2NO/2NC)

**65AF Frame**


includes 2 x UA-1-11 Auxiliary switch, (2NO/2NC)

**100AF Frame**


includes 2 x UA-1-11 Auxiliary switch, (2NO/2NC)

**150AF Frame**


includes 2 x AU-100-11 Auxiliary switch, (2NO/2NC)

**225AF Frame**


includes 2 x AU-100-11 Auxiliary switch, (2NO/2NC)

**400AF Frame**


includes 2 x AU-100-11 Auxiliary switch, (2NO/2NC)

**800AF Frame**

## 3 Pole Contactors (Normally Open)

| Amperage AC-3 @ 380/440V | AC-1 | HP Rating Single Phase 110-120V | 220-240V | 200-208V | Three Phase 220-240V | 440-480V | 550-600V | Auxiliary NO | NC | Coil Voltage 24 V AC 24 V DC 120 V AC 208 V AC 230 V AC 480 V AC | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **22AF FRAME** | | | | | | | | | | | | | | | |
| 9A | 25A | 0.5 | 1.5 | 2 | 3 | 5 | 7.5 | 1 | 1 | MC-9B-AC24V | MC-9B-DC24V | MC-9B-AC120V | MC-9B-AC208V | MC-9B-AC230V | MC-9B-AC480V |
| 12A | 25A | .75 | 2 | 3 | 5 | 7.5 | 10 | 1 | 1 | MC-12B-AC24V | MC-12B-DC24V | MC-12B-AC120V | MC-12B-AC208V | MC-12B-AC230V | MC-12B-AC480V |
| 18A | 32A | 1 | 3 | 5 | 7.5 | 10 | 15 | 1 | 1 | MC-18B-AC24V | MC-18B-DC24V | MC-18B-AC180V | MC-18B-AC208V | MC-18B-AC230V | MC-18B-AC480V |
| 22A | 40A | 2 | 3 | 7.5 | 10 | 15 | 20 | 1 | 1 | MC-22B-AC24V | MC-22B-DC24V | MC-22B-AC120V | MC-22B-AC208V | MC-22B-AC230V | MC-22B-AC480V |
| **40AF FRAME** | | | | | | | | | | | | | | | |
| 32A | 50A | 2 | 5 | 7.5 | 10 | 20 | 25 | 2 | 2 | MC-32A-AC24V | MC-32A-DC24V | MC-32A-AC320V | MC-32A-AC208V | MC-32A-AC230V | MC-32A-AC480V |
| 40A | 60A | 3 | 7.5 | 15 | 15 | 30 | 30 | 2 | 2 | MC-40A-AC24V | MC-40A-DC24V | MC-40A-AC120V | MC-40A-AC208V | MC-40A-AC230V | MC-40A-AC480V |
| **65AF FRAME** | | | | | | | | | | | | | | | |
| 50A | 70A | 3 | 10 | 20 | 25 | 40 | 50 | 2 | 2 | MC-50A-AC24V | MC-50A-DC24V | MC-50A-AC120V | MC-50A-AC208V | MC-50A-AC230V | MC-50A-AC480V |
| 65A | 100A | 5 | 15 | 25 | 30 | 50 | 60 | 2 | 2 | MC-65A-AC24V | MC-65A-DC24V | MC-65A-AC120V | MC-65A-AC208V | MC-65A-AC230V | MC-65A-AC480V |
| **100AF FRAME** | | | | | | | | | | | | | | | |
| 75A | 110A | 5 | 15 | 25 | 30 | 50 | 60 | 2 | 2 | MC-75A-AC24V | MC-75A-DC24V | MC-75A-AC120V | MC-75A-AC208V | MC-75A-AC230V | MC-75A-AC480V |
| 85A | 135A | 7.5 | 15 | 30 | 40 | 60 | 75 | 2 | 2 | MC-85A-AC24V | MC-85A-DC24V | MC-85A-AC120V | MC-85A-AC208V | MC-85A-AC230V | MC-85A-AC480V |
| 105A | 160A | 10 | 20 | 30 | 40 | 75 | 75 | 2 | 2 | MC-100A-AC24V | MC-100A-DC24V | MC-100A-AC120V | MC-100A-AC208V | MC-100A-AC230V | MC-100A-AC480V |
| **150AF FRAME with Lug Terminals** | | | | | | | | | | | | | | | |
| 130A | 160A | 10 | 20 | 40 | 40 | 75 | 75 | 2 | 2 | MC-130A-AC24V | MC-130A-DC24V | MC-130A-100/200V | MC-130A-100/200V | MC-130A-100/200V | MC-130A-AC480V |
| 150A | 210A | 15 | 25 | 40 | 50 | 100 | 75 | 2 | 2 | MC-150A-AC24V | MC-150A-DC24V | MC-150A-100/200V | MC-150A-100/200V | MC-150A-100/200V | MC-150A-AC480V |

| Amperage AC-3 @ 380/440V | AC-1 | HP Rating Single Phase 110-120V | 220-240V | 200-208V | Three Phase 220-240V | 440-480V | 550-600V | Auxiliary NO | NC | Coil Voltage 24-25 VAC/DC | 48-50 VAC/DC | 100-240 V AC 265-347 V AC 380-450 V AC 440-575 V AC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **225AF FRAME** | | | | | | | | | | | | | | | |
| 185A | 230A | 15 | 30 | 60 | 60 | 125 | 125 | 2 | 2 | MC-185A-24V | MC-185A-48V | MC-185A-110/220V | MC-185A-300V | MC-185A-400V | MC-185A-500V |
| 225A | 275A | 15 | 40 | 60 | 75 | 150 | 150 | 2 | 2 | MC-225A-24V | MC-225A-48V | MC-225A-110/220V | MC-225A-300V | MC-225A-400V | MC-225A-500V |
| **400AF FRAME** | | | | | | | | | | | | | | | |
| 265A | 300A | - | - | 75 | 100 | 200 | 200 | 2 | 2 | - | - | MC-265A-110/220V | MC-265A-300V | MC-265A-400V | MC-265A-500V |
| 330A | 350A | - | - | 100 | 125 | 250 | 250 | 2 | 2 | - | - | MC-330A-110/220V | MC-330A-300V | MC-330A-400V | MC-330A-500V |
| 400A | 450A | - | - | 125 | 150 | 300 | 300 | 2 | 2 | - | - | MC-400A-110/220V | MC-400A-300V | MC-400A-400V | MC-400A-500V |

| Amperage AC-3 @ | AC-1 | HP Rating Single Phase 110-120V | 220-240V | 200-208V | Three Phase 220-240V | 440-480V | 550-600V | Auxiliary NO | NC | Coil Voltage - | 100-127 V AC 200-240 V AC 265-347 V AC - 100-110 V DC 200-220 V DC | 380-450 | V AC 440-575 V AC | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **400AF FRAME** | | | | | | | | | | | | | | | |
| 500A | 580A | - | - | 150 | 200 | 400 | 400 | 2 | 2 | - | MC-500A-100V | MC-500A-200V | MC-500A-300V | MC-500A-400V | MC-500A-500V |
| 630A | 660A | - | - | 200 | 250 | 500 | 500 | 2 | 2 | - | MC-630A-100V | MC-630A-200V | MC-630A-300V | MC-630A-400V | MC-630A-630V |
| 800A | 900A | - | - | 200 | 300 | 600 | 600 | 2 | 2 | - | MC-800A-100V | MC-800A-200V | MC-800A-300V | MC-800A-400V | MC-800A-800V |

# Overload Relays (Class 10, Differential Typical)



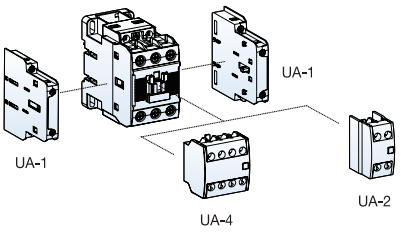





| MT-32 | MT-63 | MT-95 | MT-150 | MT-400 | MT-800 |
|---|---|---|---|---|---|

| Setting Range (A) | For Frame Size | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 22AF | 40AF | 65AF | 100AF | 150AF | 225AF | 400AF | 800AF |
| 0.1-0.16A | MT-32/3K-0.16 | MT-32/3K-0.16 | | | | | | |
| 0.16-0.25A | MT-32/3K-0.25 | MT-32/3K-0.25 | | | | | | |
| 0.25-0.4A | MT-32/3K-0.4 | MT-32/3K-0.4 | | | | | | |
| 0.4-0.63A | MT-32/3K-0.63 | MT-32/3K-0.63 | | | | | | |
| 0.63-1A | MT-32/3K-1 | MT-32/3K-1 | | | | | | |
| 1-1.6A | MT-32/3K-1.6 | MT-32/3K-1.6 | | | | | | |
| 1.6-2.5A | MT-32/3K-2.5 | MT-32/3K-2.5 | | | | | | |
| 2.4-4A | MT-32/3K-4 | MT-32/3K-4 | | | | | | |
| 4-6A | MT-32/3K-6 | MT-32/3K-6 | MT-63/3K-6 | | | | | |
| 5-8A | MT-32/3K-8 | MT-32/3K-8 | MT-63/3K-8 | | | | | |
| 6-9A | MT-32/3K-9 | MT-32/3K-9 | MT-63/3K-9 | | | | | |
| 7-10A | MT-32/3K-10 | MT-32/3K-10 | MT-63/3K-10 | MT-95/3K-10 | | | | |
| 9-13A | MT-32/3K-13 | MT-32/3K-13 | MT-63/3K-13 | MT-95/3K-13 | | | | |
| 12-18A | MT-32/3K-18 | MT-32/3K-18 | MT-63/3K-18 | MT-95/3K-18 | | | | |
| 16-22A | MT-32/3K-22 | MT-32/3K-22 | MT-63/3K-22 | MT-95/3K-22 | | | | |
| 18-25A | MT-32/3K-25 | MT-32/3K-25 | MT-63/3K-25 | MT-95/3K-25 | | | | |
| 22-32A | MT-32/3K-32 | MT-32/3K-32 | | MT-95/3K-32 | | | | |
| 24-36A | | | | MT-95/3K-36 | | | | |
| 28-40A | MT-32/3K-40 | MT-32/3K-40 | MT-63/3K-40 | MT-95/3K-40 | | | | |
| 34-50A | | | | MT-63/3K-50 | MT-95/3K-50 | MT-150/3K-50 | | |
| 45-65A | | | | MT-63/3K-65 | MT-95/3K-65 | MT-150/3K-65 | | |
| 54-75A | | | | | MT-95/3K-75 | MT-150/3K-75 | | |
| 63-85A | | | | | MT-95/3K-85 | MT-150/3K-85 | | |
| 65-100A | | | | | | MT-150/3K-105 | MT-225/3K-100 | |
| 70-95A | | | | MT-95/3K-95 | | | | |
| 80-100A | | | | MT-95/3K-100 | | | | |
| 85-125A | | | | | | MT-225/3K-125 | MT-400/3K-125 | |
| 95-130A | | | | | MT-150/3K-130 | | | |
| 110-150A | | | | | MT-150/3K-150 | | | |
| 100-160A | | | | | | MT-225/3K-160 | MT-400/3K-160 | |
| 120-185A | | | | | | MT-225/3K-185 | MT-400/3K-185 | |
| 160-240A | | | | | | MT-225/3K-240 | MT-400/3K-240 | |
| 200-330A | | | | | | | MT-400/3K-330 | MT-800/3K-330 |
| 260-400A | | | | | | | MT-400/3K-400 | MT-800/3K-400 |
| 400-630A | | | | | | | | MT-800/3K-630 |
| 520-800A | | | | | | | | MT-800/3K-800 |

## Auxiliary Contacts




### For Frame Sizes 22AF - 150AF

| Type | Configuration | Part Number |
|---|---|---|
| Side Mount | 1NO/1NC | UA-1-11 |
| Front Mount | 2NO | UA-2-20 |
| | 1NO/1NC | UA-2-11 |
| | 2NC | UA-2-02 |
| | 4NO | UA-4-40 |
| | 3NO/1NC | UA-4-31 |
| | 2NO/2NC | UA-4-22 |
| | 1NO/3NC | UA-4-13 |
| | 4NC | US-4-04 |

### For Frame Sizes 225AF - 800AF

| Type | Configuration | Part Number |
|---|---|---|
| Side Mount | 1NO/1NC | UA-100-11 |

## Overload Bases

For Separate Overload Mounting



| Relay Series | Part Number |
|---|---|
| MT-32 | UZ-32 |
| MT-63 | UZ-63/S |
| MT-95 | UZ-95/S |
| MT-150 | UZ-150A |

## Lug Terminals

For 225AF, 400AF & 800AF Frames



| Frame Size | Part Number |
|---|---|
| 225AF | AJ-200 |
| 400AF | AJ-400 |
| 800AF | AJ-800A |

## Surge Suppression



**For Frame Sizes 22AF - 100AF**

| Type | For Coil Voltages | Varistor | Resistor | Capacitor | Part Number |
|---|---|---|---|---|---|
| | 28-48V AC | 120V | 100Ω | 0.1µF | US-1 |
| | 100-125V AC | 270V | 100Ω | 0.1µF | US-2 |
| Resistor | 200-240V AC | 470V | 100Ω | 0.1µF | US-3 |
| Capacitor | 24-48DC | 120V | 100Ω | 0.47µF | US-4 |
| Varistor | 100-125V DC | 270V | 100Ω | 0.47µF | US-5 |
| | 200-220V DC | 470V | 100Ω | 0.47µF | US-6 |
| | 24-48V AC/DC | 120V | - | - | US-11 |
| Varistor | 100-125V AC/DC | 270V | - | - | US-12 |
| Only | 200-240V AC/DC | 470V | - | - | |
| | 380-440V AC/DC | 1000V | | | |
| RC Only | 100-125V AC | - | 56Ω | 0.1µF | US-22 |
| | | | | | US-14 |

## Reversing Contactors

Includes two matching contactors, mechanical interlock and wiring set (up to 100A)



MC-40A/R



MC-65A/R



MC-100A/R

| Types | Types | Types |
|---|---|---|
| MC-9B/R* | MC-65A/R* | MC-225A/R* |
| MC-12B/R* | MC-75A/R* | MC-265A/R* |
| MC-18B/R* | MC-85A/R* | MC-330A/R* |
| MC-22B/R* | MC-100A/R* | MC-400A/R* |
| MC-32A/R* | MC-130A/R* | MC-500A/R* |
| MC-40A/R* | MC-150A/R* | MC-630A/R* |
| MC-50A/R* | MC-185A/R* | MC-800A/R* |

* To create a complete part number add the coil voltage after the /R.
See individual contactors for available coil voltages (eg MC-9B/R-AC120V).

## Reversing Contactor Components

Wiring Kits



UW-XX

| Contactor Frame Size | Part Number |
|---|---|
| MC-9B to MC-22B | UW-22 |
| MC-32A to MC-40A | UW-32 |
| MC-50A, MC-65A | UW-63 |
| MC-75A, MC-100A | UW-95 |

## Mechanical Interlocks



UR-02



AR-180

| Contactor Frame Size | Part Number |
|---|---|
| MC-9B to MC-100A | UR-02* |
| MC-180A to MC-400A | AR-180 |
| MC-500A to MC-800A | AR-600 |

UL508
E108780

## Mini Contactors





| Amperage AC-3 @ 380/440V | | HP Rating Single Phase 110-120V | HP Rating Single Phase 220-240V | HP Rating Three Phase 240V | HP Rating Three Phase 480V | HP Rating Three Phase 600V | Auxiliary NO | Auxiliary NC | Coil Voltage 12 V DC 24 V DC 24 V AC | | Coil Voltage 120 V AC 208 V AC 230 V AC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6A | 20A | 0.5 | 1 | 1.5 | 3 | 3 | 1 | 0 | GMD-6M-10-DC12V | GMD-6M-10-DC24V | GMC-6M-10-AC24V | GMC-6M-10-AC120V | GMC-6M-10-AC208V | GMC-6M-10-AC230V |
| 9A | 20A | 0.5 | 1.5 | 3 | 5 | 5 | 1 | 0 | GMD-9M-10-DC12V | GMD-9M-10-DC24V | GMC-9M-10-AC24V | GMC-9M-10-AC120V | GMC-9M-10-AC208V | GMC-9M-10-AC230V |
| 12A | 20A | 1 | 2 | 3 | 7.5 | 10 | 1 | 0 | GMD-12M-10-DC12V | GMD-12M-10-DC24V | GMC-12M-10-AC24V | GMC-12M-10-AC120V | GMC-12M-10-AC208V | GMC-12M-10-AC230V |

## Overload Relays

| Setting Ranges (A) | Part Numbers |
|---|---|
| 0.1-0.16A | GTK-12M-0.16 |
| 0.16-0.25A | GTK-12M-0.25 |
| 0.25-0.4A | GTK-12M-0.4 |
| 0.4-0.63A | GTK-12M-0.63 |
| 0.63-1A | GTK-12M-1 |
| 1-1.6A | GTK-12M-1.6 |
| 1.6-2.5A | GTK-12M-2.5 |
| 2.4-4A | GTK-12M-4 |
| 4-6A | GTK-12M-6 |
| 5-8A | GTK-12M-8 |
| 6-9A | GTK-12M-9 |
| 7-10A | GTK-12M-10 |

## Auxiliary Contacts

| Mounting | Contacts | Part Numbers |
|---|---|---|
| Side | 1NO | AU-1M-10 |
| | 1NC | AU-1M-01 |
| | 2NO | AU-2M-20 |
| | 2NC | AU-2M-02 |
| | 1NO/1NC | AU-2M-11 |
| Front | 4NO | AU-4M-40 |
| | 3NO/1NC | AU-4M-31 |
| | 2NO/2NC | AU-4M-22 |
| | 1NO/3NC | AU-4M-13 |
| | 4NC | AU-4M-04 |

## Surge Suppression (Varistor)

| Coil Voltage | Part Numbers |
|---|---|
| 24-48VAC | AS-12M/1 |
| 60-127VAC | AS-12M/2 |
| 200-240V AC | AS-12M/3 |
| 12-24V DC | AS-12M/4 |
| 30-72V DC | AS-12M/5 |
| 100-127V DC | AS-12M/6 |
| 200-250V DC | AS-12M/7 |

For Mini contactors - 6A to 12A

## Reversing Contactor Kit

Includes wire harness & interlock

| Contactor Type | Part Number |
|---|---|
| 6A to 12A | AR-12M |

## Separate Mounting Base for Overload Relays

| Contactor Type | Part Number |
|---|---|
| 6A to 12A | AR-12M |

# AKKUTEC DC-UPS
## AT A GLANCE

Order Catalog
PN- 815

UPS systems with batteries as energy storage provide the consumer with uninterrupted power in case of mains disturbances. Our DC UPS systems of the AKKUTEC series operate in standby parallel mode. During mains operation, the DC source supplies the load and the battery simultaneously. The battery is kept fully charged. If the power supply fails, the battery buffers until it has reached its deep discharge limit. This can be a few minutes or a few hours. The battery management integrated in our AKKUTEC devices protects the battery and makes the system safe and highly available.

## AKKUTEC

The AKKUTEC is a battery buffered DC power supply that works in a stand-by parallel mode with lead-acid batteries. A load is maintained through the AKKUTEC with a safe and continuous DC power supply in the event of main power failure through the attached battery. VdS certified AKKUTEC modules. VdS certifications have an excellent reputation with manufacturers, service providers and correspond with the highest testing standards.







| Type AKKUTEC | Item no. | Prim. V | Sec. V | Output A | Dimensions H x W x D (mm) | Weight Kg |
|---|---|---|---|---|---|---|
| 2402 | NBPAQ33G1M01 | 115-230 | 24 | 2,1 | 92,5 x 60 x 116 | 0,55 |
| 2403 | NBPAQ33G1M10 | 230 | 24 | 2,85 | 92,5 x 60 x 116 | 0,55 |
| 2403 VdS | NBPA0844G01002 | 115-230 | 24 | 3 | 153 x 72 x 125 | 0,95 |
| 2403 DC | NBUA0523G01003 | 24 | 24 | 2,85 | 92,5 x 60 x 116 | 0,60 |
| 1203 | NBPAQ33G1M13 | 230 | 12 | 2,1 | 92,5 x 60 x 116 | 0,55 |
| 4801 | NBPAQ33G1M19 | 230 | 48 | 1,2 | 92,5 x 60 x 116 | 0,55 |
| 2405 USB | NBPA0616G01101 | 115-230 | 24 | 5 | 160 x 75 x 150 | 1,26 |
| 1208 USB | NBPA0616G01006 | 115-230 | 12 | 5 | 160 x 75 x 150 | 1,26 |
| 4803 USB | NBPA0616G01005 | 115-230 | 48 | 3 | 160 x 75 x 150 | 1,26 |
| 4810 | NBPA0347G01007 | 230 | 48 | 11 | 241 x 101 x 244 | 2,40 |
| 2410 | NBPAN33G1M01 | 230 | 24 | 11 | 216 x 91 x 175 | 1,60 |
| 4806 | NBPA1630G01002 | 230 | 48 | 6 | 92,5 x 60 x 116 | 1,5 |
| 2412 VdS | NBPA0812G01002 | 230 | 24 | 12 | 155 x 95 x 183 | 1,56 |
| 1220 | NBPA0347G01002 | 115-230 | 12 | 20 | 241 x 101 x 244 | 2,9 |
| 2420 | NBPA0347G01001 | 230 | 24 | 22 | 241 x 101 x 244 | 2,87 |
| 2420 | NBPA0313G01002 | 400 | 24 | 22 | 241 x 101 x 244 | 2,54 |
| 2440 | NBPA33G1M01 | 400 | 24 | 44 | 180 x 290 x 150 | 3,60 |




## AKKUTEC / AKKUTEC VdS

Battery back-up modules are an absolute must in many modern industrial applications. However, an AKKUTEC paired with a battery module is the best back up solution for large power loads over extended periods of time. An AKKUTEC will ensure the prolonged operation of machinery and controlled processes.

Altech Corporation offers a wide variety of products for DC-UPS systems starting 2 A and up to 40 A along with monitoring / setup software, and comprehensive support.

## FEATURES

- Primary switched-mode power supply with I/U charging characteristics
- Active power factor correction (PFC)
- Microcontroller-supported lead battery management
- RS232 for monitoring and parameter stings
- Temperature tracking of the charging voltage by external sensor
- Primary switched-mode power supply with I/U charging characteristics

### ADVANTAGES

- 12V DC, 24V DC and 48V DC
- Largest and most varied line
- Quickest charge and buffer times
- Built in power supply
- Online system (no switch over time)

### COMPETITORS

| Manufacturer | Series |
|---|---|
| Phoenix | Quint 4 CAP |
| Weidmuller | CP DC Buffer |
| Siemens | SITOP UPS500 |
| Puls | UC10 |

### APPLICATIONS

- Controlled shutdown
- Extreme / isolated environment
- Renewable energy
- Industrial / electrical automation
- Remote monitoring
- Telecommunication
- Agriculture
- Machinery
- Textiles
- Automotive
- Packaging
- Industrial PC


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| Current | 2 min | 5 min | 10 min | 15 min | 30 min | 1 h | 3 h | 5 h | 10 h | 20 h |
|---|---|---|---|---|---|---|---|---|---|---|
| | Time | | | | | | | | | |
| 0,5 A | AKKUTEC 2402 + NBBH 2401 | AKKUTEC 2402 + NBBH 2401 | AKKUTEC 2402 + NBBH 2401 | AKKUTEC 2402 + NBBH 2401 | AKKUTEC 2402 + NBBH 2401 | AKKUTEC 2402 + NBBH 2401 | AKKUTEC 2402 + NBBH 2402 | AKKUTEC 2402 + NBBH 2402 | AKKUTEC 2402 + NBBH 2407 | AKKUTEC 2402 + NBBH 2412 |
| 1 A | AKKUTEC 2402 + NBBH 2401 | AKKUTEC 2402 + NBBH 2401 | AKKUTEC 2402 + NBBH 2401 | AKKUTEC 2402 + NBBH 2401 | AKKUTEC 2402 + NBBH 2401 | AKKUTEC 2402 + NBBH 2402 | AKKUTEC 2402 + NBBH 2407 | AKKUTEC 2402 + NBBH 2407 | AKKUTEC 2402 + NBBH 2412 | AKKUTEC 2402 + NBBH 2417 |
| 2 A | AKKUTEC 2402 + NBBH 2401 | AKKUTEC 2402 + NBBH 2401 | AKKUTEC 2402 + NBBH 2401 | AKKUTEC 2402 + NBBH 2401 | AKKUTEC 2402 + NBBH 2402 | AKKUTEC 2402 + NBBH 2407 | AKKUTEC 2403 + NBBH 2407 | AKKUTEC 2403 + NBBH 2412 | AKKUTEC 2405-0 + NBBH 2417 | AKKUTEC 2405-0 + NBBH 2440 |
| 5 A | AKKUTEC 2405-0 + NBBH 2401 | AKKUTEC 2405-0 + NBBH 2402 | AKKUTEC 2405-0 + NBBH 2402 | AKKUTEC 2405-07 | AKKUTEC 2405-07 | AKKUTEC 2405-12 | AKKUTEC 2410-0 + NBBH 2417 | AKKUTEC 2410-0 + NBBH 2417 | AKKUTEC 2410-0 + NBBH 2465 | AKKUTEC 2420-0 + 2 x SB 100-12 |
| 10 A | AKKUTEC 2410-0 + NBBH 24021 | AKKUTEC 2410-07 | AKKUTEC 2410-07 | AKKUTEC 2410-07 | AKKUTEC 2410-12 | AKKUTEC 2410-0 + NBBH 2417 | AKKUTEC 2410-0 + NBBH 2440 | AKKUTEC 2420-0 + NBBH 2465 | AKKUTEC 2420-0 + 2 x SB 100-12 | AKKUTEC 2420-0 + 4 x SB 100-12 |
| 15 A | AKKUTEC 2420-07 | AKKUTEC 2420-07 | AKKUTEC 2420-07 | AKKUTEC 2420-12 | AKKUTEC 2420-12 | AKKUTEC 2420-0 + NBBH 2417 | AKKUTEC 2420-0 + NBBH 2465 | AKKUTEC 2420-0 + 2 x SB 100-12 | AKKUTEC 2440-0 + 2 x SB 150-12 | AKKUTEC 2420-0 + 4 x SB 150-12 |
| 20 A | AKKUTEC 2420-07 | AKKUTEC 2420-07 | AKKUTEC 2420-12 | AKKUTEC 2420-12 | AKKUTEC 2420-0 + NBBH 2417 | AKKUTEC 2420-0 + NBBH 2440 | AKKUTEC 2420-0 + NBBH 2465 | AKKUTEC 2440-0 + 2 x SB 100-12 | AKKUTEC 2440-0 + 4 x SB 100-12 | |
| 40 A | AKKUTEC 2440-0 + NBBH 2407HI | AKKUTEC 2440-0 + NBBH 2417 | AKKUTEC 2440-0 + NBBH 2417 | AKKUTEC 2440-0 + NBBH 2417 | AKKUTEC 2440-0 + NBBH 2440 | AKKUTEC 2440-0 + NBBH 2465 | AKKUTEC 2440-0 + 2 x SB 150-12 | AKKUTEC 2440-0 + 4 x SB 100-12 | 2 x AKKUTEC 2440-0 + 4 x SB 200-12 | |
| 80 A | 2 x AKKUTEC 2440-0 + NBBH 2417 | 2 x AKKUTEC 2440-0 + NBBH 2417 | 2 x AKKUTEC 2440-0 + NBBH 2440 | 2 x AKKUTEC 2440-0 + NBBH 2465 | 2 x AKKUTEC 2440-0 + 2 x SB 100-12 | 2 x AKKUTEC 2440-0 + 4 x SB 150-12 | 2 x AKKUTEC 2420-0 + 4 x SB 150-12 | AKKUTEC 2440-0 + 4 x SB 200-12 | | |

## Battery Modules

| Type NBBH | Item no. NBBH | Fuse | Voltage V | Capacity Ah | Dimensions H x W x D (mm) | Weight Kg |
|---|---|---|---|---|---|---|
| 2401 | Q33G1M01 | with fuse | 24 | 1,2 | 96 x 69 x 105 | 2 |
| 2402 | Q33G1M04 | with fuse | 24 | 2,2 | 96 x 178 x 105 | 3,8 |
| 2407 | L33G1M01 | with fuse | 24 | 7 | 115 x 175 x 159 | 6 |
| 2412 | L33G1M02 | with fuse | 24 | 12 | 115 x 241 x 159 | 9,4 |
| 2417 | 0336G01001 | fuse bridge | 24 | 17 | 170 x 215 x 182 | 11,9 |
| 2424 | 0336G01002 | fuse bridge | 24 | 24 | 165 x 397 x 202 | 20 |
| 2440 | 0336G01003 | fuse bridge | 24 | 40 | 200 x 400 x 210 | 33 |
| 2465 | 033G01004 | fuse bridge | 24 | 65 | 2*(170 x 397 x 200) | 2 x 26 |
| 24100 | 0336G01010 | fuse bridge | 24 | 100 | 2*(170 x 397 x 200) | 2 x 31 |
| 24120 | 0336G01017 | fuse bridge | 24 | 120 | 2*(170 x 397 x 200) | 2 x 34 |

## UPSOTEC with DC input

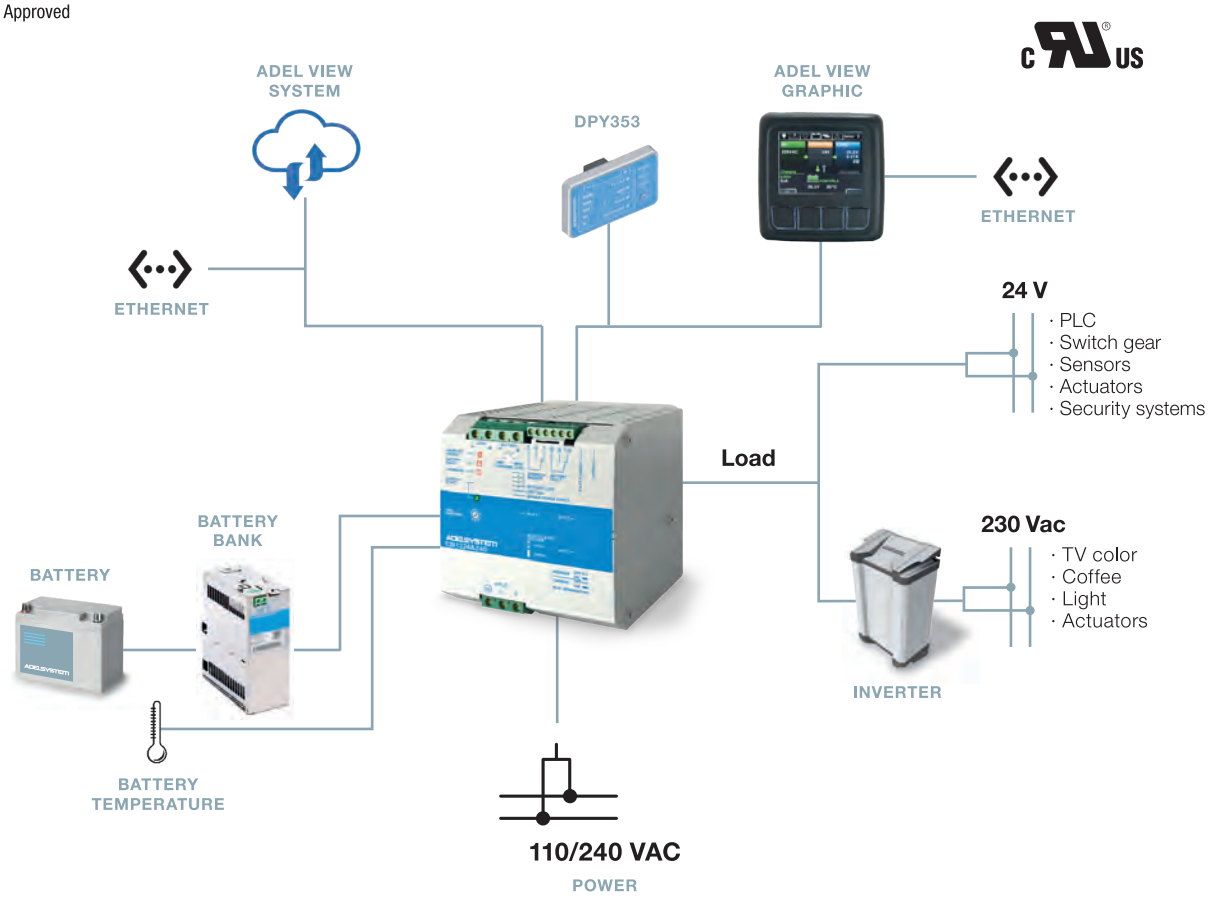
| Type UPSOTEC | Item no. NBUA | Prim. V | Sec. V | Output A | Dimensions H x W x D (mm) | Weight Kg |
|---|---|---|---|---|---|---|
| 2403 | 0523G01003 | 24 | 24 | 2,85 | 92,5 x 60 x 116 | 0,6 |
| 2420 | 1530G10001 | 24 | 24 | 20 | 123 x 65 x 141 | 0,8 |
| 2440 | 1531G10001 | 24 | 24 | 40 | 123 x 85 x 143 | 0,9 |

# DC-UPS Backup
## AT A GLANCE

Order Catalog
PN- 755B

| Series | Cat. No. | Rated Current | | | | | Universal Input | Switch Select Input | Parallel Option | UL 508 Listed | UL 60950-1 Rec. | UL 62368-1 Rec. | EN 60950-1 | EN 62368-1 | DC OK | Short Circuit | Overload | Over Voltage | Over Temperature | CB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5V | 12V | 15V | 24V | 48V | | | | | | | | | | | | | | |
| DC-UPS | | | | | | | | | | | | | | | | | | | | |
| | CBI12xx | – | 3-25A | | – | – | | | | | | | | | | | | | | |
| | CBI24xx | – | – | – | – | 5-10A | | | | | | | | | | | | | | |
| | CBI48xx | – | | | | | | | | | | | | | | | | | | |
| | CBI280xx | – | 12V/15A24V/10A | | | | | | | | | | | | | | | | | |
| | CBI6012A-DS | | | | | | | | | | | | | | | | | | | |
| | CBI6024A-DS | | | | | | | | | | | | | | | | | | | |
| Battery Charger | | | | | | | | | | | | | | | | | | | | |
| | CB12xx | – | 3-25A | – | – | – | | | | | | | | | | | | | | |
| | CB24xx | – | – | – | 3-20A | – | | | | | | | | | | | | | | |
| | CB12245A | – | 6A | – | 5A | – | | | | | | | | | | | | | | |
| | CB6012A-DS | | | | | | | | | | | | | | | | | | | |
| | CB6024A-DS | | | | | | | | | | | | | | | | | | | |
| Accessories | | | | | | | | | | | | | | | | | | | | |
| | PS-RDN | 21-28V | | | | | | | | | | | | | | | | | | |
| | PS-UPS | 21-28V | | | | | | | | | | | | | | | | | | |
| Multifunction Control Panel and Monitor | DPY351-DS | | | | | | | | | | | | | | | | | | | |
| Multifunction Display | DPY353-DS | | | | | | | | | | | | | | | | | | | |
| Two Channel Electronic Circuit Breaker | MRF102-DS | | | | | | | | | | | | | | | | | | | |
| Redundancy Module | MR220-DS | | | | | | | | | | | | | | | | | | | |

Approved






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# Altech® DC-UPS Backup AT A GLANCE

Order Catalog
PN- 755B

## CBI DC-UPS



- Combines power supply, charger, care module, and backup module
- Offers three charging modes • Compact, rugged metal case
- Available in 12V DC, 24V DC, and 48V DC
- Suitable for most common battery types
- Adjustable charging current
- Easy battery diagnosis and fault identification
- High efficiency up to 91% • Output protection features
- DIN rail mounting • Small size • 3-year warranty

## Battery Charger



- Fully automated charging • Three charging mode
- Compact, rugged metal case • Available in 12V DC and 24V DC
- Suitable for most common battery types
- Adjustable charging current
- Easy battery diagnosis and fault identification
- High efficiency up to 91% • Output protection features
- DIN rail mounting • Small size • 3-year warranty

## CBI60



- Input: Single-phase 115 – 230 - 277 Vac
- Output Selectable Load:24V DC 2.5A
- Output Battery charging:24 V DC 2.5A
- Suited for the following battery types: Open Lead
- Acid, Sealed Lead Acid, lead Gel, Ni-Cd, Li-Ion
- Automatic diagnostic of battery status, Battery Life
- Test function (internal Battery Impedance)
- Charging curve IUoU, constant voltage and current
- Four charging levels: Boost, Bulk, Trickle, Recovery
- Protected against short circuit and inverted polarity
- Signal output: for battery Fault, Mains or Back-UP
- Ethernet: SNMP V3, Modbus TCP/IP, HTTPS
- DIN rail and wall mount

## CB60



- Input: Single-phase 100 – 240 - 277 Vac
- Output: 12 V DC 5A • Power Supply function
- Suited for the following battery types: Open Lead Acid, Sealed
- Lead Acid, Lead Gel, Ni-Cd
- Battery Care: automatic diagnosis and battery status
- Charging curve IUoU: constant current and constant voltage
- High efficiency with quasi-resonant switching technology
- Charging type: Boost, Absorption, Float, Recovery.
- Protected against short circuit, inverted polarity, over Load.
- Signal output (Free Switch Contact): Fault battery state,
- Mains/Back-Up • Protection degree IP20 • DIN rail or wall Mount

## Multifunction Control Panel and Monitor



- High-brightness 3,5" TFT screen for optimal visibility
- Remote management via on-board Ethernet interface
- Gateway for standard protocols like Modbus TCP/IP and SNMP
- Versatile tool for industrial automation, building management systems, and energy management
- User-friendly interface and intuitive navigation
- Built with robust, durable materials

## Multifunction Display



- Pocket controller
- Monitors Safety DC-UPS state.
- Monitors all battery types: AGM, Gel, Ni-Cd, Li-Ion.
- Manages connected devices via ADELBus network.
- Features:
  - Charging states
  - Main/Backup CBI condition
  - Fail alarm
  - Diagnostic function
  - State of charge battery
  - Charging Current

## Two Channel Electronic Circuit Breaker



- Designed for current distribution and protection of 12V or 24V load circuits.
- Sets rated output current for each channel for 1A...10A via push button.
- Safeguards system components from overload and short-circuits with alarm signal alerting.
- Allows easy adjustment of each channel without tools.
- Wide input voltage range of 8 – 32 V DC for unlimited connection of 12V e 24V power supplies.
- Compact design with a width of 18mm

## Redundancy Module



- Suitable for redundant operation of 24V system
- Installed on 35 x 7.5 mm or 35 x 15 mm DIN Rail
- Relay contact signal output and LED indicator for input failure alarm
- Cooling by free air convection
- 3 year warranty

## ADVANTAGES

- All-in-one unit: Power supply, back up module, battery charger, battery controller, battery tester
- Universal input voltage, 110 – 230 -277VAC
- Output voltages 12, 24 and 48V DC standard
- Communication protocol: Modbus RTU, Modbus TCP/IP, SNMP
- Diagnostic checks on the internal battery through the Life Test.
- Select the most appropriate charging curve to maximize the system efficiency
- Long-life battery while intensifying its performance (AGM Open Lead Acid/Sealed Lead Acid, Gel, Ni-Cd, Li-Ion)
- Equipped with relays to warn against the power outage and the defective battery
- Conform to the most innovative battery management as electrical safety standards
- DIN Rail mountable

## APPLICATIONS

- Industrial Machinery Construction
- Power Continuity - Energy
- Equipment & System Management
- Security Applications • Gen Set
- Renewable Energy • Fire Protection System
- Auxiliary Power Supply • Elevators / Escalators
- Hospital • Transportation
- WISP • Water Treatment
- Network Application • RTU
- Telecommunications • Underground IOT NETWORK
- Environmental Monitoring • Building Automation

## COMPETITORS

ABB
Delta
Eaton
Emerson
Omron
Phoenix Contact
Puls
Schneider Electric
Siemens



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# Altech®

# DC-UPS Ultra-Capacitor
## AT A GLANCE

Order Catalog
PN- 815



## C-TEC / AC-C-TEC / CTEC-P / CEM

Through the innovative use of Ultra-Capacitors, CTEC presents itself as an attractive backup option for a variety of applications. In the event of a power interruption, the energy of the enclosed Ultra-Capacitors is released and power is supplied for a determined amount of time. Capacitor based technology comes in variety of configurations all of which serve a broad spectrum of functions.

## Benefits of Capacitor Technology

- Environmentally safe
- Free of toxic chemicals (gas is not emitted)
- Virtually maintenance free
- Wide operating temperatures (-40°C to 60°C)
- Long operational life (15 years or longer!)
- Compact and convection cooled
- No need to replace or maintain batteries
- Cost effective over time
- Resists shock and vibrations
- Quick buffer times

### ADVANTAGES

- **12V DC, 24V DC and 48V DC**
- **Largest and most varied line**
- **Quickest charge and buffer times**
- **Only line offering built in power supply**
- **Online system (no switch over time)**

### COMPETITORS

| Manufacturer | Series |
|---|---|
| Phoenix | Quint 4 CAP |
| Weidmuller | CP DC Buffer |
| Siemens | SITOP UPS500 |
| Puls | UC10 |

### APPLICATIONS

- **Controlled shutdown**
- **Extreme / Isolated Environment**
- **Renewable Energy**
- **Industrial / Electrical Automation**
- **Remote Monitoring**
- **Telecommunication**
- **Agriculture**
- **Machinery**
- **Textiles**
- **Automotive**
- **Packaging**
- **Industrial PC**



## CTEC

Capacitor driven back up UPS.

| | Part No. | Model No. | Input Voltage | Output Voltage | Max Output Current | Energy Content | USB | *CEM |
|---|---|---|---|---|---|---|---|---|
| 12V DC | C-TEC1203-1 | NCPA0727G10002 | 12 V DC | 12 V DC | 3 A | 1 KJ | – | ✓ |
| 12/24 V DC | C-TEC2405-5 | NCPA0608G01001 | 12/24 V DC | 12/24 V DC | 5 A | 6 KJ | ✓ | – |
| | C-TEC2408-20 | NCPA0607G01001 | 12/24 V DC | 12/24 V DC | 8 A | 22 KJ | ✓ | – |
| | C-TEC2410-1 | NCPA0609G01002 | 12/24 V DC | 12/24 V DC | 10 A | 1 KJ | ✓ | – |
| | C-TEC2410-10 | NCPA0606G01001 | 12/24 V DC | 12/24 V DC | 10 A | 11 KJ | ✓ | – |
| 24V DC | C-TEC2403-05 | NCPA0727G01001 | 24 V DC | 24 V DC | 3 A | 0.5 KJ | – | ✓ |
| | C-TEC2403-1 | NCPA0727G01002 | 24 V DC | 24 V DC | 3 A | 1 kJ | | ✓ |
| | C-TEC2420-8 | NCPA0747G01003 | 24 V DC | 24 V DC | 20 A | 9 KJ | ✓ | ✓ |

Used in conjunction with a separate power supply (reference the Altech power supply catalog).



## C-TEC P

Unlike its C-TEC counterpart, C-TEC P's are capable of producing an output spike for applications requiring a temporary surge of power.

| | Part No. | Model No. | Input Voltage | Output Voltage | Max Output Current | Energy Content | USB | *CEM |
|---|---|---|---|---|---|---|---|---|
| 12V DC | C-TEC1225 P | NCPA1301G30001 | 12 V DC | 12 V DC | 25 A | 0.5 KJ | – | – |
| 24V DC | C-TEC2425 P | NCPA1301G10001 | 24 V DC | 24 V DC | 25 A | 1.2 KJ | – | – |
| | C-TEC2440 P | NCPA1034G01001 | 24 V DC | 24 V DC | 40 A | 5 KJ | – | ✓ |
| 48V DC | C-TEC4815 P | NCPA1301G20001 | 48 V DC | 48 V DC | 15 A | 1 KJ | – | – |

Used in conjunction with a separate power supply (reference the Altech power supply catalog).



## AC-C-TEC

AC-C-TEC modules improve on C-TEC design by incorporating a built in power supply (AC input) for maximum convenience and ease.

| | Part No. | Model No. | Input Voltage | Output Voltage | Max Output Current | Energy Content | USB | *CEM |
|---|---|---|---|---|---|---|---|---|
| 12V DC | AC-C-TEC1203-1 | NCPA0724G10002 | 115-230 V AC | 12 V DC | 3 A | 1 KJ | – | – |
| 24V DC | AC-C-TEC2403-05 | NCPA0724G01001 | 115-230 V AC | 24 V DC | 3 A | 0.5 KJ | – | – |
| | AC-C-TEC2403-1 | NCPA0724G01017 | 115-230 V AC | 24 V DC | 3 A | 1 KJ | – | – |
| | AC-C-TEC2403-1-400 | NCPA0724G01020 | 3 X 400 V AC | 24 V DC | 3 A | 1 KJ | – | – |
| | AC-C-TEC2410-10 | NCPA1430G01001 | 100-240 V AC | 24 V DC | 10 A | 10 KJ | ✓ | – |
| | AC-C-TEC2420-8 | NCPA0746G01003 | 3 X 400 V AC | 24 V DC | 20 A | 8 KJ | ✓ | – |


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## CEM (Capacitor Extension Module)

Designed to give existing capacitor modules extended buffer times allowing for applications with increased power demands.

| | Part No. | Model No. | Input Voltage | Output Voltage | Max Output Current | Energy Content |
|---|---|---|---|---|---|---|
| 24V DC | CEM-1 | NCBA0739G01001 | 24 V DC | 0 V…26.4 V DC | 3 A | 1 |
| | CEM-2 | NCBA0739G01002 | 24 V DC | 0 V…26.4 V DC | 3 A | 2 KJ |
| | CEM-8 | NCBA0748G10003 | 24 V DC | 0 V…26.4 V DC | 20 A | 9 KJ |
| | CEM-16 | NCBA0748G10001 | 24 V DC | 0 V…26.4 V DC | 20 A | 18 KJ |
| 12V DC | CEM-12-1 | NCBA0739G10003 | 12 V DC | 0 V…13.2 V DC | 3 A | 0.6 KJ |
| | CEM-12-2 | NCBA0739G1004 | 12 V DC | 0 V…13.2 V DC | 3 A | 1.23 KJ |

Unusable by itself, designed to increase back up times of capacitor modules. - only usable with modules marked CEM

## Estimated Back Up Times

### How to Pick a Capacitor Module

1. Choose your output voltage (12, 24 or 48V DC)
2. Pick you required back up current. All suitable modules are listed below the amperages in the form of backup time in seconds.
3. Compare your required back up time to the backup time provided in the chart for the most suitable module.

| | | DC-UPS Part No. | Output Voltage | Required Backup Current (A) 0.5 | 1 | 1.5 | 2 | 3 | 5 | 8 | 10 | 15 | 20 | 30 | 40 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Time (seconds) | | | | | | | | | | | |
| DC Input | 12V DC | C-TEC1203-1 | 12 | 160 | 80 | 50 | 40 | 25 | | | | | | | |
| | | C-TEC1205-5[1] | 12 | 975 | 485 | 320 | 240 | 160 | 95 | | | | | | |
| | | C-TEC1208-20[2] | 12 | 3650 | 1825 | 1215 | 910 | 605 | 360 | 225 | | | | | |
| | | C-TEC1210-1[3] | 12 | 160 | 80 | 50 | 40 | 25 | 16 | 10 | | | | | |
| | | C-TEC1210-10[4] | 12 | 1820 | 910 | 605 | 450 | 300 | 180 | 110 | 90 | | | | |
| | | C-TEC1225P | 12 | 80 | 40 | 25 | 20 | 12 | 8 | 5 | 4 | 2 | 1 | 1.5 | |
| | 24V DC | C-TEC2403-05 | 24 | 40 | 20 | 12 | 10 | 7 | | | | | | | |
| | | C-TEC2403-1 | 24 | 80 | 40 | 25 | 20 | 13 | | | | | | | |
| | | C-TEC2403-1-400 | 24 | 80 | 40 | 25 | 20 | 13 | | | | | | | |
| | | C-TEC2405-5[1] | 24 | 485 | 240 | 160 | 120 | 80 | 45 | | | | | | |
| | | C-TEC2408-20[2] | 24 | 1825 | 910 | 600 | 455 | 300 | 180 | 110 | | | | | |
| | | C-TEC2410-1[3] | 24 | 80 | 40 | 25 | 20 | 13 | 8 | 5 | 4 | | | | |
| | | C-TEC2410-10[4] | 24 | 910 | 455 | 300 | 225 | 150 | 90 | 55 | 45 | | | | |
| | | C-TEC2420-8 | 24 | 720 | 360 | 240 | 180 | 120 | 72 | 45 | 36 | 24 | 18 | | |
| | | C-TEC2425P | 24 | 100 | 50 | 33 | 25 | 16 | 10 | 6 | 5 | 3 | 2 | | |
| | | C-TEC2440P | 24 | 400 | 200 | 150 | 100 | 65 | 40 | 25 | 20 | 15 | 10 | 6 | 5 |
| | 48V DC | C-TEC4815P | | 40 | 20 | 12 | 10 | 6 | 4 | 3 | 2.5 | 1 | | | |
| AC Input | 12V DC | AC-C-TECH1203-1 | 24 | 160 | 80 | 50 | 40 | 25 | | | | | | | |
| | 24V DC | AC-C-TEC2403-05 | 24 | 40 | 20 | 12 | 10 | 7 | | | | | | | |
| | | AC-C-TEC2403-1-400 | 24 | 80 | 40 | 25 | 20 | 13 | | | | | | | |
| | | AC-C-TECH2403-1 | 24 | 80 | 40 | 25 | 20 | 13 | | | | | | | |
| | | AC-C-TEC2410-10 | 24 | 820 | 410 | 270 | 205 | 135 | 80 | 50 | 40 | | | | |
| | | AC-C-TEC2420-8 | 24 | 600 | 300 | 200 | 150 | 100 | 60 | 37 | 30 | 20 | 15 | | |
| | Extension Modules | *CEM12-1 | 12 | 100 | 50 | 30 | 25 | 15 | | | | | | | |
| | | *CEM12-2 | 12 | 200 | 100 | 60 | 50 | 30 | | | | | | | |
| | | *CEM1 | 24 | 80 | 40 | 25 | 20 | 12 | 8 | | | | | | |
| | | *CEM2 | 24 | 160 | 80 | 50 | 40 | 24 | 16 | | | | | | |
| | | *CEM8 | 24 | 720 | 360 | 240 | 180 | 120 | 72 | 45 | 36 | 24 | 18 | | |
| | | *CEM16 | 24 | 1480 | 740 | 490 | 370 | 245 | 148 | 92 | 74 | 48 | 37 | | |

* Please add CEM back up times for extended calculations.
For example C-TEC2403-1 @ 0.5A + CEM1 @ 0.5A = 160 sec. total back up time.

**Backup Time can be calculated by the following formula:**
**WS(KJ) / W = Back Up Time**
**EX. C-TEC2420-8 with a 3A load**
**WS(KJ)** = 8,000 WS (8KJ)
**W** (Current 3A x Voltage 24V DC) = 72W
**8000WS/72W** =125 Second Back Up Time

[1,2,3,4] Part numbers with matching note 1, 2, 3, 4 each use the same module.

**USB Modules (available software)**
**ParaTEC** - allows customization of module for special requirements
**TEC Control** - allows for controlled and safe shutdown of load

- Custom machine and printing

## KV4600 Series - Modular and Innovative Enclosure System



- Modular and innovative enclosure system
- Full functionality at the front panel
- Fixed and pluggable plug-in terminal options
- Housing, front plate and terminal arrangement can be custom configured
- More connections on less width - up to 40 pins per 22.5 mm module
- Large open pcb area for up to two boards.
- Module widths of 12.5, 17.5 and 22.5mm with multiple installation depths available
- Custom configured to meet your specific requirements
- Different enclosure colors available

## KS4400 Series - DIN Rail Mounted Universal Enclosure System



- 12 to 96 terminals
- 6.2 to 90 mm wide large capacity
- Din rail mount
- Halfshell housing with 3 levels of terminals
- Fixed screw terminals or pluggable spring or screw terminal options
- Highly customizable (partial terminal loading, machining, ventilation slots, printing)
- Standard color: black with gray front plate
- Terminal blanking plugs, light pipes and push buttons available

## KO4300 - DIN Rail Mounted Electronic Enclosures



- 16 to 64 terminals
- Din rail mount
- Machine solderable pins
- Integral pc board guides
- Fixed screw or pluggable screw or spring terminal
- Compact high density design
- Standard color: light gray
- Custom options for partial terminal loading, side ventilation slots, pcb grounding to din rail, machining and printing

## KO4700 Series - Broadest Range of DIN Enclosures



- 8 to 132 terminals
- Din rail or panel mount
- Many board connection options (wire jumper, fast- on, solder tab, machine solderable pin, pluggable card edge)
- Standard or modular terminal layouts
- Snap-on keyed covers
- Integral pc board guides with horizontal, vertical, and behind the cover mounting options
- Standard color: black housing shell with tan cover
- Custom machining and printing available

## K70 Series - Classic DIN Rail Enclosure Series



- 8 to 32 terminals
- Din rail or panel mount
- Integral pc board guides with horizontal, vertical and behind the cover mounting options
- Snap-on cover
- Many board connection options (wire jumper, fast on, machine solderable pin, pluggable card edge)
- Standard color: light gray
- Custom machining and printing available

## KU4000 Series - DIN Rail Mounted Distribution Enclosures



- 8 to 64 terminals
- Screw or spring clamp connections
- Din rail or panel mount
- Integral pc board guides for horizontal and vertical mounting
- Board connection via machine solderable pin or wire jumper
- Front fits 45mm (1.77 in.) Cutouts
- Terminal cover plugs available
- Standard color: light gray

## KU4100 Series - DIN Rail Mounted Distribution Enclosures



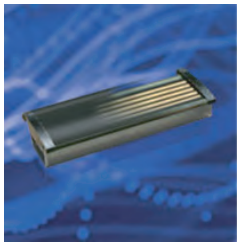
- 0 to 96 Terminals
- DIN Rail Mount
- Front Fits 45mm (1.77 in.) Cutouts
- Integral PC Board Guides for horizontal or vertical mounting
- Fixed or Pluggable Screw Terminal options
- Available without terminals for custom installations
- Standard Color: Light Gray Cover with Black Base
- Custom machining and printing available

## KO4070 Series - Economy DIN Rail Mounted Electronic Enclosures



- 4 to 16 Terminals
- DIN Rail Mount
- Machine Solderable Terminals
- Compact, Snap-Together half shells
- Integral PC Board Guides
- Machine solderable pins
- Screw clamp terminals
- Standard Color: Light Gray
- Custom machining and printing available

## In-Rail Bus for DIN Rail Mounted Electronic Enclosures



- Universal Bus system usable with most DIN enclosure types
- 5 Bus lines per Bus PCB
- 5A per bus, 25A max per PCB rail
- Quick and easy mounting in the DIN rail
- Gold plated contact surfaces
- Contact block springs with double contacts
- High spring force on the contact springs
- Can be used for internal busing
- Standard DIN profiles, 7.5mm and 15mm
- UL approval

**COMPETITORS**
Bernic
Bud
Erni
Hammond
OKW
Phoenix
Weidmuller

| | Mounting | | Style | | Terminal Types | | | | | PCB Connections | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DIN Rail Mount | Panel Mount | Switch Cabinet Style | Distribution Style | Screw Terminals | Spring Terminals | Fixed Terminals | PluggableTerminals | Without Terminals | Machine Solderable Pin | Pluggable Card Edge | Wire Jumper | Fast-On |
| KV4600 | • | | • | | | • | • | • | • | • | | | |
| KS4400 | • | | • | | • | • | • | • | • | • | | | |
| KO4300 | • | | • | | • | • | • | • | • | • | | | |
| KO4700 | • | • | • | | • | • | • | • | | • | • | • | • |
| K70 | • | • | • | | • | | • | | | • | • | • | • |
| KU4000 | • | • | | • | • | • | • | | | • | | • | |
| KU4100 | • | | | • | • | | • | • | • | • | | | |
| KO4070 | • | | • | | • | | • | | | • | | | |

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## Through the panel door
## Extended Handle Application

### Switch

**UL 60947-4-1**

**LSF Series (also 60 V DC)**



16A: **LSF 316UL**
30A: **LSF 325UL**
40A: **LSF 340UL**

16-40A

**KU Series**



16A: **KU316N**
25A: **KU325N**
40A: **KU340N**
60A: **KU363N***
80A: **KU380N**

16-80A**

* also 48 V DC with jumpers installed

**UL 98**

**KU UL 98 Series**



30A: **KU330UL98**
60A: **KU360UL98**
100A: **KU3100UL98**

30-100A



200A: **KU3200UL98**
400A: **KU3400UL98**

200 and 400A

### Shaft



**L100 AD11-ST**
100 mm
**L200 AD11-ST**
200 mm
**L300 AD11-ST**
300 mm

(500 mm available)

**L200AD12T6**
**L300AD12T6**
**LVK228**
**LVK320**

### Handle



LKX50
LKX50YR



LK10 U



LK10 Y/R U



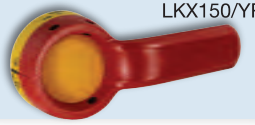
LK11 U



LK11 Y/R U



LKX100
LKX100/YR
LKX150
LKX150/YR



## Door Mounting / Side Panel Mount

### Switch

**RT Series (also 60 V DC)** – (Check for part number and built-in auxiliary configurations)



16-40A (3 pole only)

### Mounting Kit (switch not included)



LKX50
LKX50YR





LK10RT
LK10RT YR



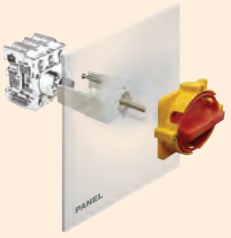


OKA/KU LK10
OKA/KU LK10 1.V
OKA/KU LK10 2.V

OKA/KU LK10 Y/R
OKA/KU LK10 1.V Y/R
OKA/KU LK10 2.V Y/R

OKA 0.V
OKA 1.V
OKA 2.V

OKA 0.V Y/R
OKA 1.V Y/R
OKA 2.V Y/R



**UL 60947-4-1**

**KUE Series (Toggle Handle)**



(16A): **KUE316**
(25A): **KUE325**
(40A): **KUE340**
(63A): **KUE363**
(80A): **KUE380**

16-80A (3 pole only)

### COMPETITORS

| Manufacturer | Series | Manufacturer | Series |
|---|---|---|---|
| Allen Bradley/ Rockwell | 140G, 194R, 194U | Mersen | M series |
| ABB | OT | RS | Pro |
| Bussmann | RDF | Schneider | TeSys |
| C3 | DS | Siemens | 3LD, HNF |
| Eaton | GD,CCP | Socomec | Sirco, Sirco M, Sirco UL 98 |
| Lovato | GA, GL, GE | Square D | Mini-Vario, Vario, TeSys VLS |
| Mennekes | Max Ds | | |

**Please contact Altech for accessories such as auxiliary switches, fuse holders, shafts, etc.**

**Altech® Disconnect Switches (3&4 Pole) (Rated Voltage: 600V AC)**

Order Catalog
PN- 444

**UL 98

**200 and 400A

**Larger amperage ratings in development.

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## Enclosed Disconnect Switches

### UL 60947-4-1 (formerly UL 508)

**Polycarbonate**

**KEM Series**



16-25A



40-80A

**KKVM Series**



30A - Fused

**Stainless**

**KER Series**



16-40A



60-80A



16-80A



16-80A

**Aluminum**

**KEA Series**



16-80A

**Sheet Metal**

**KET Series**



16-80A

**Katko/Altech's competitive advantages**

- Compact 16-40 A switch with 600 V AC/60 V DC rating; easily installable door mount version; custom configurable with integrated auxiliary switch(es)
- Small 16-80 A switch with 600 V AC rating; proven design for almost 30 years; installed million ++ times; available in industry only toggle version
- UL 98 switch offering of 30, 60 and 100 A was just extended to 200 and 400 A

### UL 98

**KEM Series**



30A 60A 100A

**KER Series**



30A 60A 100A

**Sheet Metal**



200 and 400A

**KET Series**



30A 60A 100A

Please contact Altech for accessories such as auxiliary switches, fuse holders, shafts, etc.

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# Part Number Builder

**Nomenclature** *(for existing & new part numbers)*





**KEM** | **3** | **60** | **UL** | **YR** | **M3**

**SERIES**
**KEM/ISF -** Polycarbonate Enclosed Switch
**KER -** Stainless Steel
**KET -** Sheet Metal
**KEA -** Aluminum

**NO. OF POLES**
**3 -** 3 Pole
**4 -** Pole

**RATING**
**16 -** 16A
**25 -** 25A
**30 -** 30A (ISF)
**40 -** 40A
**60 -** 60A
**80 -** 80A
**200 -** 200A
**400 -** 400A

**UL Approval**
**UL, CUL** - 60947-4-1A
**UL98** - UL98

**Color**
**Blank -** Black
**Y/R -** Yellow/Red (Existing Parts)
**YR -** Yellow/Red (New Parts)

**Enclosure name**
**Possible Enclosure Names**
**M2** (KEM/ISF), **M3** (KEM/ISF), **MF10, MF11UL -** KEM
**RA2, RA4, RA2R, RA4R, RA2RS, RA4RS -** KER
**T3, T4, T5 -** KET
**A2, A3, A4 -** KEA









## Example:

**KEM 360 UL YR M3**



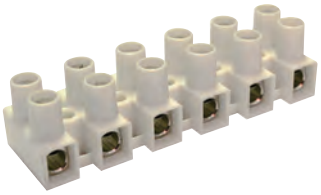


Altech®
Disconnect Switches
AT A GLANCE
Order Catalog
PN- 444

# Altech® Eurostrip® Terminal Strips AT A GLANCE

Order Catalog
PN- 310EURO

## SCREW CLAMP CONNECTION TECHNOLOGY



- Modern, touch-proof replacements for traditional double-row barrier strips
- Available in 12 poles or precut to required number of poles
- Quick and Efficient Wire-to-Wire connection solution
- Easy to cut to length

c UL us E496554 CE FI IEC 60998-2-1

### Material Specifications

- Insert: corrosion free metal
- Housing: Polyamide PA66
- Temperature Rating: -30°C - 125°C

## CRITERIA TO SELECT TERMINAL STRIPS

| Current Rating | Wire Size (max) |
|---|---|
| 20A | 12 AWG |
| 30A | 10 AWG |
| 40A | 8 AWG |
| 50A | 8 AWG |
| 63A | 6 AWG |

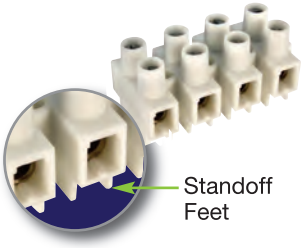
**Imprinting Available**



### Voltage Rating

**300V**
- Low profile
- Flat base housing

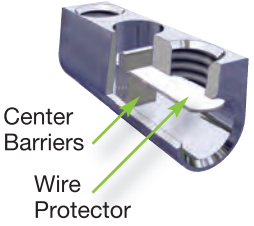
**600V**
- Standoff feet for max. voltage isolation




### Insert Style

**Wire Protectors**
- Allows trouble free wire insertion
- Stainless steel / flexible

**Center Barriers**
- Prevents wires being inserted too far




### Mounting

**Double-Row Feed-Through**
- Strict space requirements
- Panel mount / free float

**Pluggable**
- Quick disconnect
- Panel mount / free float



## SELECTION TABLE & FEATURES (XX = number of poles)

| Series | Cat. No. | Current Rating 20A | 30A | 40A | 50A | 63A | Voltage Rating 300V | 600V | Pin Spacing (mm) 8 | 10 | 12 | 15 | Mounting Feed Through | Plug Version | Insert Wire Protector | Center Barrier | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HE1 | HE1WPR/XX | • | | | | | • | | • | | | | • | | • | | HE SERIES • Wire protector |
| HE1H | HE1HWPR/XX | • | | | | | | • | • | | | | • | | • | | |
| HE4 | HE4WPR/XX | | • | | | | • | | | • | | | • | | • | | |
| HE4HN | HE4HNWPR/XX | | • | | | | | • | | • | | | • | | • | | |
| HE6 | HE6WPR/XX | | | • | | | • | | | | • | | • | | • | | |
| HE6H | HE6HWPR/XX | | | • | | | | • | | | • | | • | | • | | |
| HE10 | HE10WPR/XX | | | | • | | • | | | | | • | • | | • | | |
| HE10H | HE10HWPR/XX | | | | • | | | • | | | | • | • | | • | | |
| HE16 | HE16WPR/XX | | | | | • | • | | | | | • | • | | • | | |
| HE16H | HE16HWPR/XX | | | | | • | | • | | | | • | • | | • | | |
| HE42ST | HE42ST/XX | • | | | | | • | | | • | | | | • | • | | • Pluggable Version |
| HE42SST | HE42SST/XX | • | | | | | | • | | • | | | | • | • | | |
| ATS1.5 | 40.0XX | • | | | | | • | | • | | | | • | | • | • | ATS SERIES • Wire protector • Center Barrier |
| ATSF1.5 | 40.1XX | • | | | | | | • | • | | | | • | | • | • | |
| ATS2.5 | 40.2XX | | • | | | | • | | | • | | | • | | • | • | |
| ATSF2.5 | 40.3XX | | • | | | | | • | | • | | | • | | • | • | |
| ATS6 | 40.4XX | | | • | | | • | | | | • | | • | | • | • | |
| ATSF6 | 40.5XX | | | • | | | | • | | | • | | • | | • | • | |
| ATSF16 | 40.7XX | | | | | • | | • | | | | • | • | | • | • | |

## ACCESSORIES


Jumpers


Mounting Pins


Partition Plates


Marking Plates

### MANUFACTURES ALTECH CROSSES (PLUS OTHERS)

| | |
|---|---|
| **Conta-Clip** | Conta Strips |
| **Weco** | Eurostyle Terminal Strips |
| **Molex** | Eurostyle Terminal Strips |
| **TE Connectivity** | Europe Terminal Strips |

# Altech®

# Ferrules
## AT A GLANCE

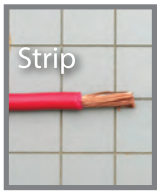
Order Catalog
PN- 960

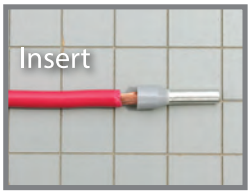
Ferrules ensure reliable electrical connections when terminating stranded flexible wire in terminal blocks, circuit breakers or other control devices. Using ferrules offers several advantages:

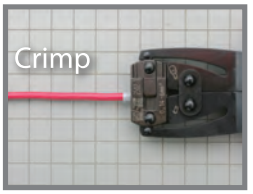
- **ELIMINATE CROSS SHORTING**
  Caused by unraveled stray wire strands.
- **REDUCE INSTALLATION TIME**
  Eliminate the need to dress loose wire strands and facilitating wire insertion into the terminal clamp.
- **IMPROVE TERMINAL CONNECTIONS**
  Reduce resistance by providing a solid surface at the connection point.
- **PREVENT CONDUCTOR BREAKAGE**
  due to bending, wire stress or vibration.

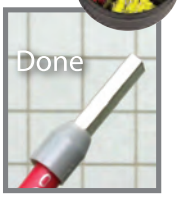


## Easy to install








## Single Insulated Ferrules



| AWG | mm² | Barrel Length | Total Length | UL Recognized Ferrules-Single Insulated — Industrial Standard — Color | UL Recognized Ferrules-Single Insulated — Industrial Standard — Part # | UL Recognized Ferrules-Single Insulated — DIN Standard — Color | UL Recognized Ferrules-Single Insulated — DIN Standard — Part # | Original Ferrules-Single Insulated — Industrial Standard — Color | Original Ferrules-Single Insulated — Industrial Standard — Part # | Original Ferrules-Single Insulated — DIN Standard — Color | Original Ferrules-Single Insulated — DIN Standard — Part # | Standard Pack. | CRIMPIT Crimper — F4 | F6 gyra | F6 EN | F6 Auto | F6L | F16 (L) | F1 25L | F50L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 26 | 0.14 | 6 | 10 | grey | FII2606 | | | | | | | 500/100 | | ■ | | | | | | |
| | | 8 | 12 | grey | FII2608 | | | | | | | 500/100 | | ■ | | | | | | |
| 24 | 0.25 | 6 | 10 | light blue | FII2406 | | | light blue | 26200 | | | 500/100 | | ■ | | | | | | |
| | | 8 | 12 | light blue | FII2408 | | | light blue | 2621.0 | | | 500/100 | | ■ | | | | | | |
| | | 12 | 16 | light blue | FII2412 | | | | | | | 500/100 | | ■ | | | | | | |
| 22 | 0.34 | 6 | 10 | turquoise | FII2206 | | | turquoise | 2622.0 | | | 500/100 | | ■ | | | | | | |
| | | 8 | 12 | turquoise | FII2208 | | | turquoise | 2623.0 | | | 500/100 | | ■ | | | | | | |
| | | 12 | 16 | turquoise | FII2212 | | | | | | | 500/100 | | ■ | | | | | | |
| 20 | 0.5 | 6 | 12 | orange | FII2006 | white | FID2006 | orange | 2397.0 | white | 2863.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 8 | 14 | orange | FII2008 | white | FID2008 | orange | 2201.0 | white | 2864.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 10 | 16 | orange | FII2010 | white | FID2010 | | | white | 2865.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 12 | 18 | orange | FII2012 | white | FID2012 | | | | | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| 18 | 0.75 | 6 | 12 | white | FII1806W | grey | FID1806GR | white | 2398.0 | grey | 2866.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 8 | 14 | white | FII1808W | grey | FID1808GR | white | 2202.0 | grey | 2867.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 10 | 16 | white | FII1810W | grey | FID1810GR | | | grey | 2868.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 12 | 18 | white | FII1812W | grey | FID1812GR | | | grey | 2869.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | 1.0 | 6 | 12 | yellow | FII1806Y | red | FID1806R | yellow | 2399.0 | red | 2870.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 8 | 14 | yellow | FII1808Y | red | FID1808R | yellow | 2203.0 | red | 2871.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 10 | 16 | yellow | FII1810Y | red | FID1810R | | | red | 2872.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 12 | 18 | yellow | FII1812Y | red | FID1812R | | | red | 2840.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| 16 | 1.5 | 6 | 12 | red | FII1606 | black | FID1606 | | | | | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 8 | 14 | red | FII1608 | black | FID1608 | red | 2204.0 | black | 2841.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 10 | 16 | red | FII1610 | black | FID1610 | red | 2205.0 | black | 2842.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 12 | 18 | red | FII1612 | black | FID1612 | | | black | 2843.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 18 | 24 | red | FII1618 | black | FID1618 | | | black | 2844.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| 14 | 2.08 | 8 | 15 | yellow | FII1408Y | | | | | | | 500/100 | ■ | ■ | ■ | | ■ | | | |
| | 2.5 | 6 | 13 | blue | FID1406 | blue | FID1406 | | | | | 500/100 | ■ | ■ | ■ | | ■ | | | |
| | | 8 | 15 | blue | FID1408 | blue | FID1408 | blue | 2206.0 | blue | 2845.0 | 500/100 | ■ | ■ | ■ | | ■ | | | |
| | | 10 | 17 | blue | FID1410 | blue | FID1410 | | | | | 500/100 | ■ | ■ | ■ | | ■ | | | |
| | | 12 | 19 | blue | FID1412 | blue | FID1412 | blue | 2401.0 | blue | 2846.0 | 500/100 | ■ | ■ | ■ | | ■ | | | |
| | | 18 | 25 | blue | FID1418 | blue | FID1418 | blue | 2207.0 | blue | 2847.0 | 500/100 | ■ | ■ | ■ | | ■ | | | |
| 12 | 4 | 8 | 16 | grey | FID1208 | grey | FID1208 | | | | | 500/100 | ■ | ■ | ■ | | ■ | | | |
| | | 10 | 18 | grey | FID1210 | grey | FID1210 | grey | 2208.0 | grey | 2848.0 | 500/100 | ■ | ■ | ■ | | ■ | | | |
| | | 12 | 20 | grey | FID1212 | grey | FID1212 | grey | 2402.0 | grey | 2849.0 | 500/100 | ■ | ■ | ■ | | ■ | | | |
| | | 18 | 26 | grey | FID1218 | grey | FID1218 | grey | 2209.0 | grey | 2850.0 | 100 | ■ | ■ | ■ | | ■ | | | |
| 10 | 6 | 12 | 20 | black | FII1012 | yellow | FID1012 | black | 2210.0 | yellow | 2851.0 | 100 | | ■ | ■ | | ■ | ■ | ■ | |
| | | 18 | 26 | black | FII1018 | yellow | FID1018 | black | 2211.0 | yellow | 2852.0 | 100 | | ■ | ■ | | ■ | ■ | ■ | |
| 8 | 10 | 12 | 22 | ivory | FII0812 | red | FID0812 | ivory | 2212.0 | red | 2853.0 | 100 | | | | | | ■ | ■ | |
| | | 18 | 28 | ivory | FII0818 | red | FID0818 | ivory | 2213.0 | red | 2854.0 | 100 | | | | | | ■ | ■ | |
| 6 | 16 | 12 | 22 | green | FII0612 | blue | FID0612 | green | 2214.0 | blue | 2855.0 | 100 | | | | | | ■ | ■ | |
| | | 18 | 28 | green | FII0618 | blue | FID0618 | green | 2215.0 | blue | 2856.0 | 100 | | | | | | ■ | ■ | |
| 4 | 25 | 16 | 30 | brown | FII0416 | yellow | FID0416 | | | | | 50 | | | | | | | ■ | |
| | | 18 | 32 | brown | FII0418 | yellow | FID0418 | brown | 2267.0 | yellow | 2857.0 | 50 | | | | | | | ■ | |
| | | 22 | 36 | brown | FII0422 | yellow | FID0422 | brown | 2272.0 | yellow | 2858.0 | 50 | | | | | | | | ■ |
| 2 | 35 | 16 | 30 | beige | FII0216 | red | FID0216 | | | | | 50 | | | | | | | | ■ |
| | | 18 | 32 | beige | FII0218 | red | FID0218 | beige | 2276.0 | red | 2859.0 | 50 | | | | | | | | ■ |
| | | 25 | 39 | beige | FII0225 | red | FID0225 | beige | 2390.0 | red | 2860.0 | 50 | | | | | | | | ■ |
| 1 | 50 | 20 | 36 | olive | FII 0120 | blue | FID0120 | olive | 2500.0 | blue | 2861.0 | 50 | | | | | | | | ■ |
| | | 25 | 41 | olive | FII0125 | blue | FID0125 | | | | | 50 | | | | | | | | ■ |
| | | 30 | 46 | olive | FII0130 | blue | FID0130 | | | | | 50 | | | | | | | | ■ |
| 2/0 | 70 | 20 | 37 | | | | | yellow | 2786.0 | | | 25 | | | | | | | | |
| 3/0 | 95 | 25 | 44 | | | | | red | 2787.0 | | | 5 | | | | | | | | |
| 4/0 | 120 | 27 | 48 | | | | | blue | 2788.0 | | | 25 | | | | | | | | |
| 250 MCM | 150 | 32 | 58 | | | | | yellow | 2789.0 | | | 25 | | | | | | | | |


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## Twin Insulated Ferrules



| AWG | mm² | Barrel Length | Total Length | UL Recognized Ferrules Twin Insulated – Industrial Standard – Color | UL Recognized Ferrules Twin Insulated – Industrial Standard – Part # | UL Recognized Ferrules Twin Insulated – DIN Standard – Color | UL Recognized Ferrules Twin Insulated – DIN Standard – Part # | Original Ferrules - Twin Insulated – DIN Standard – Color | Original Ferrules - Twin Insulated – DIN Standard – Part # | Standard Packaging | CRIMPIT Crimper: F4 | F6 gyra | F6 EN | F6 Auto | F6L | F16 (L) | F1 25L | F50L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2x22 | 2x0.34 | 8 | 15 | turquoise | FTI2208 | | | | | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| 2x20 | 2x0.5 | 8 | 14 | orange | FTI2008 | white | FTD2008 | white | 2794.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 10 | 16 | orange | FTI2010 | white | FTD2010 | | | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 12 | 18 | orange | FTI2012 | white | FTD2012 | | | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| 2x18 | 2x0.75 | 8 | 14 | white | FTI1808W | grey | FTD1808GR | grey | 2775.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 10 | 16 | white | FTI1810 | grey | FTD1810 | grey | 2795. | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 12 | 18 | white | FTI1812W | grey | FTD1812GR | | | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 18 | 24 | white | FTI1818W | grey | FTD1818GR | | | 500 | ■ | ■ | ■ | ■ | ■ | | | |
| | 2x1 | 8 | 15 | yellow | FTI1808Y | red | FTD1808R | red | 2776.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 12 | 19 | yellow | FTI1812Y | red | FTD1812R | | | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 14 | 21 | yellow | FTI1814 | red | FTD1814 | | | 500 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 18 | 25 | yellow | FTI1818Y | red | FTD1818R | red | 2796.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| 2x16 | 2x1.5 | 8 | 16 | red | FTI1608 | black | FTD1608 | black | 2777.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 12 | 20 | red | FTI1612 | black | FTD1612 | black | 2797.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 18 | 26 | red | FTI1618 | black | FTD1618 | | | 100 | ■ | ■ | ■ | ■ | ■ | | | |
| 2x14 | 2x2.5 | 10 | 19 | blue | FTD1410 | blue | FTD1410 | blue | 2778.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 12 | 21 | blue | FTD1412 | blue | FTD1412 | blue | 2798.0 | 500/100 | ■ | ■ | ■ | ■ | ■ | | | |
| | | 18 | 27 | blue | FTD1418 | blue | FTD1418 | | | 100 | ■ | ■ | ■ | ■ | ■ | | ■ | |
| 2x12 | 2x4 | 12 | 22 | grey | FTD1212 | grey | FTD1212 | grey | 2799.0 | 100/20 | | ■ | ■ | | ■ | | ■ | |
| | | 18 | 28 | grey | FTD1218 | grey | FTD1218 | | | 100 | | ■ | ■ | | ■ | | ■ | |
| 2x10 | 2x6 | 12 | 23 | black | FTI1012 | yellow | FTD1012 | yellow | 2800.0 | 100/20 | | | | | | | ■ | |
| | | 18 | 29 | black | FT11018 | yellow | FTD1012 | | | 100 | | | | | | | ■ | |
| 2x8 | 2x10 | 12 | | ivory | FTI0812 | red | FTD0812 | red | 2801.0 | 100/20 | | | | | | | ■ | |
| | | 18 | | ivory | FTI0818 | red | FTD0818 | | | 100 | | | | | | | ■ | |
| 2x6 | 2x16 | 16 | | olive | FTI0616 | blue | FTD0616 | blue | 2802.0 | 50 | | | | | | | ■ | ■ |
| | | 25 | | olive | FTI0625 | blue | FTD0625 | | | 50 | | | | | | | | ■ |

## Uninsulated Ferrules



| AWG | mm² | Barrel Length | Part Number | Std. Pack. | CRIMPIT Crimper: F4 | F6 gyra | F6 EN | F6 Auto | F6L | F16 (L) | F1 25L | F50L | 22,030 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 0.5 | 6 | 2216.0 | 1000/100 | ■ | ■ | ■ | ■ | ■ | | | | |
| 18 | 0.75 | 6 | 2217.0 | 1000/100 | ■ | ■ | ■ | ■ | ■ | | | | |
| 18 | 0.75 | 10 | 2218.0 | 1000/100 | ■ | ■ | ■ | ■ | ■ | | | | |
| 18 | 1 | 6 | 2219.0 | 1000/100 | ■ | ■ | ■ | ■ | ■ | | | | |
| 18 | 1 | 10 | 2220.0 | 1000/100 | ■ | ■ | ■ | ■ | ■ | | | | |
| 16 | 1.5 | 7 | 2221.0 | 1000/100 | ■ | ■ | ■ | ■ | ■ | | | | |
| 16 | 1.5 | 10 | 2222.0 | 1000/100 | ■ | ■ | ■ | ■ | ■ | | | | |
| 14 | 2.5 | 7 | 2223.0 | 1000/100 | ■ | ■ | ■ | ■ | ■ | | | | |
| 14 | 2.5 | 12 | 2224.0 | 1000/100 | ■ | ■ | ■ | ■ | ■ | | | | |
| 12 | 4 | 9 | 2225.0 | 1000/100 | ■ | ■ | ■ | ■ | ■ | | | | |
| 12 | 4 | 12 | 2226.0 | 1000/100 | ■ | ■ | ■ | ■ | ■ | | | | |
| 10 | 6 | 12 | 2227.0 | 500/100 | | ■ | ■ | ■ | ■ | ■ | ■ | | |
| 10 | 6 | 15 | 2388.0 | 500/100 | | ■ | ■ | ■ | ■ | ■ | ■ | | |
| 8 | 10 | 12 | 2228.0 | 500/100 | | | | | | ■ | ■ | | |
| 8 | 10 | 15 | 2389.0 | 500/100 | | | | | | ■ | ■ | | |
| 8 | 10 | 18 | 2229.0 | 500/100 | | | | | | ■ | ■ | | |
| 6 | 16 | 12 | 2391.0 | 500/100 | | | | | | ■ | ■ | | |
| 6 | 16 | 15 | 2392.0 | 500/100 | | | | | | ■ | ■ | | |
| 6 | 16 | 18 | 2393.0 | 100 | | | | | | ■ | ■ | | |
| 4 | 25 | 15 | 2394.0 | 500/100 | | | | | | | ■ | | |
| 4 | 25 | 18 | 2395.0 | 100 | | | | | | | ■ | | |
| 2 | 35 | 18 | 2396.0 | 100 | | | | | | | | ■ | |
| 1 | 50 | 32 | 2816.0 | 100 | | | | | | | | ■ | |
| 2/0 | 70 | 25 | 2790.0 | 100 | | | | | | | | | ■ |
| 3/0 | 95 | 32 | 2791.0 | 50 | | | | | | | | | ■ |
| 4/0 | 120 | 32 | 2792.0 | 25 | | | | | | | | | ■ |
| 250MCM | 150 | 32 | 2793.0 | 25 | | | | | | | | | ■ |
| 350MCM | 185 | 32 | 2815.0 | 25 | | | | | | | | | |
| 500MCM | 240 | 40 | 2815.5 | 25 | | | | | | | | | |

## Technical Information

| | Insulated Ferrules | Uninsulated Ferrules |
|---|---|---|
| Temperature Resistance | 23° to 221°F (-5° to 105°C) | 23° to 248°F (-5° to 120°C) |
| Materials | Collar = Polypropylene-fluoropolymer<br>Tube = Copper (Cu-DHP) galvanically tin-plated with 3-5 µm shiny plating | Tube = Copper (Cu-DHP) galvanically tin-plated with 3-5 µm shiny plating |
| Standards | • DIN 46228-4:1990 (1992 for Uninsulated Ferrules)<br>• CSA-US / ANSI-UL, CSA-US certificate. UL certificate number: 20140415-E467395<br>• RoHS and WEEE directives 2011/65/EU, 2003/11/EG and 2012/19/EU<br>• REACH regulation (EG) no. 1907/2006<br>• Conflict minerals according to Sec. 1502 DFA<br>• Products are labeled with the mark and meet the pertinent EC directives | |

**COMPANIES WE CROSS, — PLUS OTHERS!**

| | | |
|---|---|---|
| ABB | Entrelec | Phoenix |
| American Electric | Greenlee | Thomas & Betts |
| Automation Direct | Lapp | Tyco |
| Conta Clip | McMaster Carr | Wago |
| Eclipse | Panduit | Weidmuller |

## Pull-Out Forces Minimum Values

Minimum values of pull-out forces for FERRULES according to DIN EN 60947-1:2008. DIN EN 60999-1:2000 and DIN EN 6-0999-2:2004

| Conductor Cross Section | AWG | 24 | 22 | 20 | 18 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 2 | 0 | 00 | 000 | 250 kvmil | 300 kcmil | 350 kcmil | 500 kcmil |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | mm² | 0.20 | 0.34 | 0.50 | 0.75 | 1.0 | 1.5 | 2.5 | 4.0 | 6.0 | 10 | 16 | 25 | 35 | 50 | 70 | 95 | 120 | 150 | 185 | 240 |
| Pull Out Force | N | 10 | 15 | 20 | 30 | 35 | 40 | 50 | 60 | 80 | 90 | 100 | 135 | 190 | 236 | 285 | 351 | 427 | 427 | 503 | 578 |
| | Lbs. | 2.2 | 3.4 | 4.5 | 6.7 | 7.9 | 9 | 11.2 | 13.5 | 18 | 20.2 | 22.5 | 30.4 | 42.7 | 53.1 | 64.1 | 78.9 | 96 | 96 | 113.1 | 130 |

Minimum values of pull-forces for FERRULES according to UL 486F

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pull Out Force | N | 20 | 20 | 20 | 30 | 35 | 40 | 50 | 60 | 80 | 90 | 100 | 135 | 190 | | | | | | | |
| | Lbs. | 4.5 | 4.5 | 4.5 | 6.7 | 7.9 | 9 | 11.2 | 13.5 | 18 | 20.2 | 22.5 | 30.4 | 42.7 | | | | | | | |

## MEDIUM DUTY & MEDICAL FOOT SWITCHES

### ADVANTAGES

- Compact size and economical
- Many customizing options possible
- Medical Industry ratings available





| | Function per Pedal | | | | |
|---|---|---|---|---|---|
| Contacts | | Connection | One Pedal | Two Pedals | Three Pedals |
| SPDT | Momentary | Solder Terminals | 51.601B | 51.701B | 51.801B |
| SPDT | Momentary | 6 1/2' Cable | 51.603B | 51.705B | 51.805B |
| DPDT | Momentary | Spider Terminals | 51.607B | 51.711B | 51.811B |
| DPDT | Momentary | 6 1/2' Cable | 51.609B | 51.715B | 51.815B |
| SPDT | Latching | Solder Terminals | 51.604B | | 51.806B |
| SPDT | Latching | 6 1/2' Cable | 51.606B | 51.710B | 51.810B |
| DPDT | Latching | Solder Terminals | 51.610B | 51.716B | |
| DPDT | Latching | 6 1/2' Cable | 51.612B | 51.720B | 51.820B |
| 2x SPDT | 2 Stage | Solder Terminals | 51.613B | 51.721B | 51.821B |
| 2x SPDT | 2 Stage | 6 1/2' Cable- | 51.615B | 51.752B | 51.825B |

### FEATURES

- Black body and pedal standard
- Other pedal colors available
- Available with or without metal hood
- Terminal versions are IP43; cable versions are IP65
- Snap-action contacts rated 5A (125-250V AC)
- Multi conductor PVC, SJT, 6 1/2' cable

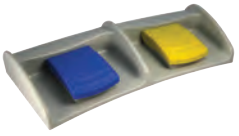
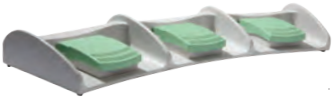
### OPTIONS

- A large variety colors are readily available
- Protection rating up IP67 are possible
- Gold plated contact for low current applications (0.1 at 125V AC)
- Silver-Nickel plated contacts for up to 10.1A (1/4HP) 125-350V AC
- Custom cable, cable lengths and connectors
- IEC 60101-1 certification and UL2601-1 recognized

## MEDIUM DUTY FOOT SWITCHES WITH HEAVY BASES

### ADVANTAGES

- Heavy base prevents accidental movement
- Many customizing options possible
- Medical Industry ratings available

| | Function per Pedal | | | | |
|---|---|---|---|---|---|
| Contacts | Action | Connection | One Pedal | Two Pedals | Three Pedals |
| SPDT | Momentary | 6 1/2' Cable | 51.601B | 51.701B | 51.801B |
| DPDT | Momentary | 6 1/2' Cable | 51.603B | 51.705B | 51.805B |
| SPDT | Maintained | 6 1/2' Cable | 51.607B | | 51.811B |
| DPDT | Maintained | 6 1/2' Cable | 51.609B | 51.715B | 51.815B |
| 2 x SPDT | Latching | 6 1/2' Cable | 51.604B | 51.706B | 51.806B |

### FEATURES

- Black body and pedal standard
- Terminal versions are IP43; cable versions are IP65

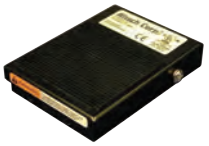
### OPTIONS

- A large variety of pedal colors are readily available
- Protection rating to IP67 are possible

## ECONOMY LINE FOOT SWITCHES

### ADVANTAGES

- Compact size and economical
- Steel body and pedal cover
- 10A (1/2HP / 125V AC switching





| | Function per Pedal | | | | |
|---|---|---|---|---|---|
| Contacts | Action | Connection | Pedal Only | Pedal with Red Guard | Pedal with Orange Guard |
| SPDT | Momentary | Screw Terminals | 51.001B | 51.051R | 51.051OR |
| SPDT | Momentary | Faston Terminals | 51.002B | 51.052R | 51.015OR |
| 1 NO | Momentary | 6 1/2' Cable | 51.012B | 51.062R | 51.062OR |
| 1 NO | Momentary | 16' Cable | 51.015B | 51.065R | 51.065OR |
| SPDT | Momentary | 6 1/2' Cable | 51.022B | 51.072R | 51.072OR |
| SPDT | Momentary | 16' Cable | 51.025B | 51.075R | 51.072OR |

## INDUSTRIAL FOOT SWITCHES

*Controls Circuits with foot activation.*

**COVERED FOOT SWITCHES**

**ADVANTAGES**

- Rugged metal construction
- Cover versions protect the pedals
- Large range of contact variations
- Many different types and functions





| | Function per Pedal | | | | |
|---|---|---|---|---|---|
| Contacts | Action | Connection | One Pedal | Two Pedals | Three Pedals |
| 1NC/1NO | Slow | Momentary | 606.1600.006 | 606.2610.014 | 606.3611.026 |
| 1NC/1NO | Snap | Momentary | 606.1800.012 | 606.2830.022 | 606.3833.045 |
| 2NC/2NC | Slow | Momentary | 606.1700.004 | 606.2720.016 | |
| 2NC/2NC | Snap | Momentary | 606.1900.062 | 606.2940.066 | |
| 1NC/1NO | Slow | 2 Stage | 606.1600.010 | 616.2610.253 | |
| 1NC/1NO | Snap | 2 Stage | 616.1800.073 | 606.2830.417 | |
| 2NC/2NC | Slow | 2 Stage | 606.1700.008 | 606.2720.020 | |
| 2NC/2NC | Snap | 2 Stage | 606.1900.433 | 616.2000.503 | |
| 1NC/1NO | Slow | Latching | 616.1600.295 | 606.2610.018 | |
| 1NC/1NO | Snap | Latching | 616.1800.247 | | |

## UNCOVERED FOOT SWITCHES

**ADVANTAGES**

- Rugged metal construction
- Uncovered Allow Easy Pedal Access
- Large range of contact variations
- Many different types and functions





| | Function per Pedal | | | | |
|---|---|---|---|---|---|
| Contacts | Action | Connection | One Pedal | Two Pedals | Three Pedals |
| 1NC/1NO | Slow | Momentary | 606.1100.005 | 606.2610.013 | 606.3111.025 |
| 1NC/1NO | Snap | Momentary | 606.1300.011 | 606.2330.021 | |
| 2NC/2NC | Slow | Momentary | 606.1200.003 | 606.2220.015 | 616.3444.577 |
| 2NC/2NC | Snap | Momentary | 606.1400.061 | 606.244.065 | |
| 2NC/2NC | Slow | 2 Stage | | 606.2220.019 | |
| 2NC/2NC | Snap | 2 Stage | 606.1200.007 | | |
| 1NC/1NO | Slow | Latching | 606.1100.001 | | |
| 1NC/1NO | Snap | Latching | 616.1000.676 | | |

## Special Functions

*Consult catalog for additonal information*

**Analog Output**



**Safety Lock Manual Release**



**Enabling Footswitch**



**With E-Stop Button**



**Anti-Trip Pedal**



**Hinged Protective Cover**



**With IP67 Protection**



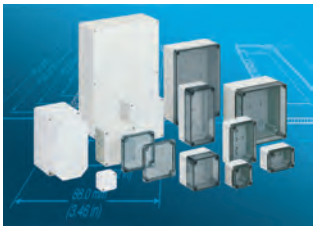
**Pedal Cover**



**COMPETITORS**

| | |
|---|---|
| Line Master | Siemens |
| RS Pro | Square D |
| Schneider | Stuete |

## TK Series - Top Selling Enclosure Series



- **18 sizes with up to 3 lid heights, 2x2x1.4" up to 14.2x10x6.5"**
- Polycarbonate is UL listed - **UL Type 4X/12K rated**

**Most Stock**

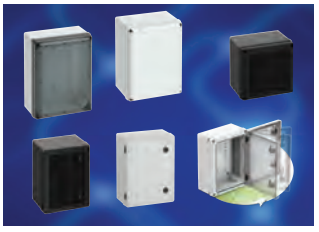
- Polystyrene (indoor material) -40 to 158°F, UL94 HB or Polycarbonate (outdoor material) -40 to 248°F, UL94 V-2 and 5V • Knockouts or smooth walls
- IP66 protection rating
- Direct mount through corner holes or internal base knockouts or externally with optional mounting tab kit
- Integral mounting holes or standoffs inside base of enclosure • Gray or tinted transparent covers
- Accessories available like hinge kits, mounting plates, DIN rails

## TG Series - Smooth Wall Enclosure with Extra Features



- **16 sizes: 3.3x3.3x2.2" up to 11.9x9.1x4.3"**
- Polycarbonate is UL listed - **UL Type 4X/12K rated**
- ABS (indoor material) -40 to 176°F, UL94 HB or Polycarbonate (outdoor material) -40 to 248°F, UL94 V-2 and 5V • Smooth side walls
- IP67 protection rating • Accessories available like hinge kits, mounting plates, DIN rails
- Direct mount through corner holes or external mount with optional mounting tab kit
- Quick turn (1/4 turn) or standard stainless steel screws • Recessed covers for label inlay
- Integral standoffs in base of enclosure • Integral cover retainers included • Gray or clear covers

## GEOS Series – Larger Rugged Enclosures and Cabinets



- **3 basic sizes with up 2 base heights, 11.8 x 11.8 x 7.1" up to 19.7 x 15.7 x 8.9"**
- UL Listed - **UL Type 4X rated** • Polycarbonate -40 to 248°F, UL94 V-2 and 5V • Smooth side walls
- Rugged enclosures optimized for outdoor use • IP66/IP67/IP69 protection ratings
- Cabinet enclosures have hinged doors and cam locks • Integral standoffs in base of enclosure
- Direct mount through corner holes or internal base knockouts or externally with optional mounting tab kit
- Gray or black enclosure bases with matching covers or transparent cover
- Modular component mounting system available for tool-free installations
- Accessories: hinge kits, multiple mounting plates, DIN rails, pole mount kit, ventilation elements and more

## AL Series - Cast Aluminum Enclosures



- **16 sizes: 2x1.8x1.2" up to 13x9.1x4.4"**
- Aluminum
- IP 66 protection rating
- Silver gray powder coating
- Direct mount through corner holes or external mount with optional mounting tab kit
- Integral threaded mounting holes
- Stainless steel cover screws • Grounding screws included
- Accessories available like hinge kits, mounting plates, DIN rails

## EK Series - Circuit Breaker Enclosures



- **5 sizes: 5.12x3.70x3.15" up to 14.21x10.0x4.33" used for 2, 4, 8, 12 or 24 breaker poles**
- **UL Type 4X rated**
- Polycarbonate (outdoor material) -40 to 248°F, UL94 V-2 and 5V • Smooth sidewalls
- IP65 protection rating
- Gray with tinted transparent door (open vertically)
- Shrouded cutouts in cover shows face of breaker while covering wiring area
- Direct mount through corner holes or externally mounted with optional mounting tab kit
- DIN rail included pre-installed • Filler strips available to cover unused breaker locations

## Abox / Abox-Pro Series - European Style Junction Boxes

NEW



- **8 sizes: 3.4x3.4x2.0" up to 9.9x9.9x4.7" -** Broader range than old series
- Metric knockout sidewalls and knockouts in bottom of enclosure
- Polypropylene (indoor material, Abox) -13°F to 131°F, UL94 HB or Polycarbonate (outdoor material, Abox-Pro) -31°F to 176°F, UL94 V-0
- Up to IP69 protection rating • NO UL approvals at this time
- Light gray or black cover and base • Direct mount through knockouts in base
- Integral standoffs in base • Stainless steel cover screws
- Versions with terminals included or without terminals
- External fixing flanges on some models

## AKL Series - Larger Enclosures



- **4 sizes with 2 lid height options: 5.9x11.8x5.2" u p to 23.6x11.8x8.3"**
- Metric knockouts
- Polystyrene (indoor material) -40 to 158°F, UL94 HB or Polycarbonate (outdoor material) -40 to 248°F, UL94 V-2
- IP65 protection rating • No UL approvals • Gray or tinted transparent covers
- Direct mount through corner holes or internal base knockouts or externally with optional mounting tab kit
- Integral standoffs in base
- Accessories available like hinge kits, mounting plates, DIN rail

# Altech® Industrial Enclosures AT A GLANCE

Order Catalog PN- 370

## AK / AK III Series - Small to Large Circuit Breaker Enclosures




- **11 sizes: 3.94x5.91x3.78" up to 12.4x29.5x6.1" used for 3, 5, 9, 12, 14, 28, 42 or 56 poles**
- Polycarbonate (outdoor material) -40 to 248°F, UL94 V-2
- IP65 protection rating • Metric knockout sidewalls • Pre-installed DIN rail • Foreign object protection
- Maintenance-free • Ammonia resistance • Gray with tinted transparent door

AKIII Features only:

- **UL approvals** • Integrated air ventilation system • Height-adjustable mounting rail • 150mm rail spacing
- Prevention of condensate water while preserving the high protection class IP65 • High air exchange rate
- 100% pressure compensation • Combinable • Flange mount end walls with variety of options

## HP Series - Economy Junction Boxes



- **6 sizes: 3.0x3.0x1.7" up to 7.8x5.9x3.0"**
- Semi rigid polypropylene -22 to 212°F, UL94 V-2
- IP55 protection rating
- No UL approvals
- Sidewalls with stepped entry spouts
- Snap on cover for smaller sizes, screw on for larger
- Larger versions have standoffs in base for DIN rails
- Optional terminals available for smaller models

**Find what you need with our large inventory!**

ENCLOSURE FINDER

## PB Series - 22.5mm Pushbutton Enclosures



- **5 sizes: 3.70x3.70x3.19" up to 7.09x3.70x3.19" / 1 to 5 pushbutton holes in cover**
- Polycarbonate (outdoor material) -40 to 248°F, UL94 V-2
- IP66 protection rating
- No UL approvals
- Metric knockout sidewalls
- Integral standoffs in base
- Direct mount through corner holes or internal base knockouts or externally with optional mounting tab kit

## Comparison Table

| Series | ABS | Polystyrene | Polycarbonate | Aluminum | Polypropylene | Knockouts | Smooth Walls | Transparent Cover | Opaque Cover | IP55 Protection | IP65 Protection | IP66 Protection | IP67 Protection | Outdoor Use | UL Approval | UL Type 4X |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TK | | ■ | ■ | | | ■ | ■ | ■ | ■ | | | ■ | | ■ | ■ | ■ |
| TG | ■ | | ■ | | | | ■ | ■ | ■ | | | | ■ | ■ | ■ | ■ |
| GEOS | | | ■ | | | | ■ | ■ | ■ | | | ■ | ■ | ■ | ■ | ■ |
| AL | | | | ■ | | | ■ | | ■ | | | ■ | | ■ | | ■ |
| EK | | | ■ | | | | ■ | ■ | | | ■ | | | ■ | ■ | ■ |
| Abox / Abox-Pro | | | ■ | | ■ | ■ | | | ■ | | | ■ | ■ | ■ | | |
| AKL | | ■ | ■ | | | ■ | | ■ | ■ | | ■ | | | ■ | | |
| AK / AK III | | | ■ | | | ■ | ■* | ■ | | | ■ | | | ■ | ■* | |
| HP | | | | | ■ | ■ | | | ■ | ■ | | | | | | |
| PB | | | ■ | | | ■ | | | ■ | | | ■ | | ■ | | |

*AKIII only

**COMPETITORS**

Bud, Fibox, Hammond, Polycase, Rose, Vynckier

**BENEFITS OF NON-METALLIC ENCLOSURES**

- Non-corrosive
- Non-conductive
- Light weight
- Impact Resistant
- Ease of modification
- Dust / Waterproof



35 Royal Road • Flemington, NJ 08822-6000 • t 908-806-9400 • f 908-806-9490 • altechcorp.com

## Subminiature Electromagnetic and Solid State Modules



| MOUNTING OPTIONS | | | | | COIL | | | TYPE OF RELAY | NUMBER AND TYPE OF CONTACTS | | | | | | | | | RATED CURRENT [A] | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direct PCB mounting | With plug-in socket PCB mounting | Panel mounting | 35 mm rail mount acc. To PN-EN 60715 | Others | AC | DC | AC/DC | | SPDT | SPST(1NO) | SPST(1NC) | DPDT | DPST(2NO) | DPST(2NC) | 3PDT | 3PST(3NO) | 4PDT | 5 | 10 | 15 | 20 | 25 | 30 |
| | | | ■ | | | ■ | ■ | PI6-1P | ■ | | | | | | | | | 6 | | | | | |
| | | | ■ | | | ■ | ■ | PI6-1T | | ■ | | | | | | | | 1 | | | | | |
| | | | ■ | | | ■ | ■ | PI6-1OC | | ■ | | | | | | | | 1 | | | | | |
| | | | ■ | | | ■ | ■ | PIR6W-1PS-… | ■ | ■ | | | | | | | | max 6 *** | | | | | |
| | | | ■ | | | ■ | ■ | PIR6WB-1PS-…** | ■ | ■ | | | | | | | | max 6 *** | | | | | |

## Industrial Electromagnetic Relays



| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ■ | ■ | ■ | ■ | ■ | ■ | ■ | | R2 | | | | ■ | | | | | | 12 | | | | | |
| | | ■ | ■ | | ■ | ■ | | R3 | | | | | | | ■ | | | 10 | | | | | |
| ■ | ■ | ■ | ■ | ■ | ■ | ■ | | R4 | | | | | | | | | ■ | 6 | | | | | |
| | | ■ | ■ | ■ | ■ | ■ | | RY2 | | | | ■ | | | | | | 12 | | | | | |
| ■ | ■ | ■ | ■ | | ■ | ■ | | R2M | | | | ■ | | | | | | 5 | | | | | |
| ■ | | ■ | ■ | ■ | ■ | ■ | | RUC | | | | ■ | ■ | | ■ | ■ | | 16 | | | | | |
| ■ | | ■ | ■ | ■ | ■ | ■ | | R15 - DPDT | | | | ■ | | | | | | 10 | | | | | |
| ■ | | ■ | ■ | ■ | ■ | ■ | | R15 - 3PDT | | | | | | | ■ | | | 10 | | | | | |
| | | ■ | ■ | ■ | ■ | ■ | | R15 - 4PDT | | | | | | | | | ■ | 10 | | | | | |

## Miniature Electromagnetic Relays



| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ■ | | | | | | ■ | | RM40 | ■ | ■ | | | | | | | | 5/8* | | | | | |
| ■ | | | | | | ■ | | RM50 | ■ | ■ | | | | | | | | 12 | | | | | |
| ■ | ■ | ■ | ■ | | ■ | ■ | | RM84 | | | | ■ | ■ | | | | | 9 | | | | | |
| ■ | ■ | ■ | ■ | | ■ | ■ | | RM85 | ■ | ■ | | | | | | | | 16 | | | | | |
| ■ | ■ | ■ | ■ | | ■ | ■ | | RM87 | ■ | ■ | | | | | | | | 12 | | | | | |

## Slimline Interface Relays



| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ■ | | | ■ | | | ■ | | RM699B | ■ | | | | | | | | | 6 | | | | | |
| ■ | ■ | | | | | ■ | | RSR30-…-D1-24-010-1 | | ■ | | | | | | | | 1 | | | | | |
| ■ | ■ | | | | ■ | | | RSR30-…-A1-24-020-1 | | ■ | | | | | | | | 2 | | | | | |
| ■ | ■ | | | | | ■ | | RSR30-…-D1-04-025-1 | | ■ | | | | | | | | 2.5 | | | | | |
| ■ | ■ | | | | | ■ | | RSR30-…-D1-02-040-1 | | ■ | | | | | | | | 4 | | | | | |

## Relays for Photovoltaic Systems



| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ■ | | | | | | ■ | | RS35, RS50 | | | | | ■ | | | | | RSR35: 35A, RSR50: 50A | | | | | |

## Relay Socket Combinations

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ■ | ■ | | ■ | ■ | | PI84 with socket GZT80 | | | | ■ | | | | | | 8 | | | | | |
| | | ■ | ■ | | ■ | ■ | | PI85 with socket GZT80 | ■ | | | | | | | | | 16 | | | | | |
| | | ■ | ■ | | ■ | ■ | | PI84 with socket GZM80 | | | | ■ | | | | | | 8 | | | | | |
| | | ■ | ■ | | ■ | ■ | | PI85 with socket GZM80 | ■ | | | | | | | | | 16 | | | | | |
| | | ■ | ■ | | ■ | ■ | | PIR2 with socket GZM2 | | | | ■ | | | | | | 12 | | | | | |
| | | ■ | ■ | | ■ | ■ | | PIR3 with socket GZM3 | | | | | | | ■ | | | 10 | | | | | |
| | | ■ | ■ | | ■ | ■ | | PIR4 with socket GZM4 | | | | | | | | | ■ | 6 | | | | | |
| | | ■ | ■ | | ■ | ■ | | PIR2M with socket GZ2 | | | | ■ | | | | | | 5 | | | | | |

* SPDT 5 A; SPST (1NO) 8A. **spring clamp socket. *** for more information see data sheet.

■ Available ■ AC ■ DC ■ AC/DC ■ Range

## Subminiature Electromagnetic and Solid State Modules



- Standard SPDT contact configuration
- Space-saving 6.2 mm width
- Only 85 mm in height from DIN rail
- DC Coil voltages from 5VDC to 110V DC
- AC coil voltages from 6VAC to 240V AC 50/60 Hz
- Pre-assembled relay and DIN mount socket
- Screw clamp or Spring clamp terminals
- Universal AC/DC socket with built-in surge suppression and green LED
- Rated load current
- 6A / 250V AC or 0.05A / 30V AC gold plated) rating
- 6A / 24V DC or 0.05A / 36V DC gold plated) rating
- 4A max for Solid state relays
- Silver Tin Oxide (AgSnO2) cadmium free contact material
- Gold plated contact (AgSnO2/Au 3µm) available
- UL recognized
- ROHS2 and REACH compliance

## Industrial Electromagnetic Relays



- DPDT, 3PDT and 4PDT contact configuration
- DC Coil voltages from 5VDC to 220V DC
- AC coil voltages from 6VAC to 240V AC 50/60 Hz
- Din Rail Plug in Socket are standard
- Rated load current: 5A/250V AC to 16A/250V AC rating
  5A/24V DC to 16A/24VDC DC1 rating
- Test button with (K) or without block function (W)
- Built in LED light indicator (L)
- Surge suppression element with diode (D) or varistor (V)
- Approved for railroad applications (DE)
- Silver Nickel (AgNi) cadmium free contact material
- UL and CSA recognized relays
- ROHS2 and REACH compliance

## Miniature Electromagnetic Relays



- Standard SPDT, DPDT contact configuration
- DC Coil voltages from 3VDC to 110V DC
- AC coil voltages from 12VAC to 240V AC 50/60 Hz
- PCB mounting with socket or direct PCB solder
- Din Rail Plug in Socket are standard
- Rated load current: 8A/250V AC (DPDT) or 16A/250V AC (SPDT) rating; 8A/24V DC (DPDT) or 16A/24VDC (SPDT) DC1 rating
- Silver Nickel (AgNi) cadmium free contact material
- UL and CSA recognized relays
- ROHS2 and REACH compliance

## Slimline Interface Relays



- Standard SPDT contact configuration
- Standard 5 mm width
- DC Coil voltages from 5VDC to 60V DC
- Vertical or horizontal configuration
- Sealed for soldering and cleaning
- Can be used with Din rail socket or PCB mountable
- Rated load current
- 6A / 250V AC or 0.05A / 30V AC gold plated) rating
- 6A / 24V DC or 0.05A / 36V DC gold plated) rating
- 4A max for Solid state relays
- Silver Tin Oxide (AgSnO2) cadmium free contact material
- Gold plated contact (AgSnO2/Au 3µm) available
- UL recognized
- ROHS2 and REACH compliance

## Relays for Photovoltaic Systems



- Standard DPST (2 NO) contact configuration
- DC Coil voltages from 5VDC to 110V DC
- Rated load current
- 35A / 250V AC or 48A / 250V AC
- 35A / 24V DC or 48A / 24V DC
- Contact gap >1.75 mm ; Holding power 1W
- Silver Tin Oxide (AgSnO2) cadmium free contact material
- Compact size, PCB mounting
- UL recognized
- ROHS2 and REACH compliance

### COMPETITORS

| | |
|---|---|
| Idec | Finder |
| Honeywell | Eaton |
| Omron | Schneider Electric |
| Phoenix Contact | Siemens |
| Panasonic | Square D |
| TE Connectivity | Rockwell |
| Tyco | Eaton |
| Weidmuller | Fuji |
| American Zettler | |

## Advantages

- Electromechanical relay is a good separation of AC and DC circuit.
- Can be used as an interface between electronic control circuits and power circuits
- Low initial cost
- Very reliable component
- High resistance to voltage transients
- No off-stage leakage current through open contacts

## Applications

- The control of various AC and DC equipment's
- Solenoid activation and control purposes
- Automation and control
- Motor control
- PCB applications or with Din Rail mountable sockets

# LIMIT SWITCHES

## IN65 Plastic Body



### Standardized design according to DIN EN 50047

- Modular design
- High reliability at low currents (1 mA)
- Tool-free turning and changing of the actuator
- Metal actuator locking and mounting clip
- Hinged snap-on cover
- M12 Connector versions available







| Actuator | | SM | RK | HK | AHK | DGHK |
|---|---|---|---|---|---|---|
| 1NC/1NO | Slow Action | 608.3000.208 | 608.3000.215 | 608.3000.222 | 608.3000.236 | 608.3000.229 |
| 1NC/1NO | Snap Action | 608.3000.207 | 608.3000.214 | 608.3000.221 | 608.3000.235 | 608.3000.228 |
| 2NC | Slow Action | 608.3000.210 | 608.3000.217 | 608.3000.224 | 608.3000.238 | 608.3000.231 |
| 2NC | Snap Action | 608.3000.209 | 608.3000.216 | 608.3000.223 | 608.3000.237 | 608.3000.230 |
| 2NO | Slow Action | 608.3000.212 | 608.3000.219 | 608.3000.226 | 608.3000.240 | 608.3000.233 |
| 2NO | Snap Action | 608.3000.211 | 608.3000.218 | 608.3000.225 | 608.3000.239 | 608.3000.232 |
| 1NC/1NO Overlapping | Slow Action | 608.3000.213 | 608.3000.220 | 608.3000.227 | 608.3000.241 | 608.3000.234 |
| Actuator Only | | 391.8052.341 | 391.8172.342 | 391.8202.343 | 391.8352.345 | 391.8202.344 |







| Actuator | | KNK | DGKK | AVK | AHDM | AF |
|---|---|---|---|---|---|---|
| 1NC/1NO | Slow Action | 608.3000.262 | 608.3000.255 | 608.3000.284 | 608.3000.303 | 608.3000.338 |
| 1NC/1NO | Snap Action | 608.3000.261 | 608.3000.254 | 608.3000.280 | 608.3000.307 | 608.3000.337 |
| 2NC | Slow Action | 608.3000.264 | 608.3000.257 | 608.3000.279 | 608.3000.304 | 608.3000.340 |
| 2NC | Snap Action | 608.3000.263 | 608.3000.256 | 608.3000.286 | 608.3000.308 | 608.3000.339 |
| 2NO | Slow Action | 608.3000.266 | 608.3000.259 | 608.3000.287 | 608.3000.305 | 608.3000.342 |
| 2NO | Snap Action | 608.3000.265 | 608.3000.258 | 608.3000.288 | 608.3000.309 | 608.3000.341 |
| 1NC/1NO Overlapping | Slow Action | 608.3000.267 | 608.3000.260 | 608.3000.285 | 608.3000.306 | 608.3000.343 |
| Actuator Only | | 391.8262.349 | 391.8202.348 | NA | NA | NA |





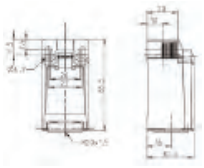


| Actuator | | AHSGU | AHDB | IN62...SK | IN62...FF | IN65 Switch Body Only |
|---|---|---|---|---|---|---|
| 1NC/1NO | Slow Action | 608.3000.296 | 608.3000.345 | 608.3000.201 | 608.3000.362 | 608.3000.272 |
| 1NC/1NO | Snap Action | 608.3000.300 | 608.3000.344 | 608.3000.200 | 608.3000.361 | 608.3000.271 |
| 2NC | Slow Action | 608.3000.297 | 608.3000.347 | 608.3000.203 | 608.3000.364 | 608.3000.274 |
| 2NC | Snap Action | 608.3000.301 | 608.3000.346 | 608.3000.202 | 608.3000.363 | 608.3000.273 |
| 2NO | Slow Action | 608.3000.298 | 608.3000.349 | 608.3000.205 | 608.3000.366 | 608.3000.276 |
| 2NO | Snap Action | 608.3000.302 | 608.3000.348 | 608.3000.204 | 608.3000.365 | 608.3000.275 |
| 1NC/1NO Overlapping | Slow Action | 608.3000.299 | 608.3000.350 | 608.3000.206 | 608.3000.367 | 608.3000.277 |
| Actuator Only | | 391.8352.359 | 391.8352.406 | NA | NA | NA |

# LIMIT SWITCHES

## IN65 Plastic Body Metal Mounting

Separate Switch Body and Actuators









| | | Standard Switch Body Only | Standard Switch Body with M12 Only | Latching Switch Body with Reset Only |
|---|---|---|---|---|
| 1NC/1NO | Slow Action | 608.3000.272 | 608.3000.289 | 608.3000.315 |
| 1NC/1NO | Snap Action | 608.3000.271 | 608.3000.293 | 608.3000.314 |
| 2NC | Slow Action | 608.3000.274 | 608.3000.290 | 608.3000.317 |
| 2NC | Snap Action | 608.3000.273 | 608.3000.294 | 608.3000.316 |
| 2NO | Slow Action | 608.3000.276 | 608.3000.291 | 608.3000.319 |
| 2NO | Snap Action | 608.3000.275 | 608.3000.295 | 608.3000.318 |
| 1NC/1NO Overlapping | Slow Action | 680.3000.277 | 608.3000.292 | 608.3000.320 |

## LIMIT SWITCH ACTUATORS ONLY

### PLUNGER



**391.8052.341**
SM Actuator
(Metal Plunger)

### ROLLER PLUNGER



**391.8172.342**
RK Actuator
(Plastic Roller)



**391.8172.362**
RM Actuator
(Metal Roller)

### ROLLER LEVER



**391.8202.343**
HK Actuator
(Plastic Roller)

### SIDE MOUNT ROLLER LEVER



**391.8352.345**
AHK Actuator
(Plastic Roller)



**391.8352.364**
AHM Actuator
(Metal Roller)

### SWIVEL POINT LEVER



**391.8202.344**
DGHK Actuator
(Plastic Roller)

### SWIVEL KNEE LEVER



**391.8202.348**
DGKK Actuator
(Plastic Roller)

### SWIVEL KNEE LEVER



**391.8262.349**
KNK Actuator
(Plastic Roller)

### SIDE MOUNT ROLLER



**391.8352.359**
AHSGU RO50
(Rubber Roller)

### ADJUSTABLE HEIGHT ROLL



**391.8362.358**
AVZK Actuator
(Plastic Roller)



**391.8362.365**
AVZM Actuator
(Metal Roller)

### HINGED PIVOT



**391.8352.406**
AHDB Actuator
(Pivot Rod Insertion)

### ADJUSTABLE HEIGHT ROLLER



**391.8362.484**
AVK Actuator
(Plastic Roller)

### PLASTIC ROD



**391.8372.486**
AHDK Actuator
(Plastic Rod)

**COMPETITORS**

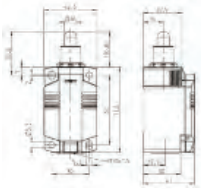
| | |
|---|---|
| Automation Direct | Pizzato |
| Allen Bradley | Schmersal |
| Banner | Siemens |
| Eaton | Suns |
| Omron | Telemechanique |


35 Royal Road • Flemington, NJ 08822-6000 • t 908-806-9400 • f 908-806-9490 • altechcorp.com

# LIMIT SWITCHES

## IN73 Plastic Body





## Standardized design according to DIN EN 50041

- Especially suitable for switching low currents
- Sophisticated combination of metal and plastic components
- Modular design with numerous actuators to choose from Up to 4 contacts
- Actuator and installation collar with mounting holes made of metal
- Easy turning (8 45°) and changing of actuators without tool
- Standard switches and standard actuators to DIN EN 50041
- Protection classes IP66 and IP67 according to VDE 0470 T1








| PLASTIC BODY | | SM | RK | HK | DGHK | DGKK | AHK |
|---|---|---|---|---|---|---|---|
| 1NC/1NO | Slow Action | 608.1000.002 | 608.1000.014 | 608.1000.026 | 608.1000.038 | 608.1000.050 | 608.1000.062 |
| 1NC/1NO | Snap Action | 608.1000.001 | 608.1000.013 | 608.1000.025 | 608.1000.037 | 608.1000.049 | 608.1000.061 |
| 2NC | Slow Action | 608.1000.004 | 608.1000.016 | 608.1000.028 | 608.1000.040 | 608.1000.052 | 608.1000.064 |
| 2NC | Snap Action | 608.1000.003 | 608.1000.015 | 608.1000.027 | 608.1000.039 | 608.1000.051 | 608.1000.063 |
| 2NO | Slow Action | 608.1000.006 | 608.1000.018 | 608.1000.030 | 608.1000.042 | 608.1000.054 | 608.1000.066 |
| 2NO | Snap Action | 608.1000.005 | 608.1000.017 | 608.1000.029 | 608.1000.041 | 608.1000.053 | 608.1000.065 |
| 2NC/2NO | Slow Action | 608.1000.008 | 608.1000.020 | 608.1000.032 | 608.1000.044 | 608.1000.056 | 608.1000.068 |
| 4NC | Slow Action | 608.1000.009 | 608.1000.021 | 608.1000.033 | 608.1000.045 | 608.1000.057 | 608.1000.069 |
| 4NO | Slow Action | 608.1000.010 | 608.1000.022 | 608.1000.034 | 608.1000.046 | 608.1000.058 | 608.1000.070 |
| 3NC/1NO | Slow Action | 608.1000.011 | 608.1000.023 | 608.1000.035 | 608.1000.047 | 608.1000.059 | 608.1000.071 |
| 1NC/3NO | Slow Action | 608.1000.012 | 608.1000.024 | 608.1000.036 | 608.1000.048 | 608.1000.060 | 608.1000.072 |
| 1NC/1NO Overlapping | Slow Action | 608.1000.007 | 608.1000.019 | 608.1000.031 | 608.1000.043 | 608.1000.055 | 608.1000.067 |
| Actuator Only | | 391.8022.415 | 391.8172.416 | 391.8020.432 | 391.8202.428 | 391.8202.430 | 391.8352.393 |








| PLASTIC BODY | | AVK | AHDM | AHGU R050 | AVGU R050 | Switch Body Only M20 Port | Switch Body Only M12 Connector |
|---|---|---|---|---|---|---|---|
| 1NC/1NO | Slow Action | 608.1000.074 | 608.1000.086 | 608.1000.109 | 608.1000.105 | 608.1000.113 | 608.1000.126 |
| 1NC/1NO | Snap Action | 608.1000.073 | 608.1000.085 | 608.1000.108 | 608.1000.104 | 608.1000.112 | 608.1000.125 |
| 2NC | Slow Action | 608.1000.076 | 608.1000.088 | 608.1000.110 | 608.1000.106 | 608.1000.115 | 608.1000.128 |
| 2NC | Snap Action | 608.1000.075 | 608.1000.087 | | | 608.1000.114 | 608.1000.127 |
| 2NO | Slow Action | 608.1000.078 | 608.1000.090 | | | 608.1000.117 | 608.1000.130 |
| 2NO | Snap Action | 608.1000.077 | 608.1000.089 | | | 608.1000.116 | 608.1000.129 |
| 2NC/2NO | Slow Action | 608.1000.080 | 608.1000.092 | | | 608.1000.119 | 608.1000.132 |
| 4NC | Slow Action | 608.1000.081 | 608.1000.093 | | | 608.1000.120 | 608.1000.133 |
| 4NO | Slow Action | 608.1000.082 | 608.1000.094 | | | 608.1000.121 | 608.1000.134 |
| 3NC/1NO | Slow Action | 608.1000.083 | 608.1000.095 | | | 608.1000.122 | 608.1000.135 |
| 1NC/3NO | Slow Action | 608.1000.084 | 608.1000.096 | | | 608.1000.123 | 608.1000.136 |
| 1NC/1NO Overlapping | Slow Action | 608.1000.079 | 608.1000.091 | 608.1000.111 | 608.1000.107 | 608.1000.118 | 608.1000.131 |

## LIMIT SWITCHES

**IN73 Plastic Body Metal Mounting**

Separate Switch Body and Actuators





| | | Switch Body (with Contacts) Only M20 Threaded Cable Entry Port | Switch Body (with Contacts) Only M12 Connector |
|---|---|---|---|
| 1NC/1NO | Slow Action | 608.1000.113 | 608.1000.126 |
| 1NC/1NO | Snap Action | 608.1000.112 | 608.1000.125 |
| 2NC | Slow Action | 608.1000.115 | 608.1000.128 |
| 2NC | Snap Action | 608.1000.114 | 608.1000.127 |
| 2NO | Slow Action | 608.1000.117 | 608.1000.130 |
| 2NO | Snap Action | 608.1000.116 | 608.1000.129 |
| 2NC/2NO | Slow Action | 608.1000.119 | 608.1000.132 |
| 4NC | Slow Action | 608.1000.120 | 608.1000.133 |
| 4NO | Slow Action | 608.1000.121 | 608.1000.134 |
| 3NC/1NO | Slow Action | 608.1000.122 | 608.1000.135 |
| 1NC/3NO | Slow Action | 608.1000.123 | 608.1000.136 |
| 1NC/1NO Overlapping | Slow Action | 608.1000.118 | 608.1000.131 |

### Actuators Only



**SM**
3918022415
(Metal plunger)



**RK**
3918172416
(Plastic roller)



**RM**
3918172417
(Metal roller)



**RP ***
3911042418
(Pull switch attachment)



**AHK**
3918352393
(Plastic roller)



**AHM**
3918352419
(Metal roller)



**AHDK**
3918372420
(Plastic)



**AHDM**
3918372421
(Metal)



**AVGU RO**
3918362423
(Rubber roller)



**AHGU RO**
3918352422
(Rubber roller)



**AVK**
3918362424
(Plastic roller)



**AVM**
3918362425
(Metal roller)



**AVZK**
3918362426
(Plastic roller)



**AVZM**
3918362427
(Metal roller)



**DGHK**
3918202428
(Plastic roller)



**DGHM**
3918202429
(Metal roller)



**DGKK**
3918202430
(Plastic roller)



**DGKM**
3918202431
(Metal roller)



**HK**
3918202432
(Plastic roller)



**HM**
3918202433
(Metal roller)

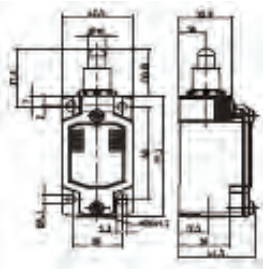
**COMPETITORS**

| | |
|---|---|
| Automation Direct | Pizzato |
| Allen Bradley | Schmersal |
| Banner | Siemens |
| Eaton | Suns |
| Omron | Telemechanique |

# LIMIT SWITCHES

## MN78 Metal Body





### Standardised design according to DIN EN 50041

- Especially suitable for switching low currents
- Highest switching reliability, switching insert technology
- Modular design with numerous actuators to choose from
- Up to 4 contacts
- Easy turning (8 45°) and changing of actuators without tool
- Standard switches and standard actuators to DIN EN 50041
- Protection classes IP66 and IP67 according to VDE 0470 T1
- Aluminum pressure die-cast enclosure with sheet metal cover







| METAL BODY | | SM | RK | HK | DGHK | DGKK |
|---|---|---|---|---|---|---|
| 1NC/1NO | Slow Action | 608.7000.002 | 608.7000.014 | 608.7000.026 | 608.7000.038 | 608.7000.050 |
| 1NC/1NO | Snap Action | 608.7000.001 | 608.7000.013 | 608.7000.025 | 608.7000.037 | 608.7000.049 |
| 2NC | Slow Action | 608.7000.004 | 608.7000.016 | 608.7000.028 | 608.7000.040 | 608.7000.052 |
| 2NC | Snap Action | 608.7000.003 | 608.7000.015 | 608.7000.027 | 608.7000.039 | 608.7000.051 |
| 2NO | Slow Action | 608.7000.006 | 608.7000.018 | 608.7000.030 | 608.7000.042 | 608.7000.054 |
| 2NO | Snap Action | 608.7000.005 | 608.7000.017 | 608.7000.029 | 608.7000.041 | 608.7000.053 |
| 2NC/2NO | Slow Action | 608.7000.008 | 608.7000.020 | 608.7000.032 | 608.7000.044 | 608.7000.056 |
| 4NC | Slow Action | 608.7000.009 | 608.7000.021 | 608.7000.033 | 608.7000.045 | 608.7000.057 |
| 4NO | Slow Action | 608.7000.010 | 608.7000.022 | 608.7000.034 | 608.7000.046 | 608.7000.058 |
| 3NC/1NO | Slow Action | 608.7000.011 | 608.7000.023 | 608.7000.035 | 608.7000.047 | 608.7000.059 |
| 1NC/3NO | Slow Action | 608.7000.012 | 608.7000.024 | 608.7000.036 | 608.7000.048 | 608.7000.060 |
| 1NC/1NO Overlapping | Slow Action | 608.7000.007 | 608.7000.019 | 608.7000.031 | 608.7000.043 | 608.7000.055 |
| Actuator Only | | 391.8022.415 | 391.8172.416 | 391.8020.432 | 391.8202.428 | 391.8202.430 |







| METAL BODY | | AHK | AVK | AHDM | Switch Body Only M20 Port | Switch Body Only M12 |
|---|---|---|---|---|---|---|
| 1NC/1NO | Slow Action | 608.7000.062 | 608.7000.074 | 608.7000.086 | 608.7000.103 | 608.7000.115 |
| 1NC/1NO | Snap Action | 608.7000.061 | 608.7000.073 | 608.7000.085 | 608.7000.102 | 608.7000.114 |
| 2NC | Slow Action | 608.7000.064 | 608.7000.076 | 608.7000.088 | 608.7000.105 | 608.7000.117 |
| 2NC | Snap Action | 608.7000.063 | 608.7000.075 | 608.7000.087 | 608.7000.104 | 608.7000.116 |
| 2NO | Slow Action | 608.7000.066 | 608.7000.078 | 608.7000.090 | 608.7000.107 | 608.7000.119 |
| 2NO | Snap Action | 608.7000.065 | 608.7000.077 | 608.7000.089 | 608.7000.106 | 608.7000.118 |
| 2NC/2NO | Slow Action | 608.7000.068 | 608.7000.080 | 608.7000.092 | 608.7000.109 | 608.7000.121 |
| 4NC | Slow Action | 608.7000.069 | 608.7000.081 | 608.7000.093 | 608.7000.110 | 608.7000.122 |
| 4NO | Slow Action | 608.7000.070 | 608.7000.082 | 608.7000.094 | 608.7000.111 | 608.7000.123 |
| 3NC/1NO | Slow Action | 608.7000.071 | 608.7000.083 | 608.7000.095 | 608.7000.112 | 608.7000.124 |
| 1NC/3NO | Slow Action | 608.7000.072 | 608.7000.084 | 608.7000.096 | 608.7000.113 | 608.7000.125 |
| 1NC/1NO Overlapping | Slow Action | 608.7000.067 | 608.7000.079 | 608.7000.091 | 608.7000.108 | 608.7000.120 |
| Actuator Only | | 391.8352.393 | 391.8362.424 | 391.8372.420 | | |

## LIMIT SWITCHES

**MN78 Metal Body**

Separate Switch Body and Actuators





| | | Switch Body (with Contacts) Only M20 Threaded Cable Entry Port | Switch Body (with Contacts) Only M12 Connector |
|---|---|---|---|
| 1NC/1NO | Slow Action | 608.7000.103 | 608.7000.115 |
| 1NC/1NO | Snap Action | 608.7000.102 | 608.7000.114 |
| 2NC | Slow Action | 608.7000.105 | 608.7000.117 |
| 2NC | Snap Action | 608.7000.104 | 608.7000.116 |
| 2NO | Slow Action | 608.7000.107 | 608.7000.119 |
| 2NO | Snap Action | 608.7000.106 | 608.7000.118 |
| 2NC/2NO | Slow Action | 608.7000.109 | 608.7000.121 |
| 4NC | Slow Action | 608.7000.110 | 608.7000.122 |
| 4NO | Slow Action | 608.7000.111 | 608.7000.123 |
| 3NC/1NO | Slow Action | 608.7000.112 | 608.7000.124 |
| 1NC/3NO | Slow Action | 608.7000.113 | 608.7000.125 |
| 1NC/1NO Overlapping | Slow Action | | |

### Actuators Only



**SM**
3918022415
(Metal plunger)



**RK**
3918172416
(Plastic roller)



**RM**
3918172417
(Metal roller)



**RP ***
**3911042418**
(Pull switch attachment)



**AHK**
3918352393
(Plastic roller)



**AVK**
3918362424
(Plastic roller)



**AVM**
3918362425
(Metal roller)



**AVZK**
3918362426
(Plastic roller)



**AVZM**
3918362427
(Metal roller)



**DGHK**
3918202428
(Plastic roller)



**DGHM**
3918202429
(Metal roller)



**DGKK**
3918202430
(Plastic roller)



**DGKM**
3918202431
(Metal roller)



**HK**
3918202432
(Plastic roller)



**HM**
3918202433
(Metal roller)



**AHGU RO**
3918352422
(Rubber roller)



**AVGU RO**
3918362423
(Rubber roller)



**AHDM**
3918372421
(Metal)



**AHDK**
3918372420
(Plastic)



**AHM**
3918352419
(Metal roller)

**COMPETITORS**

| | |
|---|---|
| Automation Direct | Pizzato |
| Allen Bradley | Schmersal |
| Banner | Siemens |
| Eaton | Suns |
| Omron | Telemechanique |

# Universal Monitor D0-1
## AT A GLANCE

Order Catalog
PN- WEB ONLY




## Simple Monitoring Device for your business

- Monitoring / alerting / data collecting / analyzing / diagnosing
- Universal application at low cost
- Monitoring up to 128 Modbus RTU / TCP devices
- Web based software included
- Do-it-yourself - easy configuration
- Individual Dashboard creation
- Includes MODBUS addresses of Selec products
- Individual alert or event settings with email notifications
- Extract filters for data to Excel or cvs files
- Realtime clock with 30 days battery backup
- Dual power input
- 5GB internal data storage / 128GB external
- Compact design, with DIN rail adapter (optional)
- WiFi and Bluetooth connection (optional)
- Custom features or functions on request
- German engineered, assembled in Mexico



shown with
optional antenna

**General Information**

The following section contains essential information about the development and application of the DO-1 universal monitor, the main alarm functions and the additional options considered.



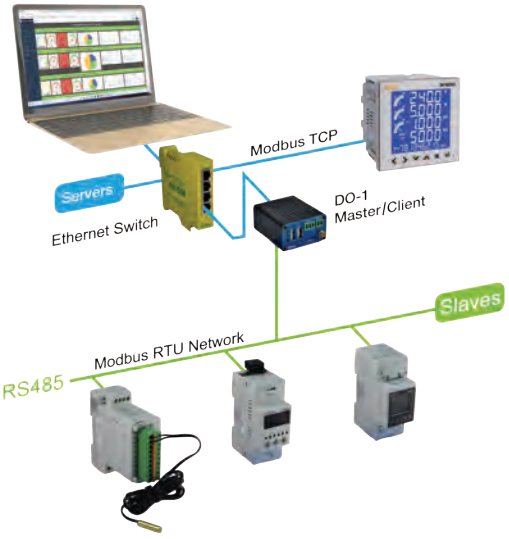

**Use and advantages of DO-1**

DO-1 was developed to help companies monitor their buildings, plants and machines in a simple and cost-effective way. By using DO-1, companies can monitor, alarm and evaluate their buildings, plants and machines themselves without having to resort to expensive and complex systems.

DO-1 does not require any special technical requirements or IT specialists to be installed and operated. DO-1 is easy to install and operate, making it an ideal solution for small and medium-sized businesses.

In addition, DO-1 offers the ability to connect a variety of sensors and data logging devices that allow companies to monitor and analyze their buildings, facilities and machinery in a variety of ways. For example, DO-1 also allows companies to collect a variety of data, including energy consumption, current, voltage, temperature, humidity, motion, and noise levels.

*The special benefit: There are no monthly or annual license fees for DO-1. This makes DO-1 a cost-effective solution for companies that want to monitor their buildings, plants, and machines easily and economically.*




**Communication protocol**

When selecting a communication protocol for industrial applications, various factors must be taken into account. One major challenge is the large number of protocols used by different manufacturers, which are often not compatible.

Key selection criteria:
1. Use of a simple, universal, stable and interference-resistant communication protocol that is already being used successfully in industry
2. Widely used by almost all manufacturers for the myriad of PLCs, VFDs, HMIs, meters and sensors available on the market
3. Compatibility problems should be avoided and the integration of devices from different manufacturers should be facilitated.

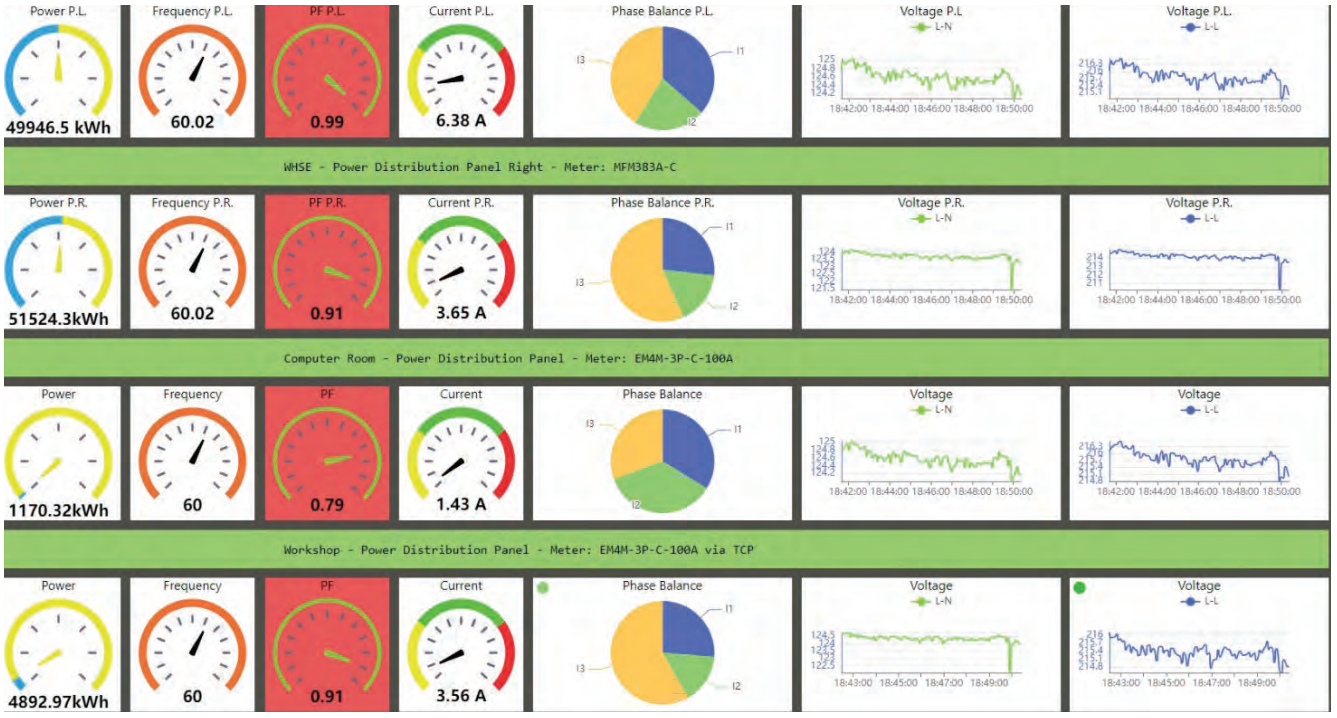
For this reason, **Modbus RTU** was chosen for the development of the DO-1. Sensors and devices can be connected in series in a network, which is very popular for industrial control networks. The **Modbus RTU** communication protocol provides reliable and efficient communication over a 2-wire serial connection (RS485). This connection is easy to set up and maintain, making it a suitable option for use with sensors and data acquisition devices.

The figure shows an example for a **Modbus RTU/TCP** network.

**Modbus TCP** is an Ethernet extension of Modbus. If a local Ethernet network (LAN) already exists, the **Modbus TCP** communication protocol can be used to connect sensors and data acquisition devices that have an Ethernet port. If sensors and data acquisition devices only have a 2-wire serial connection, they can still be connected using a suitable RS485 serial converter. This allows seamless integration into an existing network and provides greater installation flexibility.

**Display and data logging**

The dashboard for displaying measurement data is easily customizable and user-friendly. It can be displayed on different devices such as desktops, laptops or tablets in the network (LAN), which allows flexible use.
Instead of having to learn and operate a complex analysis program, the measurement data can simply be transferred to Microsoft Excel or another spreadsheet program for evaluation. These powerful spreadsheet programs are widely available today and are easy to use.




**Alert functions**

Alerts help to ensure the safety, efficiency and reliability of the monitored systems/devices by providing early warning of errors or malfunctions and enabling a rapid response. This function is therefore essential to quickly detect and visualize possible errors or malfunctions.

1. Early failure detection: To become aware of possible faults or malfunctions in the monitored equipment at an early stage. This allows action to be taken before problems worsen or lead to failures.
2. Quick response time: By creating alarms in the monitoring center, the responsible persons receive immediate notifications of any problems that occur. This allows them to react quickly to determine the cause of the problem and initiate appropriate measures to restore the operation of the equipment.
3. Efficient error identification: Alerts help to specifically identify errors or malfunctions in the monitored devices. By monitoring specific parameters or patterns, alarms can be triggered as soon as deviations from normal operating conditions are detected. This facilitates fault diagnosis and shortens the time to rectification.
4. Reduction of downtime: Timely detection of faults and rapid intervention can minimize downtime. Alarms allow potential problems to be addressed proactively before they lead to major disruptions or outages.
5. Improvement of the overall performance: By continuously monitoring and creating alarms, the overall performance of the monitored system can be improved. By identifying trends or recurring problems, appropriate action can be taken to increase equipment reliability, efficiency and longevity.

If the corresponding values are exceeded or not reached, an alarm is triggered, which leads to the automatic sending of an e-mail. This e-mail can contain a short message or a report about the situation. It can be specified in advance whether the alarm status should be reset automatically when the measured value is back within the tolerance range, or whether a manual reset is required. In this way, the user can adapt the settings to his specific requirements.

**Additional Options**

Beyond the basic version, the product offers a range of additional options to meet individual needs and requirements. These advanced features enable customized use and provide a higher level of flexibility and performance. These additional options ensure that the product meets individual requirements and provides a comprehensive solution for various business needs.

**WLAN/WiFi • Bluetooth • Remote Access**

Altech Corp.® MEXICO

Modbus MEMBER

# AMR Series

## FEATURES

- Current Monitoring
- Voltage Monitoring
- Under/ Over Monitoring
- Wide range of Measuring Voltage/ Current
- Alsense Energy Monitor

**COMPETITORS**

| | |
|---|---|
| Carlo Gavazzi | IDEC |
| Crompton TE | Phoenix Contact |
| Crouzet | Omron |
| Finder | Macromatic |

**APPLICATIONS**

- Ventialtion Monitoring
- Pump Monitoring
- Motor Monitoring
- Smart Energy
- Conveyor Monitoring

c UL us
LISTED
E233019



| Monitoring Part Number | Phases | Supply Voltage | Voltage Measurement AC | Voltage Measurement DC | Current Measurement | Monitor Function Over | Under | Window | Phase Loss | Sequence | Trip Delay | Latch | Relay Output SPDT | DPDT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CURRENT** | | | | | | | | | | | | | | |
| AMR-AI1M5A2D | 1 | Monitor | - | - | 20mA, 1A, 5A | x | x | x | - | - | x | x | - | x |
| AMR-AI3M5A2D | 3 | Monitor | - | 20mA, | 20mA, 1A, 5A | x | x | x | - | - | x | x | - | x |
| **VOLTAGE** | | | | | | | | | | | | | | |
| AMR-AP1M300V2D | 1 | External | 30V, 60V, | 30V, 60V, 300V | - 300V | x | x | x | - | - | - | x | - | x |
| AMR-AP3U690V2D | 3 | Monitor | 180-690V | - | - | - | x | - | x | x | x | - | - | x |
| AMR-EP1F480Y277V1D | 3 | Monitor | 480/277V | - | - | - | - | - | x | x | x | - | x | |
| AMR-EP1M230V1 | 1 | Monitor | 24V, 300V | 24V | - | - | x | x | - | - | - | - | x | - |
| **ALSENSE ENERGY MONITOR** | | | | | | | | | | | | | | |
| AMR-ES3M480V5A2M | 3 | | | | | | | | | | | | | |

## Monitor Functions

**OVER**
If the measured value exceeds the adjusted MAX threshold, the output relay switches into off-position. The output relay switches into on-position again, as soon as the measured value falls below the adjusted MIN threshold.

**UNDER**
If the measured value falls below the min value, the output relay drops out. The output relay picks up again as soon as the value exceeds the max value.

**WINDOW**
If the measured value falls below the adjusted MIN threshold, the output relay switches into off-position. The output relay switches into on-position again, as soon as the measured value exceeds the adjusted MIN threshold. If the measured value exceeds the adjusted MAX threshold, the output relay switches into off position. The output relay switches into on-position again, as soon as the measured value falls below the adjusted MAX threshold.

**PHASE LOSS**
As soon as one of the three phases fails, the output relay R pulls in and drops out. For safe detection of phase failures, the asymmetry function should be activated. It is recommended to connect the neutral conductor of the monitoring relay as soon as loads in the system use the neutral conductor connection.

**PHASE SEQUENCE**
If all phases are connected in the correct sequence and the measured asymmetry is smaller than the set value, the output relay pulls in. If the phase sequence changes, the output relay drops out (yellow LED does not light up). It is recommended to connect the neutral conductor of the monitoring relay as soon as loads in the system use the neutral conductor connection.

**PHASE ASSYMETRY**
If the asymmetry of the daisy-chained voltages exceeds the set ASYM value, the output relay drops out. If the neutral conductor is connected, the phase voltages (star voltage) are additionally monitored for asymmetry with respect to the neutral conductor. In this application, both values for the asymmetry are used for the evaluation. As soon as one of the two values exceeds the set value, the output relay drops out.

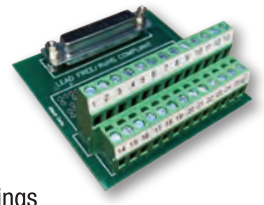
**TRIP DELAY**
If the monitored value leaves the selected range, the output relay only switches into off-position following expiration of the trip delay.

**LATCH FUNCTION**
If the device detects a fault, the output relay only switches on again when the fault latch has been reset. The fault latch can be reset by means of an internal or external reset button or by interrupting the supply voltage.

# Altech® PCB Terminal Blocks AT A GLANCE

Order Catalog
PN- WEB ONLY

## OVERVIEW



- Over 20,000 parts
- PCB Mount Terminals
- Plug-In Connectors with mating headers
- Industry standard pin spacings
- All connection technologies
- Custom Imprints & designs

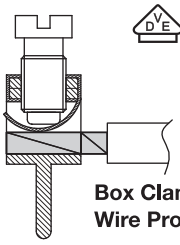
### APPLICATIONS

- HV AC • PCB Boards
- Wire-to-board applications
- Signal/ Data transmission
- High Current Boards
- Smart networks IIoT

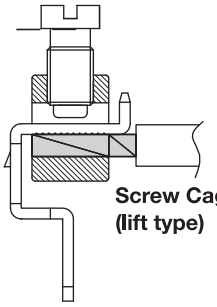
### COMPETITORS

Phoenix Contact
Wago
Weidmueller
Amphenol
TE Connectivity
Molex
Metz Connect
Sauro
Würth

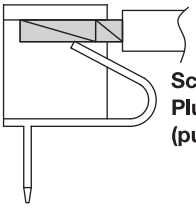
## Connection Technologies



**Box Clamp with Wire Protector**

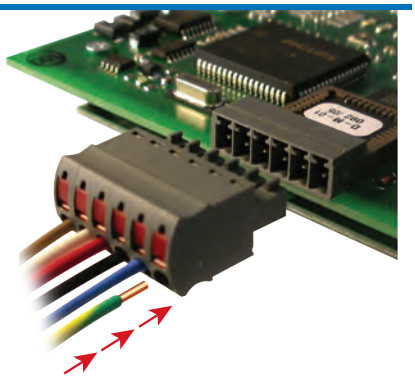


**Screw Cage Clamp (lift type)**



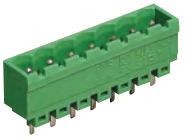
**Screwless Plug-In (push-in spring)**

## PCB Terminal Block Types





**Vertical PCB Terminal**
MVS15xx-5-V



**Vertical Header**
PHxx-3,50-K



**Horizontal PCB Terminal**
MV15xx-5-H



**Inverted Header**
PFXX-5,00



**Double Level PCB Terminal**
MVD15xx-5,08-V



**Double Level header**
**PDVxx-3,81-H-P**



**Reversed Header**
SVRXX-5,00



**Triple Level PCB Terminal**
MVT25xx-5,08-V



**Horizontal Plug with Screw flange**
SHxx-3,50-K



**Pin Header**
PVSXX-5,00



**Angled PCB Terminal**
MVS15xx-5-IT



**Vertical Plug**
SVFxx-5,08



**Pin header Plug**
SHCSXX-5,00



**Horizontal Header with threaded flange**
PHxx-3,50-K



**Inverted Plug**
SFXX-5,08

## Fixed

| Part# | Connection Type | Wire Size | UL Rating | | IEC Rating | | height | Rows/ Levels | Mounting/ Wire Entry |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Voltage | Current | Voltage | | | |
| **3.50 mm** | | | | | | | | | |
| MLK13XX-3,5-V | Box Clamp WP | 24-16AWG | 6A | 300V | 10A | 130V | 8.40mm | single | vertical/ 0° |
| MLK13XX-3,5-H | Box Clamp WP | 24-16AWG | 6A | 300V | 10A | 130V | 6.80mm | single | horizontal/ 90° |
| MV13XX-3,5-V-L | Cage Clamp | 30-16AWG | 12A | 300V | 13.5A | 130V | 8.50mm | single | vertical/ 0° |
| MVS-13XX (3,50) | Cage Clamp | 30-16AWG | 12A | 300V | 17.5A | 130V | 12.60mm | single | vertical/ 0° |
| MVS13XX-3,5-H | Cage Clamp | 30-16AWG | 12A | 300V | 17.5A | 130V | 8.20mm | single | horizontal/ 90° |
| **3.81 mm** | | | | | | | | | |
| MLK13XX-3,81-V | Box Clamp WP | 24-16AWG | 6A | 300V | 10.0A | 130V | 8.40mm | single | vertical/ 0° |
| MLK13XX-3,81-H | Box Clamp WP | 24-16AWG | 6A | 300V | 10.0A | 130V | 6.80mm | single | horizontal/ 90° |
| MV13XX-3,81-V-L | Cage Clamp | 30-16AWG | 12A | 300V | 13.5A | 130V | 8.50mm | single | vertical/ 0° |
| MVS-13XX | Cage Clamp | 30-16AWG | 12A | 300V | 17.50A | 130V | 12.60mm | single | vertical/ 0° |
| MVS13XX-3,81-H | Cage Clamp | 30-16AWG | 12A | 300V | 17.5A | 130V | 8.2mm | single | horizontal/ 90° |
| **5.00 mm** | | | | | | | | | |
| MVE-15XX | Box Clamp WP | 30-14AWG | 20A | 300V | 24A | 450V | 13.50mm | single | vertical/ 0° |
| MBE-15XX | Box Clamp WP | 30-14AWG | 20A | 300V | 24A | 450V | 10.20mm | single | vertical/ 0° |
| MVE11XX-5-V | Box Clamp WP | 30-14AWG | 20A | 300V | 24A | 450V | 11.50mm | single | vertical/ 0° |
| MV-15XX | Cage Clamp | 30-16AWG | 13.5A | 300V | 13.5A | 250V | 10.6mm | single | vertical/ 0° |
| MH-15XX | Cage Clamp | 30-16AWG | 13.5A | 300V | 13.5A | 250V | 8.10mm | single | horizontal/ 90° |
| MVS-15XX | Cage Clamp | 30-16AWG | 17.5A | 300V | 17.5A | 450V | 13.20mm | single | vertical/ 0° |
| MHS-15XX | Cage Clamp | 30-16AWG | 17.5A | 300V | 17.5A | 450V | 8.90mm | single | horizontal/ 90° |
| MVS-15XX (35) | Cage Clamp | 30-16AWG | 17.5A | 300V | 17.5A | 450V | 14.80mm | single | Angled/ 35° |
| MVE-25XX | Cage Clamp | 30-14AWG | 16.0A | 300V | 16A | 450V | 16.80mm | single | vertical/ 0° |
| MHE-25XX | Cage Clamp | 30-14AWG | 16.0A | 300V | 16A | 450V | 8.90mm | single | horizontal/ 90° |
| MHR-25XX | Cage Clamp | 30-14AWG | 16.0A | 300V | 16A | 450V | 8.90mm | single | horizontal/ 270° |
| MVE26XX-5-V | Box Clamp WP | 30-12AWG | 26.0A | 300V | 24A | 450V | 12.80mm | single | vertical/ 0° |
| MI25XX-5-IT | Cage Clamp | 30-14AWG | 16.0A | 300V | 16A | 450V | 16.30mm | single | Angled/ 35° |
| MI-25XX (5,00) | Cage Clamp | 30-14AWG | 16.0A | 300V | 16A | 450V | 16.30mm | single | Angled/ 45° |
| MVST25XX-5-V | Cage Clamp | 24-12AWG | 20A | 300V | 24A | 250V | 18.00mm | single | vertical/ 0° |
| MIP25XX-5,00-IQ | Cage Clamp | 30-12AWG | 24A | 300V | 24A | 250V | 12.50mm | single | Angled/ 45° |
| MVD-15XX (5,00) | Cage Clamp | 30-16AWG | 13.5A | 300V | 13.5A | 450V | 19.50mm | double | vertical/ 0° |
| MMT25XX-5,00-V | Cage Clamp | 30-12AWG | 20A | 300V | 20A | 450V | 29.50mm | single | vertical/ 0° |
| MVD25XX-5-V | Cage Clamp | 30-14AWG | 16A | 300V | 16A | 450V | 29.50mm | double | vertical/ 0° |
| **5.08 mm** | | | | | | | | | |
| MVES15XX-5,08-V | Box Clamp WP | 30-14AWG | 20A | 300V | 24A | 250V | 13.50mm | single | vertical/ 0° |
| MBES-15XX | Box Clamp WP | 30-14AWG | 20A | 300V | 24A | 250V | 10.20mm | single | vertical/ 0° |
| MV15XX-5,08-V | Cage Clamp | 30-16AWG | 13.5A | 300V | 13.5A | 250V | 10.60mm | single | vertical/ 0° |
| MV15XX-5,08-H | Cage Clamp | 30-16AWG | 13.5A | 300V | 13.5A | 250V | 8.10mm | single | horizontal/ 90° |
| MVS-15XX-5,08 | Cage Clamp | 30-16AWG | 17.5A | 300V | 17.5A | 450V | 13.20mm | single | vertical/ 0° |
| MVS15XX-5,08-H | Cage Clamp | 30-16AWG | 17.5A | 300V | 17.5A | 450V | 8.90mm | single | horizontal/ 90° |
| MV-25XX | Cage Clamp | 30-14AWG | 16A | 300V | 16A | 450V | 16.00mm | single | vertical/ 0° |
| MV-25XX-D | Cage Clamp | 30-14AWG | 18A | 300V | 24A | 250V | 16.00mm | single | vertical/ 0° |
| MH-25XX | Cage Clamp | 30-14AWG | 16A | 300V | 16A | 450V | 11.00mm | single | horizontal/ 90° |
| MVS25XX-5,08-H | Cage Clamp | 30-14AWG | 18A | 300V | 24A | 450V | 11.75mm | single | horizontal/ 90° |
| MVS25XX-5,08-HS | Cage Clamp | 30-14AWG | 18A | 300V | 24A | 450V | 16.00mm | single | horizontal/ 90° |
| MI-25XX (35) | Cage Clamp | 30-14AWG | 16A | 300V | 16A | 450V | 16.30mm | single | Angled/ 35° |
| MI-25XX (45) | Cage Clamp | 30-14AWG | 16A | 300V | 16A | 450V | 16.30mm | single | Angled/ 45° |
| MVST25XX-5,08-V | Cage Clamp | 24-12AWG | 20A | 300V | 24A | 250V | 18.00mm | single | vertical/ 0° |
| MIP25XX-5,08-IQ | Cage Clamp | 30-12AWG | 24A | 300V | 24A | 250V | 12.50mm | single | Angled/ 45° |
| MVSP-25XX | Cage Clamp | 30-14AWG | 18A | 300V | 24A | 450V | 19.00mm | single | vertical/ 0° |
| MHSP-25XX | Cage Clamp | 30-14AWG | 18A | 300V | 24V | 450V | 12.50mm | single | horizontal/ 90° |
| MMT-15XX | Cage Clamp | 30-16AWG | 13.5A | 300V | 13.5A | 250V | 19.50mm | single | vertical/ 0° |
| MMT25XX-5,08-V | Cage Clamp | 30-12AWG | 20A | 300V | 20A | 450V | 29.50mm | single | vertical/ 0° |
| MVD-15XX | Cage Clamp | 30-16AWG | 13.5A | 300V | 13.5A | 250V | 19.50mm | double | vertical/ 0° |
| MVD-25XX | Cage Clamp | 30-14AWG | 16A | 300V | 16A | 450V | 29.50mm | double | vertical/ 0° |
| MVDK-25XX | Cage Clamp | 30-14AWG | 16A | 300V | 16A | 450V | 29.50mm | double | vertical/ 0° |
| MVT-25XX | Cage Clamp | 30-14AWG | 16A | 300V | 16A | 450V | 43.00mm | triple | vertical/ 0° |
| MVS25XX-5,08-V | Cage Clamp | 30-14AWG | 18A | 300V | 24A | 450V | 18.00mm | single | vertical/ 0° |
| **6.35 mm** | | | | | | | | | |
| MV-462 | Cage Clamp | 30-10AWG | 30A | 300V | 32A | 450V | 21.00mm | single | vertical/ 0° |
| MV46XX-6,35-H | Cage Clamp | 30-10AWG | 30A | 300V | 32A | 450V | 12.50mm | single | horizontal/ 90° |
| MV46XX-6,35-IT | Cage Clamp | 30-10AWG | 30A | 300V | 32A | 450V | 22.35mm | single | Angled/ 35° |
| **7.50 mm** | | | | | | | | | |
| MVE11XX-7,5-V | Box Clamp WP | 30-14AWG | 20A | 300V | 24A | 750V | 11.50mm | single | vertical/ 0° |
| MVE17XX-7,5-V | Box Clamp WP | 30-14AWG | 20A | 300V | 24A | 750V | 13.50mm | single | vertical/ 0° |
| MVS17XX-7,5-V | Cage Clamp | 30-16AWG | 17.5A | 300V | 17.5A | 750V | 13.20mm | single | vertical/ 0° |
| MVS17XX-7,5-H | Cage Clamp | 30-16AWG | 17.5A | 300V | 17.5A | 750V | 8.90mm | single | horizontal/ 90° |
| MV-27XX | Cage Clamp | 30-14AWG | 16A | 300V | 16A | 750V | 16.00mm | single | vertical/ 0° |
| MH-27XX | Cage Clamp | 30-14AWG | 16A | 300V | 16A | 750V | 11.00mm | single | horizontal/ 90° |
| MV27DXX-7,5-V | Cage Clamp | 30-14AWG | 20A | 300V | 24A | 750V | 16.00mm | single | vertical/ 0° |
| MVE26XX-7,5-V-L | Box Clamp WP | 30-12AWG | 26A | 300V | 24A | 750V | 12.80mm | single | vertical/ 0° |
| MVE-27XX | Cage Clamp | 30-14AWG | 16A | 300V | 16A | 750V | 16.80mm | single | vertical/ 0° |
| MHE-27XX | Cage Clamp | 30-14AWG | 16A | 300V | 16A | 750V | 8.90mm | single | horizontal/ 90° |
| MHR-27XX | Cage Clamp | 30-14AWG | 16A | 300V | 16A | 750V | 8.90mm | single | horizontal/ 270° |
| MI-27XX | Cage Clamp | 30-14AWG | 16A | 300V | 16A | 750V | 16.00mm | single | Angled/ 35° |
| MMT27XX-7,50-V | Cage Clamp | 30-12AWG | 20A | 300V | 24A | 750V | 29.50mm | single | vertical/ 0° |
| MBE17XX-7,5-V | Box Clamp WP | 30-14AWG | 20A | 300V | 24A | 750V | 10.20mm | single | vertical/ 0° |
| MVL47XX-7,5-V | Cage Clamp | 20-10AWG | 30A | 300V | 41A | 750V | 18.40mm | single | vertical/ Feed-Thru |
| **7.62 mm** | | | | | | | | | |
| MVS172-7,62-V | Cage Clamp | 30-16AWG | 17.5A | 300V | 17.5A | 750V | 13.20mm | single | vertical/ 0° |
| MVS172-7,62-H | Box Clamp WP | 30-16AWG | 17.5A | 300V | 17.5A | 750V | 8.90mm | single | horizontal/ 90° |
| MV-472 | Cage Clamp | 30-10AWG | 30A | 300V | 32A | 750V | 21.00mm | single | vertical/ 0° |
| MV472-7,62-H | Cage Clamp | 30-10AWG | 30A | 300V | 32A | 750V | 12.50mm | single | horizontal/ 90° |
| MVSP-272 | Cage Clamp | 30-14AWG | 20A | 300V | 24A | 750V | 19.00mm | single | vertical/ 0° |
| MHSP-272 | Cage Clamp | 30-14AWG | 20A | 300V | 24A | 750V | 12.50mm | single | horizontal/ 90° |
| MVK472-7,62-V | Box Clamp WP | 20-10AWG | 35A | 300V | 41A | 750V | 20.00mm | single | vertical/ 0° |
| **9.52 mm** | | | | | | | | | |
| MV-49XX | Cage Clamp | 30-10AWG | 30A | 300V | 32A | 750V | 21.00mm | single | vertical/ 0° |
| MV49XX-9,52-H | Cage Clamp | 30-10AWG | 30A | 300V | 32A | 750V | 12.50mm | single | horizontal/ 90° |
| **10.16 mm** | | | | | | | | | |
| MV-10XX | Cage Clamp | 30-6AWG | 57A | 600V | 70A | 750V | 29.00mm | single | vertical/ 0° |
| **15.00 mm** | | | | | | | | | |
| MVP35XX-15-V | Cage Clamp | 1-20AWG | 125A | 600V | 16A | 750V | 36.3mm | single | vertical/ 0° |

## Plugs/ Connectors

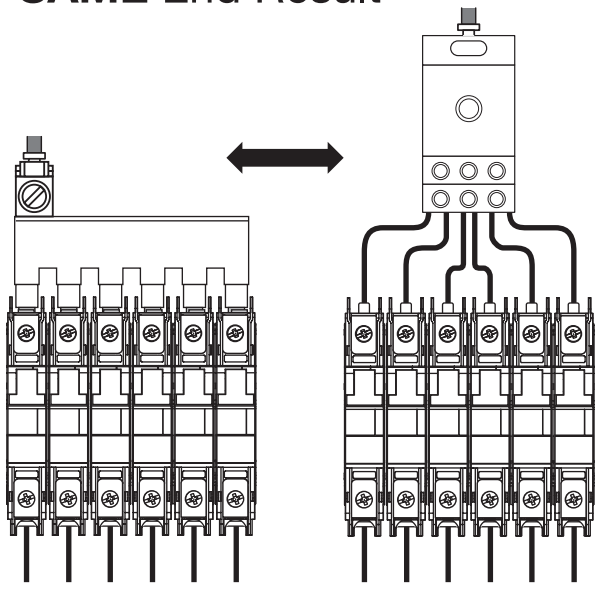
| Part# | Connection Type | Wire Size | UL Rating | | IEC Rating | | Rows/ Levels | Plug/ Wire Entry | Feature(s) |
|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Voltage | Current | Voltage | | | |
| **3.50 mm** | | | | | | | | | |
| SHMDXX-3,50 | Push-In | 24-14AWG | 11A | 300V | 8A | 160V | double | horizontal/ 0° | |
| SHXX-3,50 | Cage Clamp | 30-14AWG | 11A | 300V | 11A | 200V | single | horizontal/ 0° | |
| SHXX-3,50-K | Cage Clamp | 30-14AWG | 11A | 300V | 11A | 200V | single | horizontal/ 0° | screw flange |
| SHMXX-3,50-E | Push-In | 24-14AWG | 11A | 300V | 8A | 160V | single | horizontal/ 0° | compact version |
| SHMXX-3,50-F | Push-In | 24-14AWG | 11A | 300V | 8A | 160V | single | horizontal/ 0° | |
| SHMXX-3,50-P | Push-In | 24-14AWG | 11A | 300V | 8A | 160V | single | horizontal/ 0° | |
| SHMXX-3,50-P-K | Push-In | 24-14AWG | 11A | 300V | 8A | 160V | single | horizontal/ 0° | screw flange |
| SHCSXX-3,50 | Cage Clamp | 28-14AWG | 12A | 300V | 15A | 250V | single | vertical/ 90° | pin header |
| SVPXX-3,50 | Cage Clamp | 30-14AWG | 11A | 300V | 11A | 200V | single | vertical/ 90° | |
| SVFXX-3,50 | Cage Clamp | 30-14AWG | 11A | 300V | 11A | 200V | single | vertical/ 90° | |
| SVPXX-3,50-K | Cage Clamp | 30-14AWG | 11A | 300V | 11A | 200V | single | vertical/ 90° | screw flange |
| SVFXX-3,50-K | Cage Clamp | 30-14AWG | 11A | 300V | 11A | 200V | single | vertical/ 90° | screw flange |
| **3.81 mm** | | | | | | | | | |
| SHXX-3,81 | Cage Clamp | 30-14AWG | 11A | 300V | 11A | 200V | single | horizontal/ 0° | |
| SHXX-3,81-K | Cage Clamp | 30-14AWG | 11A | 300V | 11A | 200V | single | horizontal/ 0° | screw flange |
| SHMXX-3,81-E | Push-In | 24-14AWG | 11A | 300V | 8A | 160V | single | horizontal/ 0° | compact version |
| SHMXX-3,81-F | Push-In | 24-14AWG | 11A | 300V | 8A | 160V | single | horizontal/ 0° | |
| SHMXX-3,81-P | Push-In | 24-14AWG | 11A | 300V | 8A | 160V | single | horizontal/ 0° | |
| SHMXX-3,81-P-K | Push-In | 24-14AWG | 11A | 300V | 8A | 160V | single | horizontal/ 0° | screw flange |
| SFXX-3,81-P | Cage Clamp | 24-14AWG | 11A | 300V | 11A | 200V | single | horizontal/ 0° | inverted plug |
| SVPXX-3,81 | Cage Clamp | 30-14AWG | 11A | 300V | 11A | 200V | single | vertical/ 90° | |
| SVFXX-3,81 | Cage Clamp | 30-14AWG | 11A | 300V | 11A | 200V | single | vertical/ 90° | |
| SVPXX-3,81-K | Cage Clamp | 30-14AWG | 11A | 300V | 11A | 200V | single | vertical/ 90° | screw flange |
| SVFXX-3,81-K | Cage Clamp | 30-14AWG | 11A | 300V | 11A | 200V | single | vertical/ 90° | screw flange |
| **5.00 mm** | | | | | | | | | |
| SHXX-5,00 | Cage Clamp | 30-14AWG | 12A | 300V | 16A | 250V | single | horizontal/ 0° | |
| SH2XX-5,00 | Cage Clamp | 30-14AWG | 12A | 300V | 16A | 250V | single | horizontal/ 0° | |
| SHMXX-5,00 | Push-In | 30-12AWG | 16A | 300V | 12A | 250V | single | horizontal/ 0° | |
| SHMXX-5,00-P | Push-In | 30-12AWG | 16A | 300V | 12A | 250V | single | horizontal/ 0° | |
| SHMXX-5,00-K | Push-In | 30-12AWG | 16A | 300V | 12A | 250V | single | horizontal/ 0° | screw flange |
| SHSXX-5,00 | Box Clamp WP | 30-16AWG | 10A | 300V | 12A | 200V | single | vertical/ 90° | pin header |
| SHCSXX-5,00 | Cage Clamp | 30-14AWG | 18A | 300V | 20A | 200V | single | vertical/ 90° | pin header |
| SVRXX-5,00 | Cage Clamp | 30-14AWG | 12A | 300V | 12A | 250V | single | vertical/ 90° | reversed header |
| SVRXX-5,00-K | Cage Clamp | 30-14AWG | 12A | 300V | 12A | 250V | single | vertical/ 90° | reversed header/ screw flange |
| SVRXX-5,00-DR | Cage Clamp | 30-14AWG | 12A | 300V | 12A | 250V | single | vertical/ 90° | reversed header/ DIN rail mount |
| SFXX-5,00-P | Cage Clamp | 30-12AWG | 22A | 300V | 16A | 250V | single | horizontal/ 0° | inverted plug |
| SVFXX-5,00 | Cage Clamp | 30-14AWG | 12A | 300V | 16A | 250V | single | vertical/ 90° | |
| SVPXX-5,00 | Cage Clamp | 30-14AWG | 12A | 300V | 16A | 250V | single | vertical/ 90° | |
| **5.08 mm** | | | | | | | | | |
| SHXX-5,08 | Cage Clamp | 30-14AWG | 12A | 300V | 16A | 250V | single | horizontal/ 0° | |
| SHMXX-5,08 | Push-In | 30-12AWG | 16A | 300V | 12A | 250V | single | horizontal/ 0° | |
| SHMXX-5,08-P | Push-In | 30-12AWG | 16A | 300V | 12A | 250V | single | horizontal/ 0° | |
| SHMXX-5,08-K | Push-In | 30-12AWG | 16A | 300V | 12A | 250V | single | horizontal/ 0° | |
| SFXX-5,08 | Cage Clamp | 30-12AWG | 22A | 300V | 16A | 250V | single | horizontal/ 0° | inverted plug |
| SFXX-5,08-K | Cage Clamp | 30-12AWG | 22A | 300V | 16A | 250V | single | horizontal/ 0° | inverted plug/ thread flange |
| SFXX-5,08-KV | Cage Clamp | 30-12AWG | 22A | 300V | 16A | 250V | single | horizontal/ 0° | inverted plug/ screw flange |
| SVFXX-5,08 | Cage Clamp | 30-14AWG | 12A | 300V | 16A | 250V | single | vertical/ 90° | |
| SVPXX-5,08 | Cage Clamp | 30-14AWG | 12A | 300V | 16A | 250V | single | vertical/ 90° | |
| **7.50 mm** | | | | | | | | | |
| SHXX-7,50 | Cage Clamp | 30-14AWG | 12A | 300V | 16A | 500V | single | horizontal/ 0° | |
| SHMXX-7,50 | Push-In | 30-12AWG | 16A | 300V | 16A | 500V | single | horizontal/ 0° | |
| SHMXX-7,50-K | Push-In | 30-12AWG | 16A | 300V | 16A | 500V | single | horizontal/ 0° | screw flange |
| SFXX-7,50-P | Cage Clamp | 30-12AWG | 22A | 300V | 16A | 500V | single | horizontal/ 0° | inverted plug |
| SVXX-7,50-P | Cage Clamp | 30-14AWG | 12A | 300V | 16A | 500V | single | vertical/ 90° | |
| SVXX-7,50-F | Cage Clamp | 30-14AWG | 12A | 300V | 16A | 500V | single | vertical/ 90° | |
| **7.62 mm** | | | | | | | | | |
| SHXX-7,62 | Cage Clamp | 30-14AWG | 12A | 300V | 16A | 500V | single | horizontal/ 0° | |
| SHMXX-7,62 | Push-In | 30-12AWG | 16A | 300V | 16A | 500V | single | horizontal/ 0° | |
| SHMXX-7,62-K | Push-In | 30-12AWG | 16A | 300V | 16A | 500V | single | horizontal/ 0° | screw flange |
| SFXX-7,62-P | Cage Clamp | 30-12AWG | 22A | 300V | 16A | 500V | single | horizontal/ 0° | inverted plug |
| SVXX-7,62-P | Cage Clamp | 30-14AWG | 12A | 300V | 16A | 500V | single | vertical/ 90° | |
| SVXX-7,62-F | Cage Clamp | 30-14AWG | 12A | 300V | 16A | 500V | single | vertical/ 90° | |
| **10.00 mm** | | | | | | | | | |
| SHXX-10,00 | Cage Clamp | 30-14AWG | 12A | 600V | 16A | 500V | single | horizontal/ 0° | |
| SHXX-10,00-K | Cage Clamp | 30-14AWG | 12A | 600V | 16A | 500V | single | horizontal/ 0° | screw flange |
| **10.16 mm** | | | | | | | | | |
| SHXX-10,16 | Cage Clamp | 30-14AWG | 12A | 600V | 16A | 500V | single | horizontal/ 0° | |
| SHXX-10,16-K | Cage Clamp | 30-14AWG | 12A | 600V | 16A | 500V | single | horizontal/ 0° | screw flange |

## Headers

| Part# | UL Rating | | IEC Rating | | Rows/ Levels | Mounting/ plug orientation | Feature(s) |
|---|---|---|---|---|---|---|---|
| | Current | Voltage | Current | Voltage | | | |
| **3.50 mm** | | | | | | | |
| PH02-3,50 | 11A | 300V | 11A | 160V | single | horizontal/ 0° | open |
| PH02-3,50-K | 11A | 300V | 11A | 160V | single | horizontal/ 0° | Threaded flange |
| PHP02-3,50 | 11A | 300V | 11A | 160V | single | horizontal/ 0° | closed |
| PV02-3,50 | 11A | 300V | 11A | 160V | single | vertical/ 90° | open |
| PV02-3,50-K | 11A | 300V | 11A | 160V | single | vertical/ 90° | Threaded flange |
| PVP02-3,50 | 11A | 300V | 11A | 160V | single | vertical/ 90° | open |
| PVS02-3,50 | 11A | 300V | 11A | 160V | single | vertical/ 90° | pin header |
| PDV02-3,50-H-K | 11A | 300V | 8A | 160V | double | horizontal/ 0° | Threaded flange |
| PDV02-3,50-H-M | 11A | 300V | 8A | 160V | double | horizontal/ 0° | |
| PDV02-3,50-H-P | 11A | 300V | 8A | 160V | double | horizontal/ 0° | closed |
| PDV02-3,50-V-K | 11A | 300V | 8A | 160V | double | vertical/ 90° | Threaded flange |
| PDV02-3,50-V-M | 11A | 300V | 8A | 160V | double | vertical/ 90° | |
| PDV02-3,50-V-P | 11A | 300V | 8A | 160V | double | vertical/ 90° | closed |
| **3.81 mm** | | | | | | | |
| PH02-3,81 | 11A | 300V | 11A | 160V | single | horizontal/ 0° | open |
| PH02-3,81-K | 11A | 300V | 11A | 160V | single | horizontal/ 0° | Threaded flange |
| PHP02-3,81 | 11A | 300V | 11A | 160V | single | horizontal/ 0° | closed |
| PV02-3,81 | 11A | 300V | 11A | 160V | single | vertical/ 90° | open |
| PV02-3,81-K | 11A | 300V | 11A | 160V | single | vertical/ 90° | Threaded flange |
| PVP02-3,81 | 11A | 300V | 11A | 160V | single | vertical/ 90° | closed |
| PDV02-3,81-H-K | 11A | 300V | 8A | 160V | double | horizontal/ 0° | Threaded flange |
| PDV02-3,81-H-M | 11A | 300V | 8A | 160V | double | horizontal/ 0° | |
| PDV02-3,81-H-P | 11A | 300V | 8A | 160V | double | horizontal/ 0° | closed |
| PDV02-3,81-V-K | 11A | 300V | 8A | 160V | double | vertical/ 90° | Threaded flange |
| PDV02-3,81-V-M | 11A | 300V | 8A | 160V | double | vertical/ 90° | |
| PDV02-3,81-V-P | 11A | 300V | 8A | 160V | double | vertical/ 90° | closed |
| **5.00 mm** | | | | | | | |
| PDH02-5 | 12A | 300V | 12A | 250V | double | horizontal/ 0° | |
| PDV02-5 | 12A | 300V | 12A | 250V | double | vertical/ 90° | |
| PH02-5,00 | 16A | 300V | 16A | 250V | single | horizontal/ 0° | open |
| PH02-5,00-K | 16A | 300V | 16A | 250V | single | horizontal/ 0° | Threaded flange |
| PHP02-5,00 | 16A | 300V | 16A | 250V | single | horizontal/ 0° | closed |
| PV02-5,00 | 16A | 300V | 16A | 250V | single | vertical/ 90° | open |
| PV02-5,00-K | 16A | 300V | 16A | 250V | single | vertical/ 90° | Threaded flange |
| PV02-5-HR | 16A | 300V | 16A | 250V | single | horizontal/ 0° | under board mount |
| PV02-5-HR-P | 16A | 300V | 16A | 250V | single | horizontal/ 0° | under board mount |
| PVP02-5,00 | 16A | 300V | 16A | 250V | single | vertical/ 90° | closed |
| PVS02-5,00 | 18A | 300V | 20A | 250V | single | vertical/ 90° | pin header |
| PVSD02-5,00 | 18A | 300V | 20A | 250V | single | vertical/ 90° | pin header |
| PVST02-5,00 | 18A | 300V | 20A | 250V | single | vertical/ 90° | pin header |
| **5.08 mm** | | | | | | | |
| PDH02-5,08 | 12A | 300V | 12A | 250V | double | horizontal/ 0° | closed |
| PDSH02-5,08 | 12A | 300V | 12A | 250V | double | horizontal/ 0° | open |
| PDSH02-5,08-P | 12A | 300V | 12A | 250V | double | horizontal/ 0° | closed |
| PDSV02-5,08 | 12A | 300V | 12A | 250V | double | vertical/ 90° | open |
| PDSV02-5,08-P | 12A | 300V | 12A | 250V | double | vertical/ 90° | closed |
| PDV02-5,08 | 12A | 300V | 12A | 250V | double | vertical/ 90° | closed |
| PF02-5,08-H | 22A | 300V | 16A | 250V | single | horizontal/ 0° | inverted header |
| PF02-5,08-V | 22A | 300V | 16A | 250V | single | vertical/ 90° | inverted header |
| PH02-5,08 | 16A | 300V | 16A | 250V | single | horizontal/ 0° | open |
| PH02-5,08-K | 16A | 300V | 16A | 250V | single | horizontal/ 0° | Threaded flange |
| PHP02-5,08 | 16A | 300V | 16A | 250V | single | horizontal/ 0° | closed |
| PI02-5,08 | 12A | 300V | 12A | 250V | single | Angled/ 45° | open |
| PIP02-5,08 | 12A | 300V | 12A | 250V | single | Angled/ 45° | closed |
| PV02-5,08 | 16A | 300V | 16A | 250V | single | vertical/ 90° | open |
| PV02-5,08-HR | 16A | 300V | 16A | 250V | single | horizontal/ 0° | under board mount |
| PV02-5,08-HR-P | 16A | 300V | 16A | 250V | single | horizontal/ 0° | under board mount |
| PV02-5,08-K | 16A | 300V | 16A | 250V | single | vertical/ 90° | Threaded flange |
| PVP02-5,08 | 16A | 300V | 16A | 250V | single | vertical/ 90° | closed |
| **7.50 mm** | | | | | | | |
| PH02-7,50 | 11A | 300V | 11A | 400V | single | horizontal/ 0° | open |
| PHP02-7,50 | 11A | 300V | 11A | 400V | single | horizontal/ 0° | closed |
| PV02-7,50 | 11A | 300V | 11A | 400V | single | vertical/ 90° | open |
| PVP02-7,50 | 11A | 300V | 11A | 400V | single | vertical/ 90° | closed |
| **7.62 mm** | | | | | | | |
| PF02-7,62-H | 22A | 300V | 16A | 500V | single | horizontal/ 0° | inverted header |
| PF02-7,62-V | 22A | 300V | 16A | 500V | single | vertical/ 90° | inverted header |
| PH02-7,62 | 16A | 300V | 16A | 500V | single | horizontal/ 0° | open |
| PHP02-7,62 | 16A | 300V | 16A | 500V | single | horizontal/ 0° | closed |
| PV02-7,62 | 16A | 300V | 16A | 500V | single | vertical/ 90° | open |
| PVP02-7,62 | 16A | 300V | 16A | 500V | single | vertical/ 90° | closed |
| **10.00 mm** | | | | | | | |
| PH02-10,00 | 16A | 300V | 16A | 500V | single | horizontal/ 0° | open |
| PHP02-10,00 | 16A | 300V | 16A | 500V | single | horizontal/ 0° | closed |
| PV02-10,00 | 16A | 300V | 16A | 500V | single | vertical/ 90° | open |
| PVP02-10,00 | 16A | 300V | 16A | 500V | single | vertical/ 90° | closed |
| **10.16 mm** | | | | | | | |
| PH02-10,16 | 16A | 300V | 16A | 500V | single | horizontal/ 0° | open |
| PHP02-10,16 | 16A | 300V | 16A | 500V | single | horizontal/ 0° | closed |
| PV02-10,16 | 16A | 300V | 16A | 500V | single | vertical/ 90° | open |
| PVP02-10,16 | 16A | 300V | 16A | 500V | single | vertical/ 90° | closed |

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# **TWO** Examples of Power Distribution - **SAME** End Result



(One phase power distribution shown as an example)

## Splicer Blocks (175 - 800A)

- Quick mounting and wiring
- IP20 Finger Safe
- DIN Rail or Panel Mount
- No caps to open or remove

**Material**
- Housing: Polyamide
- Metal Body: Aluminum



38059



38057



38064

## 1 & 3 Phase (80-310A) - 380XX Series

- Suitable for aluminum and copper conductors (solid / stranded)
- 600V AC/DC • 80A – 310A current ratings
- 6 – 11 outputs • DIN Rail or Panel Mount
- Speed of mounting and wiring • IP20 Finger Safe
- Blocks fit with other DIN Rail mountable modular devices (height 95mm, depth 44.5mm
- Accessories increase the number of outputs with only one input (applies only to 38041 and 38032)
- No caps to open or remove

**IP20 Finger Safe Quick mounting and wiring**

E98082

**Material**
- Housing: Polyamide
- Metal Body: Brass

**1 Phase**



38049



38041



38074/76



38032



38019/20

**3 Phase**



38073/75

**Altech's competitive advantages**
- Only fully enclosed distribution blocks offered, IP20 touch safe without additional parts required
- Sleek looking UL 1953 listed series; proven in renewal energy sector applications
- Industry unique brass contact carrier in some models

Altech®
Power Distribution Blocks
AT A GLANCE
Order Catalog
PN- WEB ONLY

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# UL 1953 Power Distribution Blocks (85-380A)*

- Selectable phase identification
- Colored phase (L, N, Ground) marking plates
- DIN Rail or Panel Mount
- Built-in IP20 slide cover for input side
- Connection clip included with each PDB for multi-pole applications
- Suitable for aluminum and copper conductors



38680



38682



38684



38686/88

* More amperage and output configurations are in development.

**Technical Data**

- UL listed to standard 1953
- 1000 V AC / DC
- PDB Block Material Tin plated Aluminum
- Copper or Aluminum Conductors
- Light grey / Dark grey housing

**COMPETITORS**

| Manufacturer | Series |
|---|---|
| Eaton/Bussmann | PDBFS |
| Lovato | ACB |
| Marathon | EPDB |
| Mersen | FSPDB |
| nVent | Eriflex |
| Square D | 9080 |
| TE ENTRELEC | DBL |

# Compact Hybrid Distribution

- Hybrid distribution terminal block
- Screw input (115A)
- 4 spring clamp outputs (4 x41A)
- Modular system
- Standard slot & hex screw versions
- Expandable with standard CX Series jumpers and terminal blocks
- Easy installation

**APPLICATIONS**

- Miniature Circuit Breaker (MCB) distribution
- Limited space distribution

Hybrid Terminal Block



CXDB35

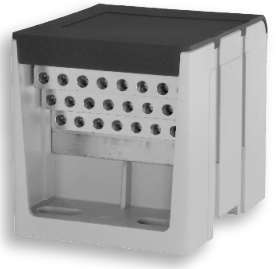


Miniature Circuit Breaker Distribution Example

# Power Distribution Block for Solar Systems

- 38690 is a perfect solution for solar combiner box applications
- Approved to UL 1059, IEC 60947-7-1
- 1500 V AC/DC UL approval and a maximum current of 800 A for aluminum and copper conductors
- 24 Inputs
- Easy and quick mounting

E98082



38690

UL Approved 1500V AC/DC

**Technical Data**

- 1500V per UL 1059 Class E & CSA 22.2 No.158, Class C requirements
- 600V per UL 1059 Service & Industrial Class C requirements
- 600V per CSA 22.2 No.158 Service & Industrial Class requirements
- Short Circuit Current Rating (SCCR) of 10kA
- CU 9 - 90°C connector terminal rating
- Tested for 1500V AC/DC, rated to UL 1059

Standard Type: IEC 60309
Protection Rating: IP44 Version or IP67 Version
Amperage Ratings: 20 AMP or 30 AMP
Voltage Ratings: 120 to 600 V AC

Contacts: 3 Pole, 4 Pole & 5 Pole (including ground)
Housing Material: Polyamide 6
Contact Material: Brass or Nickel-Plated Brass
Temperature Rating: -13°F to 176°F (-25°C to 80°C)



## Color codes

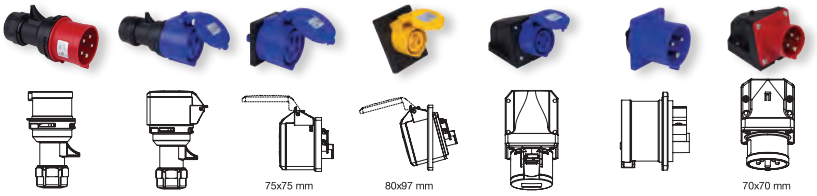
IEC 60309

For ease of identification of the various voltages and frequencies all CEE plugs and sockets are color coded.

| Rated operating voltage: | 20–25V | 40–50V | 100–130V | 200–250V | 380–480V | 500–1000V | >60–500Hz | no color code |
|---|---|---|---|---|---|---|---|---|
| Color: | violet | white | yellow | blue | red | black | green | grey |

## IP44 (Splashproof)

cULus
E232901 & E252008



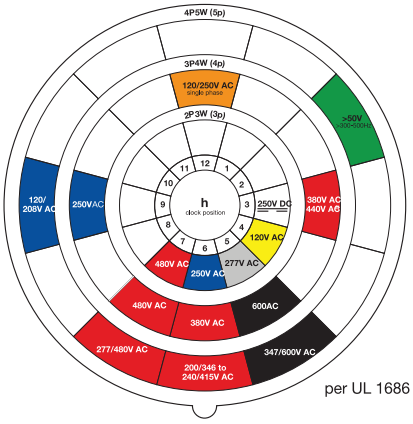

| | | | PLUGS | CONNECTORS | RECEPTACLES | RECEPTACLES | RECEPTACLES | INLETS | INLETS |
|---|---|---|---|---|---|---|---|---|---|
| | | | Male | Female | Female | Female | Female | Male | Male |
| Poles | Ground Pin | Voltage (colors) | cable mount | cable mount | flange straight | flange angled | wall mount | flange straight | wall mount |
| | | Manufacturer | PCE | PCE | PCE | PCE | PCE | PCE | PCE |
| 20A | | | | | | | | | |
| 2P3W (3p) | 4h | 120V AC | 0139-4 | 2139-4 | 3139-4ft7 | 4139-4f8 | 11391-4 | 6139-4 | 5139-4 |
| | 5h | 277V AC | 0139-5 | 2139-5 | 3139-5ft7 | 4139-5f8 | 11391-5 | 6139-5 | 5139-5 |
| | 6h | 250V AC | 0139-6 | 2139-6 | 3139-6ft7 | 4139-6f8 | 11391-6 | 6139-6 | 5139-6 |
| | 7h | 480V AC | 0139-7 | 2139-7 | 3139-7ft7 | 4139-7f8 | 11391-7 | 6139-7 | 5139-7 |
| 3P4W (4p) | 3h | 380,440V AC | 0149-3 | 2149-3 | 3149-3ft7 | 4149-3f8 | 11491-3 | 6149-3 | 5149-3 |
| | 5h | 600V AC | 0149-5 | 2149-5 | 3149-5ft7 | 4149-5f8 | 11491-5 | 6149-5 | 5149-5 |
| | 6h | 380V AC | 0149-6 | 2149-6 | 3149-6ft7 | 4149-6f8 | 11491-6 | 6149-6 | 5149-6 |
| | 7h | 480V AC | 0149-7 | 2149-7 | 3149-7ft7 | 4149-7f8 | 11491-7 | 6149-7 | 5149-7 |
| | 9h | 250V AC | 0149-9 | 2149-9 | 3149-9ft7 | 4149-9f8 | 11491-9 | 6149-9 | 5149-9 |
| | 12h | 120/250V AC single phase | 0149-12 | 2149-12 | 3149-12ft7 | 4149-12f8 | 11491-12 | 6149-12 | 5149-12 |
| 4P5W (5p) | 5h | 347/600V AC | 0159-5 | 2159-5 | 3159-5ft7 | 4159-5f8 | 11591-5 | 6159-5 | 5159-5 |
| | 6h | 200/346 to 240/415V AC | 0159-6 | 2159-6 | 3159-6ft7 | 4159-6f8 | 11591-6 | 6159-6 | 5159-6 |
| | 7h | 277/480V AC | 0159-7 | 2159-7 | 3159-7ft7 | 4159-7f8 | 11591-7 | 6159-7 | 5159-7 |
| | 9h | 120/208V AC | 0159-9 | 2159-9 | 3159-9ft7 | 4159-9f8 | 11591-9 | 6159-9 | 5159-9 |
| 30A | | | | | | | | | |
| 2P3W (3p) | 4h | 120V AC | 0239-4 | 2239-4 | 3239-4ft7 | 4239-4f8 | 12391-4 | 6239-4 | 5239-4 |
| | 5h | 277V AC | 0239-5 | 2239-5 | 3239-5ft7 | 4239-5f8 | 12391-5 | 6239-5 | 5239-5 |
| | 6h | 250V AC | 0239-6 | 2239-6 | 3239-6ft7 | 4239-6f8 | 12391-6 | 6239-6 | 5239-6 |
| | 7h | 480V AC | 0239-7 | 2239-7 | 3239-7ft7 | 4239-7f8 | 12391-7 | 6239-7 | 5239-7 |
| 3P4W (4p) | 3h | 380,440V AC | 0249-3 | 2249-3 | 3249-3ft7 | 4249-3f8 | 12491-3 | 6249-3 | 5249-3 |
| | 5h | 600V AC | 0249-5 | 2249-5 | 3249-5ft7 | 4249-5f8 | 12491-5 | 6249-5 | 5249-5 |
| | 6h | 380V AC | 0249-6 | 2249-6 | 3249-6ft7 | 4249-6f8 | 12491-6 | 6249-6 | 5249-6 |
| | 7h | 480V AC | 0249-7 | 2249-7 | 3249-7ft7 | 4249-7f8 | 12491-7 | 6249-7 | 5249-7 |
| | 9h | 250V AC | 0249-9 | 2249-9 | 3249-9ft7 | 4249-9f8 | 12491-9 | 6249-9 | 5249-9 |
| | 12h | 120/250V AC single phase | 0249-12 | 2249-12 | 3249-12ft7 | 4249-12f8 | 12491-12 | 6249-12 | 5249-12 |
| 4P5W (5p) | 5h | 347/600V AC | 0259-5 | 2259-5 | 3259-5ft7 | 4259-5f8 | 12591-5 | 6259-5 | 5259-5 |
| | 6h | 200/346 to 240/415V AC | 0259-6 | 2259-6 | 3259-6ft7 | 4259-6f8 | 12591-6 | 6259-6 | 5259-6 |
| | 7h | 277/480V AC | 0259-7 | 2259-7 | 3259-7ft7 | 4259-7f8 | 12591-7 | 6259-7 | 5259-7 |
| | 9h | 120/208V AC | 0259-9 | 2259-9 | 3259-9ft7 | 4259-9f8 | 12591-9 | 6259-9 | 5259-9 |




Earthing contact is visibly wider.
**Example:** Position of the earthing contact - viewed from front side of socket or connector

6h
400V 4P5W = 6h

## Clock positions
### North American Rating - Series II




per UL 1686

**COMPETITORS**

- Mennekes
- PCE
- Scame
- Hubbell
- Eaton
- ABB
- Leviton
- Lapp

# IP67 (Splashproof)

c UL us
E232901 & E252008




## 20A

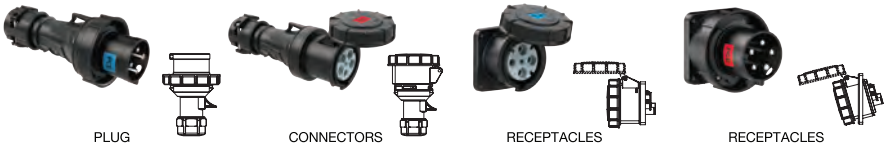
| Poles | Ground Pin | Voltage (colors) | Male cable mount | Female cable mount | Female flange straight | Female flange angled | Female wall mount | Male flange straight | Male wall mount |
|---|---|---|---|---|---|---|---|---|---|
| 2P3W (3p) | 4h | 120V AC | 01392-4 | 21392-4 | 31392-4 | 41392-4f8 | 11392-4 | 61392-4 | 51392-4k |
| | 5h | 277V AC | 01392-5 | 21392-5 | 31392-5 | 41392-5f8 | 11392-5 | 61392-5 | 51392-5k |
| | 6h | 250V AC | 01392-6 | 21392-6 | 31392-6 | 41392-6f8 | 11392-6 | 61392-6 | 51392-6k |
| | 7h | 480V AC | 01392-7 | 21392-7 | 31392-7 | 41392-7f8 | 11392-7 | 61392-7 | 51392-7k |
| 3P4W (4p) | 3h | 380,440V AC | 01492-3 | 21492-3 | 31492-3 | 41492-3f8 | 11492-3 | | |
| | 5h | 600V AC | 01492-5 | 21492-5 | 31492-5 | 41492-5f8 | 11492-5 | 61492-5 | 51492-5k |
| | 6h | 380V AC | 01492-6 | 21492-6 | 31492-6 | 41492-6f8 | 11492-6 | 61492-6 | 51492-6k |
| | 7h | 480V AC | 01492-7 | 21492-7 | 31492-7 | 41492-7f8 | 11492-7 | 61492-7 | 51492-7k |
| | 9h | 250V AC | 01492-9 | 21492-9 | 31492-9 | 41492-9f8 | 11492-9 | 61492-9 | 51492-9k |
| | 12h | 120/250V AC single phase | 01492-12 | 21492-12 | 31492-12 | 41492-12f8 | 11492-12 | 61492-12 | 51492-12k |
| 4P5W (5p) | 5h | 347/600V AC | 01592-5 | 21592-5 | 31592-5 | 41592-5f8 | 11592-5 | 61592-5 | 51592-5k |
| | 6h | 200/346 to 240/415V AC | 01592-6 | 21592-6 | 31592-6 | 41592-6f8 | 11592-6 | 61592-6 | 51592-6k |
| | 7h | 277/480V AC | 01592-7 | 21592-7 | 31592-7 | 41592-7f8 | 11592-7 | 61592-7 | 51592-7k |
| | 9h | 120/208V AC | 01592-9 | 21592-9 | 31592-9 | 41592-9f8 | 11592-9 | 61592-9 | 51592-9k |

## 30A

| Poles | Ground Pin | Voltage (colors) | Male cable mount | Female cable mount | Female flange straight | Female flange angled | Female wall mount | Male flange straight | Male wall mount |
|---|---|---|---|---|---|---|---|---|---|
| 2P3W (3p) | 4h | 120V AC | 02392-4 | 22392-4 | 32392-4 | 42392-4f8 | 12392-4 | 62392-4 | 52392-4k |
| | 5h | 277V AC | 02392-5 | 22392-5 | 32392-5 | 42392-5f8 | 12392-5 | 62392-5 | 52392-5k |
| | 6h | 250V AC | 02392-6 | 22392-6 | 32392-6 | 42392-6f8 | 12392-6 | 62392-6 | 52392-6k |
| | 7h | 480V AC | 02392-7 | 22392-7 | 32392-7 | 42392-7f8 | 12392-7 | 62392-7 | 52392-7k |
| 3P4W (4p) | 3h | 380,440V AC | 02492-3 | 22492-3 | 32492-3 | 42492-3f8 | 12492-3 | 62492-3 | 52492-3k |
| | 5h | 600V AC | 02492-5 | 22492-5 | 32492-5 | 42492-5f8 | 12492-5 | 62492-5 | 52492-5k |
| | 6h | 380V AC | 02492-6 | 22492-6 | 32492-6 | 42492-6f8 | 12492-6 | 62492-6 | 52492-6k |
| | 7h | 480V AC | 02492-7 | 22492-7 | 32492-7 | 42492-7f8 | 12492-7 | 62492-7 | 52492-7k |
| | 9h | 250V AC | 02492-9 | 22492-9 | 32492-9 | 42492-9f8 | 12492-9 | 62492-9 | 52492-9k |
| | 12h | 120/250V AC single phase | 02492-12 | 22492-12 | 32492-12 | 42492-12f8 | 12492-12 | 6249242 | 5249242k |
| 4P5W (5p) | 5h | 347/600V AC | 02592-5 | 22592-5 | 32592-5 | 42592-5f8 | 12592-5 | 62592-5 | 52592-5k |
| | 6h | 200/346 to 240/415V AC | 02592-6 | 22592-6 | 32592-6 | 42592-6f8 | 12592-6 | 62592-6 | 52592-6k |
| | 7h | 277/480V AC | 02592-7 | 22592-7 | 32592-7 | 42592-7f8 | 12592-7 | 62592-7 | 52592-7k |
| | 9h | 120/208V AC | 02592-9 | 22592-9 | 32592-9 | 42592-9f8 | 12592-9 | 62592-9 | 52592-9k |

# IP67/IP69 (watertight) IEC 60309

c UL us
E232901 & E252008




## 60A

| Poles | Ground Pin | Voltage (colors) | Male cable mount | Female cable mount | Female flange straight | Female flange angled |
|---|---|---|---|---|---|---|
| 2P3W (3p) | 4h | 120V AC | 0339-4 | 2339-4 | 3339-4 | 6339-4 |
| | 5h | 277V AC | 0339-5 | 2339-5 | 3339-5 | 6339-5 |
| | 6h | 250V AC | 0339-6 | 2339-6 | 3339-6 | 6339-6 |
| | 7h | 480V AC | 0339-7 | 2339-7 | 3339-7 | 6339-7 |
| 3P4W (4p) | 3h | 380,440V AC | 0349-3 | 2349-3 | 3349-3 | 6349-3 |
| | 5h | 600V AC | 0349-5 | 2349-5 | 3349-5 | 6349-5 |
| | 6h | 380V AC | 0349-6 | 2349-6 | 3349-6 | 6349-6 |
| | 7h | 480V AC | 0349-7 | 2349-7 | 3349-7 | 6349-7 |
| | 9h | 250V AC | 0349-9 | 2349-9 | 3349-9 | 6349-9 |
| | 12h | 120/250V AC single phase | 0349-12 | 2349-12 | 3349-12 | 6349-12 |
| 4P5W (5p) | 2h | >50V AC | 0359-2 | 2359-2 | 3359-2 | 6359-2 |
| | 5h | 347/600V AC | 0359-5 | 2359-5 | 3359-5 | 6359-5 |
| | 6h | 200/346 to 240/415V AC | 0359-6 | 2359-6 | 3359-6 | 6359-6 |
| | 7h | 277/480V AC | 0359-7 | 2359-7 | 3359-7 | 6359-7 |
| | 9h | 120/208V AC | 0359-9 | 2359-9 | 3359-9 | 6359-9 |

# Altech® DIN Rail Power Supplies AT A GLANCE

Order Catalog
PN- WEB ONLY

| Series | Cat. No. | Rated Current 5V | 12V | 15V | 24V | 48V | Universal Input | Switch Select Input | Parallel Option | UL 508 Listed | UL 60950-1 Rec. | UL 62368-1 Rec. | EN 60950-1 | EN 62368-1 | DC OK | Short Circuit | Overload | Over Voltage | Over Temperature | CB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PSC Slimline Version 2 SINGLE PHASE** NEW | **SLIMLINE (Replaces PS-Sxx slimline plastic housing)** | | | | | | | | | | | | | | | | | | | |
| | PSC-10xx | 2A | 1.0A | 0.67A | 0.42A | – | | | | | | | | | LED/C | | | | | |
| | PSC-20xx | 3A | 1.67A | 1.34A | 1 | – | | | | | | | | | LED/C | | | | | |
| | PSC-40xx | 7A | 3.33A | 2.5A | 1.7A | 0.83A | | | | | | | | | LED/RC | | | | | |
| | PSC-60xx | 10A | 5A | 4A | 2.5A | 1.25A | | | | | | | | | LED/RC | | | | | |
| | PSC-96xx | – | 7.5A | 6A | 4A | 2A | | | | | | | | | LED/RC | | | | | |
| **PS Low Profile SINGLE PHASE** NEW | **LOW PROFILE (Replaces PS-xx low profile plastic housing)** | | | | | | | | | | | | | | | | | | | |
| | PSD-15xx | 2A | 1.25A | 1A | 0.63A | 0.32A | | | | | | | | | LED | | | | | |
| | PSD-30xx | 3A | 2A | 2A | 1A | 0.6A | | | | | | | | | LED | | | | | |
| | PSD-60xx | 4.5A | 4.5A | 4A | 2.5A | 1.25A | | | | | | | | | LED | | | | | |
| | PSD-100xx | – | 7.1A | 6.13A | 3.8A | 2.1A | | | | | | | | | LED | | | | | |
| **PSC Ultra Compact SINGLE PHASE** NEW | **METAL HOUSING (Replaces PS-Cxx and PS-XX metal housing)** | | | | | | | | | | | | | | | | | | | |
| | PSC-75xx | – | 6.3A | – | 3.2A | 1.6A | | | | | | | | | LED/RC | | | | | |
| | PSC-120xx | – | 8.33A | – | 5A | 2.5A | | | | | | | | | LED/RC | | | | | |
| | PSC-U120xx | – | 10A | – | 5A | 2.5A | | | | | | | | | LED | | | | | |
| | PSC-240xx | – | – | – | 10A | 5A | | | | | | | | | LED/RC | | | | | |
| | PSC-480xx | – | – | – | 20A | 10A | | | | | | | | | LED/RC | | | | | |
| **SINGLE PHASE** | PSA-60 xx | – | – | – | 2A | – | | | | | | | | | | | | | | |
| | PSA-120xx | – | – | – | 5A | – | | | | | | | | | LED/RC | | | | | |
| | PSA-180xx | – | – | – | 7.5A | – | | | | | | | | | LED/RC | | | | | |
| | PSA-360xx | – | – | – | 14A | – | | | | | | | | | LED/RC | | | | | |
| | PSA-600xx | – | – | – | 25A | – | | | | | | | | | LED/RC | | | | | |
| **TWO (THREE) PHASE** | PSB-120xx | – | – | – | 5A | – | | | | | | | | | LED/RC | | | | | |
| | PSB-180xx | – | – | – | 7.5A | – | | | | | | | | | LED/RC | | | | | |
| | PSB-360xx | – | – | – | 14A | – | | | | | | | | | LED/RC | | | | | |
| | PSB-600xx | – | – | – | 25A | – | | | | | | | | | LED/RC | | | | | |
| **PS Compact WIDE VOLTAGE** | PSW-120xx | – | 10A | – | 5A | 2.5A | | | | | | | | | LED/RC | | | | | |
| | PSW-240xx | – | – | – | 10A | 5A | | | | | | | | | LED/RC | | | | | |
| | PSW-480Pxx | – | – | – | 20A | 10A | | | | | | | | | LED/RC | | | | | |

Three Phase Input | Special order item / not UL | Wide Range Input | Approved



Low Profile



Ultra-Compact



Slimline

# Altech® DIN Rail Power Supplies AT A GLANCE

Order Catalog
PN- WEB ONLY



## PSC Slimline

- Universal AC input (90-264V AC)
- Protections: Short Circuit / Overload / Overvoltage
- Installed on DIN rail TS35 / 7.5 or 15
- DC OK relay output
- All wiring 105°C long life electrolytic capacitors
- High operation temperature up to 70°C
- Withstands 2G vibration test
- High efficiency, long life and high reliabilty
- 3 year warranty
- NEC Class 2 compliant
- UL508 (Industrial control equipment) listed



## PS Low Profile

- High efficiency
- 100% Full Load Burn-In
- Low Ripple & Noise
- Adjustable DC Voltage Output
- Class II Isolation Level
- UL62368-1 and CAN / CSA C22.2
- Protections: Overload / Over Voltage / Short Circuit
- Three-year Warranty



## PSC Ultra Compact

- Universal AC input range (85~264V AC)
- Support 1+1 or N+1 redundant system (suggest to use redundancy modules.)
- Built-in active PFC,PF>0.95
- High efficiency up to 91%
- Built-in current sharing function
- Built-in current limiting circuit
- Output protections: OVP/OLP/SCP/OTP
- Wide operating ambient temp (-25°~70°)
- 150% peak load capacity
- Easy Fuse Tripping due to High Overload Current
- Excellent partial load efficiency
- Built-in DC OK relay contact
- Can be installed on 35 mm DIN rail
- 100% full load burn-in test
- PCB with conformal coating
- Suitable for critical applications
- Ultra-slim, 32mm width
- 3 year warranty



## Flex Power Single Phase

- Switch Select input 110V AC / 230V AC
- Support 1+1 or N+1 redundant system
- Support for parallel connection
- Built-in active PFC,PF>0.95
- High efficiency up to 91%
- Output protections: OVP/OLP/SCP/OTP
- Multiple overload settings (Hiccup, manual, continuous)
- Built-in current limiting circuit
- Wide operating ambient temp (-25°~70°)
- 150% peak load capacity up to 3 minutes
- Easy fuse tripping due to high overload current
- Excellent partial load efficiency
- Built-in DC OK relay contact
- Suitable for critical applications
- 3 year warranty



## Flex Power Two (Three) Phase

- Switch Select input 230V AC / 400V AC / 500V AC
- Support 1+1 or N+1 redundant system
- Built-in active PFC,PF>0.95
- High efficiency up to 91%
- Built-in current sharing function
- Built-in current limiting circuit
- Output protections: OVP/OLP/SCP/OTP
- Wide operating ambient temp (-25°~70°)
- 150% peak load capacity up to 3 minutes
- Easy Fuse Tripping due to High Overload Current
- Excellent partial load efficiency
- Built-in DC OK relay contact
- Suitable for critical applications
- Slim construction
- 3 year warranty



## PS Compact Wide Voltage

- Universal AC input / Full range
- Single phase or Three phase
- Built in active PFC function
- Protections:
  Short circuit /Overload/Overvoltage/Over temperature
- Cooling by free air convection
- DIN rail mountable
- UL 508 (industrial control equipment) approved
- LED indicator for power on
- 100% full load burn-in test
- 3 year warranty

## ADVANTAGES

- Design is based on semi-resonant switching power supply technology
- High efficiency up to 93% and dynamic output power
- Compact size and cost-effective, perfect choice for electronic loads, motor loads, PLCs, sensors, resistive, inductive and capacitive loads.
- One single unit covers most input voltage options.
- High reliability and durability: MTBF values up to 500.000 hours
- Conformal coated PCB
- 3 year warranty

## APPLICATIONS

- Industrial equipment
- Telecommunication
- Electronics and energy
- Aerospace / deffense
- Medical devices
- Research and development
- Security systems

## COMPETITORS

ABB
Delta
Eaton
Emerson
Omron
Phoenix Contact
Puls
Schneider Electric
Siemens

# Altech®

# 22 mm Push Buttons AT A GLANCE

Order Catalog PN- 255

## Control and Signaling devices Ø 22.5mm

This range of Ø 22.5mm push buttons, selector switches, illuminated switches, illuminated selector switches and pilot lights have been designed to provide the following features:

- Economy of space
- Self-wiping contacts
- Safe operation
- Simple to mount (screw driver is all that is required)
- Fixing method unaffected by excessive vibration-unit does not loosen
- Protection against electric shock (unit grounded)
- Aesthetically pleasing
- Heavy-duty construction
- Shrouded terminals
- Flame resistant materials
- Use of LEDs for long life and minimum maintenance
- 10A contact blocks sold separately

c SP us  c UL us E225660  CE  DVE

Certified for NEMA Type 4X 12 environment.

## 22mm Non-Illuminated Metal Operators

*mounting bracket included / contact blocks sold separately*

☐ (white) 1 ■ 2 ■ 3 ■ 4 ■ 6 ■ 8 *Add color number into part number* ❑

| | Flush Momentary | Booted Momentary | Projecting Momentary | Recessed Momentary |
|---|---|---|---|---|
| | 2AF❑ | 2AB❑ | 2AP❑ | 2AF❑RH |
| | **Mushroom Momentary** | **Mushroom Momentary** | **Mushroom Push-Pull** | **Mushroom Push-Pull** |
| | 40 mm head | 60 mm head | 40 mm head | 60 mm head |
| | 2AM❑ | 2AMJ❑ | 2AMPP❑ | 2AMPPJ❑ |
| | **Mushroom Push-Turn** | **Mushroom Push-Turn** | **Mushroom Push-Turn** | **Mushroom Key Release** |
| | 30 mm head | 40 mm head | 60 mm head | 40 mm head |
| | 2AMLS❑ | 2AML❑ | 2AMLJ❑ | 2AMLKB❑ |

## 22mm Twin Touch Metal Non-Illuminated Operators

*mounting bracket included / contact blocks is sold separately*

Twin Touch/ Not Marked  Twin Touch I-O Marked

| Color | Style | Not Marked Cat. No. | I.D. Marked Cat. No. |
|---|---|---|---|
| GREEN-RED | Flush | 2ATF3-F4 | 2ATF3-F4-I0 |
| YELLOW-BLACK | Flush | 2ATF8-F2 | 2ATF8-F2-I0 |
| BLACK-WHITE | Flush | 2ATF2-F1 | 2ATF2-F1-I0* |
| GREEN-RED | Green Flush, Red Projecting | 2ATF3-P4 | 2ATF3-P4-I0 |
| YELLOW-BLACK | Yellow Flush, Black Projecting | 2ATF8-P2 | 2ATF8-P2-I0 |
| WHITE-BLACK | White Flush, Black Projecting | 2ATF1-P2 | 2ATF1-P2-I0* |

Arrows marking available upon request. *Comply with vision impaired requirements.

## 22mm Twin Touch Metal LED Illuminated and Non-Illuminated Operators

*mounting bracket included / contact blocks sold separately*

Twin Touch/ Not Marked  Twin Touch I-O Marked

| Color | Voltage | Not Marked Cat. No. | I.D. Marked Cat. No. |
|---|---|---|---|
| GREEN-RED, Flush, Illuminated Center | | | |
| Green-Red | 12V AC/DC | 2ATL5LB F3F4-012 | 2ATL5LB F3F4-I0-012 |
| Green-Red | 24V AC/DC | 2ATL5LB F3F4-024 | 2ATL5LB F3F4-I0-024 |
| Green-Red | 48V AC/DC | 2ATL5LB F3F4-048 | 2ATL5LB F3F4-I0-048 |
| Green-Red | 110V AC** | 2ATL5LB F3F4-110 | 2ATL5LB F3F4-I0-110 |
| Green-Red | 230V AC** | 2ATL5LB F3F4-230 | 2ATL5LB F3F4-I0-230 |
| GREEN-RED, Green Flush/ Red Projecting, Illuminated center | | | |
| Green-Red | 12V AC/DC | 2ATL5LB F3P4-012 | 2ATL5LB F3P4-I0-012 |
| Green-Red | 24V AC/DC | 2ATL5LB F3P4-024 | 2ATL5LB F3P4-I0-024 |
| Green-Red | 48V AC/DC | 2ATL5LB F3P4-048 | 2ATL5LB F3P4-I0-048 |
| Green-Red | 110V AC** | 2ATL5LB F3P4-110 | 2ATL5LB F3P4-I0-110 |
| Green-Red | 230V AC** | 2ATL5LB F3P4-230 | 2ATL5LB F3P4-I0-230 |
| WHITE-BLACK*, Flush, Illuminated Center | | | |
| white-black | 12V AC/DC | – | 2ATL5LB F2F1-I0-012 |
| white-black | 24V AC/DC | – | 2ATL5LB F2F1-I0-024 |
| white-black | 48V AC/DC | – | 2ATL5LB F2F1-I0-048 |
| white-black | 110V AC** | – | 2ATL5LB F2F1-I0-110 |
| white-black | 230V AC** | – | 2ATL5LB F2F1-I0-230 |

## 22mm LED Illuminated Metal Operators

*with LED bulb, bulb holder and mounting bracket / contact blocks sold separately*

☐ (white) 1 ■ 3 ■ 4 ■ 5 ■ 6 ☐ (clear) 7 ■ 8

*Add color number into part number* ❑

| Voltage | Description | Mushroom Momentary Cat. No. | Mushroom Push-Pull Cat. No. |
|---|---|---|---|
| 12V AC/DC | 40mm Head, 12V AC/DC | 2ALM❑LB-012 | 2ALMPP❑LB-012 |
| 24V AC/DC | 40mm Head, 24V AC/DC | 2ALM❑LB-024 | 2ALMPP❑LB-024 |
| 48V AC/DC | 40mm Head, 48V AC/DC | 2ALM❑LB-048 | 2ALMPP❑LB-048 |
| 110V AC* | 40mm Head, 110V AC* | 2ALM❑LB-110 | 2ALMPP❑LB-110 |
| 230V AC* | 40mm Head, 230V AC* | 2ALM❑LB-230 | 2ALMPP❑LB-230 |

*110V DC and 230V DC version is available on request.

## 22mm Illuminated Metal Operators

*bulb, bulb holder and mounting bracket included / contact blocks sold separately*

☐ (white) 1 ■ 3 ■ 4 ■ 5 ■ 6 ☐ (clear) 7 ■ 8

*Add color number into part number* ❑

| Voltage | Flush Momentary Cat. No. | Projecting Momentary Cat. No. |
|---|---|---|
| 12V AC/DC | 2ALF❑LB-012 | 2ALP❑LB-012 |
| 24V AC/DC | 2ALF❑LB-024 | 2ALP❑LB-024 |
| 48V AC/DC | 2ALF❑LB-048 | 2ALP❑LB-048 |
| 110V AC | 2ALF❑LB-110 | 2ALP❑LB-110 |
| 110V DC | 2ALF❑LB-110D | 2ALP❑LB-110D |
| 230V AC | 2ALF❑LB-230 | 2ALP❑LB-230 |
| 230V DC | 2ALF❑LB-230D | 2ALP❑LB-230D |

## 22mm LED Metal Pilot Lights

*bulb, bulb holder and mounting bracket included / contact blocks sold separately*

☐ (white) 1 ■ 3 ■ 4 ■ 5 ■ 6 ☐ (clear) 7 ■ 8

*Add color number into part number* ❑

| Voltage | Cat. No. |
|---|---|
| 12V AC/DC | 2PLB❑LB-012 |
| 24V AC/DC | 2PLB❑LB-024 |
| 48V AC/DC | 2PLB❑LB-048 |
| 10V AC | 2PLB❑LB-11010 |
| 110V DC | 2PLB❑LB-110D |
| 230V AC | 2PLB❑LB-230 |
| 230V DC | 2PLB❑LB-230D |

## Economy Non-Illuminated Plastic Push Buttons Operators

*with LED bulb, bulb holder and mounting bracket*

☐ (white) 1 ■ 3 ■ 4 ■ 5 ■ 6 ☐ (clear) 7 ■ 8

*Add color number into part number* ❑

| Momentary | Cat No. |
|---|---|
| Flush, 1NO Contact | 3PSF❑10 |
| Flush, 1NC Contact | 3PSF❑01 |
| Flush, 1NO + 1NC Contact | 3PSF❑11 |
| Flush, 2NO Contact | 3PSF❑20 |
| Flush, 2NC Contact | 3PSF❑02 |
| **Maintained** | **Cat No.** |
| Flush, 1NO Push-Push | 3PSFPP❑10 |
| Flush, 1NC Push-Push | 3PSFPP❑01 |
| Flush, 1NO + 1NC Push-Push | 3PSFPP❑11 |
| Flush, 2NO Push-Push | 3PSPP❑20 |
| Flush, 2NC Push-Push | 3PSPP❑02 |

## Unibody LED Indicator Plastic Pilot Lights *with integral LED / contacts included*

| Voltage | Cat. No. |
|---|---|
| 12V AC/DC | 3PLBR❑-012 |
| 24V AC/DC | 3PLBR❑-024 |
| 48V AC/DC | 3PLBR❑-048 |
| 110V AC* | 3PLBR❑-110 |
| 230V AC* | 3PLBR❑-230 |

*Add color number into part number* ❑

Lens / LED: 1L, 1LS, 3L, 4L, 34L, 5L, 6L, 7L, 7LS, 8L

### 22mm LED Illuminated Metal Selector Switch Operators *with LED bulb, bulb holder and mounting bracket*

☐ (white) 1 ■ 3 ■ 4 ■ 5 ■ 6 ☐ (clear) 7 ■ 8

*Add color number into part number* ❑



| Function | Cat No. |
|---|---|
| 2 Position, Maintained | 2ASL❑LB-1-XXX |
| 2 Position, Spring Return | 2ASL❑LB-2-XXX |
| 3 Position, Maintained | 2ASL❑LB-3-XXX |
| 3 Position, Spring return from left and right | 2ASL❑LB-4-XXX |
| 3 Position, Spring return from right | 2ASL❑LB-5-XXX |
| 3 Position, Spring return from left | 2ASL❑LB-6-XXX |

XXX = Voltage Codes

| | | | |
|---|---|---|---|
| 012 | = 12V AC/DC | 110D | = 110V DC |
| 024 | = 24V AC/DC | 230 | = 230V AC |
| 048 | = 48V AC/DC | 230D | = 230V DC |
| 110 | = 110V AC | | |

### 22mm Non-Illuminated Metal Selector Switch Operators *with mounting bracket*





| | Function | Key Removal | Cat No. |
|---|---|---|---|
| | Maintained | Left/Right | 2AK2-01 |
| | Maintained | Left | 2AK2-02 |
| | Maintained | Right | 2AK2-03 |
| | Spring Return | Left | 2AK2-04 |
| | Maintained | Left/Right | 2AK2-05 |
| | Maintained | All | 2AK2-06 |
| | Maintained | Center | 2AK2-07 |
| | Spring Return | Center | 2AK2-08 |
| | Spring Return | Center | 2AK2-09 |
| | Spring Return | Center | 2AK2-10 |
| | Maintained | Left | 2AK2-11 |
| | Replacement Key | | 2KY455 |

| | Function | Cat No. |
|---|---|---|
| | Maintained | 2AS2-1 |
| | Spring Return | 2AS2-2 |
| | Maintained | 2AS2-3 |
| | Spring Return | 2AS2-4 |
| | Spring Return | 2AS2-5 |
| | Spring Return | 2AS2-6 |

| | Function | Cat No. |
|---|---|---|
| | Maintained | 2AS2E-1 |
| | Spring Return | 2AS2E-2 |
| | Maintained | 2AS2E-3 |
| | Spring Return | 2AS2E-4 |
| | Spring Return | 2AS2E-5 |
| | Spring Return | 2AS2E-6 |

**Legend Plates**




Metal legend plates are engraved on both sides, one side in horizontal and the other side in a vertical orientation.

**Please visit altechcorp.com/pb for other available legend plates**

### 22mm Push Button Accessories



Push Push mechanism for converting spring return actuator into maintained
Cat. No. 2PPM



Adapter for installing a Ø22.5 device in Ø 30.5 cutout
Cat. No. 2ADP (with washer)
ADW (washer only)



Mounting Bracket
Cat. No. 2BRK
Cat. No. 2BRKT (Thin Bracket for Base Mount Enclosures)



Bulb Extractor
Cat. No. 2BA9SE



Padlock
For mushroom actuator: Cat. No. 2PAM
For projecting actuator: Cat. No. 2PAP



E-Stop Shroud

Plastic protector:Cat. No. 2ESS1
Plastic protector (UL):Cat. No. 2ESS1-UL
*shown with pushbutton / not included*



Blanking plug for 22.5 mm holes
Color: Black
Cat. No. 2BP2
Blanking plug for M20 (20mm) or NPT 1/2" holes
Color: Gray
Cat. No. M20
Cat. No. NPT1/2



Replacement Keys
For all 22mm operators with keysCat. No. 2KY455



Transparent Silicone Rubber Boot for Flush Actuators
Color: Clear
Cat. No. 2BT7 (for non-illuminated)
2ALBT7 (for illuminated)



Rubber Boot for Twin Actuators
Color: Clear
Cat. No. 2ATBT7 (Non-Illuminated)
2ATLBT7 (illuminated)



Rubber Gasket
Cat. No. 2PRG1



Rubber Boot for Contact Elements
Cat. No. 2SEBT2



Bulb Holder for Illuminated Push Buttons
Cat. No. 2LHB



Plastic Cover
Cat. No. 2PAM7

### 22mm Push Button Switch Contacts
**Panel Mount Types**



| S1 | S2 | S3 | S4 |
|---|---|---|---|
| Normally Open Silver | Normally Closed Silver | Normally Open Gold Plated | Normally Closed Gold Plated |

**Clear Filament Bulbs**



Voltage XXX
Cat No. BA9SXXX

**LED Bulbs**



*Add color number into part number* ❑

☐ (white) 1 ■ 3 ■ 4 ■ 5 ■ 6 ☐ (clear) 7 ■

| Voltage | Cat No. |
|---|---|
| 12V AC/DC | MCB9❑XX |
| 24V AC/DC | MCB9❑XXX |
| 48V AC/DC | MCB9❑XXX |
| 110V AC | MCB9❑XXX |
| 110V DC | MCB9❑XXXD |
| 230V AC | MCB9❑XXX |
| 230V DC | MCB9❑XXXD |

XXX = Voltage Codes

| | | |
|---|---|---|
| 012 | = | 12V AC/DC |
| 024 | = | 24V AC/DC |
| 048 | = | 48V AC/DC |
| 110 | = | 110V AC |
| 230 | = | 230V AC |

### Pressure Die Cast Aluminum Enclosures for 22mm Operators

Black/Pebble Gray (RAL 7032) / 94 mm (3.70 in) Width / 4 x 6 mm mounting hole.
For base mount contact blocks and non-illuminated operators.

**52mm** - 2 contact blocks maximum per operator.



**Cable Entry Thread Size - 2xM20**

| Cat. No. | Capacity | Dimensions LxWxH |
|---|---|---|
| 2005A13 | 1 | 80x90x52 (3.15x3.54x2.05) |
| 2006C13 | 2 | 80x135x52 (3.15x5.32x2.05) |
| 2007E13 | 3 | 80x180x52 (3.15x7.09x2.05) |
| 2010G13 | 4 | 80x225x52 (3.15x8.86x2.05) |

**Cable Entry Thread Size - 2x1/2"-14 NPT**

| | | |
|---|---|---|
| 2015A13 | 1 | 80 x 90x52 (3.15x3.54x2.05) |
| 2014C13 | 2 | 80x135x52 (3.15x5.32x2.05) |
| 2012E13 | 3 | 80x180x52 (3.15x7.09x2.05) |
| 2008G13 | 4 | 80x225x52 (3.15x8.86x2.05) |



**72mm** - 2 contact blocks can be used with an illuminated operator.
4 contact blocks can be used with any non-illuminated operator.



**Cable Entry Thread Size - 2xM20**

| Cat. No. | Capacity | Dimensions LxWxH |
|---|---|---|
| 7009A13 | 1 | 80x90x72 (3.15x3.54x2.83) |
| 7006C13 | 2 | 80x135x72 (3.15x5.32x2.83) |
| 7004E13 | 3 | 80x180x72 (3.15x7.09x2.83) |
| 7004G13 | 4 | 80x225x72 (3.15x8.86x2.83) |

**Cable Entry Thread Size - 2x1/2"-14 NPT**

| | | |
|---|---|---|
| 7010A13 | 1 | 80x90x72 (3.15x3.54x2.83) |
| 7007C13 | 2 | 80x135x72 (3.15x5.32x2.83) |
| 7005E13 | 3 | 80x180x72 (3.15x7.09x2.83) |
| 7005G13 | 4 | 80x225x72 (3.15x8.86x2.83) |



### 22mm Thermoplastic Enclosures

2xM20 cable entry knockouts
(4) - 4.4x6.4 mounting hole size



❑ - 3 = White Top/Black Bottom
❑ - 4 = Yellow Top/Black Bottom

| Cat. No. | Capacity | Dimensions LxWxH |
|---|---|---|
| 400❑A11 | 1 | 73 X 73 X 52 |
| 400❑C11 | 2 | 113 X 73 X 52 |
| 400❑E11 | 3 | 153 X 73X 52 |
| 400❑G11 | 4 | 193 X 73 X 52 |
| 400❑S11 | 5 | 233 X 73 X 52 |
| 400❑I11 | 6 | 273 X 73 X 52 |

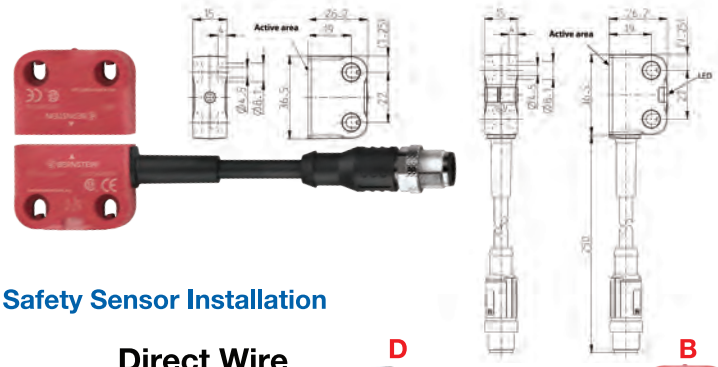
### Control Boxes

2xM20 cable entry knockouts
4) - 4.4x6.4 mounting hole size



| Cat. No. | Capacity | Dimensions LxWxH |
|---|---|---|
| 2PV2X | 2 | 188x75x67 |
| 2PV3X | 3 | 188x75x67 |
| 2PV4X | 4 | 221x75x67 |
| 2PV5X | 5 | 254x75x67 |
| 2PV6X | 6 | 287x75x67 |
| 2PV7X | 7 | 320x75x67 |
| 2PV8X | 8 | 353x75x67 |
| 2PV9X | 9 | 386x75x67 |

## Non-Contact RFID Safety Sensor



### ADVANTAGES

- 2 OSSD safety outputs
- M12 plug-in installation
- Up to 32 switches in series
- Cat 4. / PLe / SIL CL 3
- Protection Class - IP69
- Low, high or unique coding
- Fault tolerant outputs
- Optional features
  - Local reset
  - PNP or daisy chain IO link monitoring
  - Android smartphone diagnostics

### Single Safety Sensor Installation

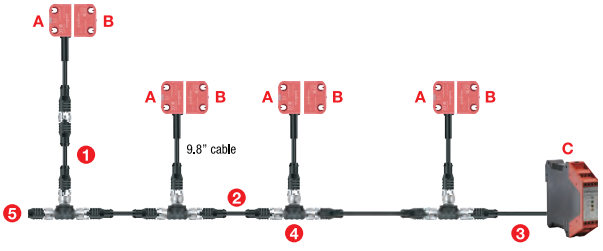



| | |
|---|---|
| A = Sensor with attached 6.5' cable | 607.5685.118 |
| B = Actuator (sold separately) | 607.5687.078 |
| D = Safety Relay | 607.5111.020 |




| | |
|---|---|
| A1 = Sensor with 10" cable to connector | 607.5685.121 |
| B = Actuator (sold separately) | 607.5687.078 |
| C = Connection Cable 6.5' | 607.5689.092 |
| C = Connection Cable 16.4' | 607.5689.093 |
| D = Safety Relay | 607.5111.020 |

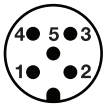
### Series Safety Sensor Installation




| | |
|---|---|
| A = Sensor with attached 6.5' cable | 607.5685.096 |
| B = Actuator (sold separately) | 607.5687.078 |
| 1 = Sensor extension cable 3.2' | 607.5689.085 |
| 2 = Main extension cable 6.4' | 607.5689.087 |
| 2 = Main extension cable 16.4' | 607.5689.088 |
| 3 = Connection cable 6.4' | 607.5689.091 |
| 4 = Main T connector | 607.5989.082 |
| 6 = Terminator Cap | 607.5689.084 |
| C = Safety Relay | 607.5111.020 |

## Connector Types

Single Connection
From Sensor to Controller



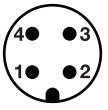

Color Code
1 Brown (24V+)
2 White (OSSD1)
3 Blue (0V)
4 Black (OSSD2)
5 Grey (PNP/OUT)

Series Connection
From Sensor to Series Line




Color Code
1 White
2 Brown
3 Green
4 Yellow
5 Grey
6 Pink
7 Blue
8 Red

Series Connection
Series Main Line




Color Code
1 Brown (24V+)
2 White (OSSD1)
3 Blue (0V)
4 Black (OSSD2)

### COMPETITORS

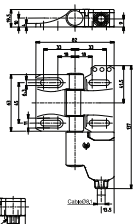
| | | | |
|---|---|---|---|
| Schmersal | Pilz | Telemechanique | Sick |
| Allen Bradley | Reer | Pizzato | ABB |
| Euchner | Automation Direct | Lueze | Balluff |
| Omron | Elobau | Idem | Siemens |

## Hinged Safety Switches with M12 Connector

Combines door hinge with a safety switch; no alignment or actuation key issues

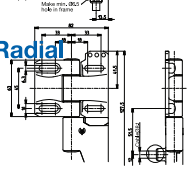


Axial





Radial



### ADVANTAGES

- NC/1NO Contacts
- Easy to Install
- Tamper Resistant
- No Actuator
- No Alignment Issues
- Suitable for Cat 4 / PLe
- Reliable Operation
- Limited Wear
- Switch Point Can Be Reset
- 3 Degree Fine Adjustment
- Also in Stainless Steel
- IP67 (IP69K Also Available)

| Connection | Door Side | Contacts | Part Number |
|---|---|---|---|
| Axial | Right | 2NC/1NO | 601.9490.054 |
| Axial | Left | 2NC/1NO | 601.9490.055 |
| Radial | Right | 2NC/1NO | 601.9490.056 |
| Radial | Left | 2NC/1NO | 601.9490.063 |
| Blank Hinge (without components) | | 601.9490.049 | |

| Connection Cables | |
|---|---|
| 2 Meter (6.6') Straight 6 Pole Connector | 325.1006.291 |
| 5 Meter (16.4') Straight 6 Pole Connector | 325.1006.292 |
| 10 Meter (32.8') Straight 6 Pole Connector | 325.1006.293 |

### COMPETITORS

| | |
|---|---|
| Schmersal | Euchner |
| Elesa | Leuze |
| Banner* | Pilz |

## Keyed Safety Switches

*Uses to detect the position of safety gates and guards.*

**SKI Keyed Safety Switch**
*Small Plastic Body*



Keys ordered separately

| Contacts | Part Number |
|---|---|
| 2NC | 601.6869.189 |
| 2NC/1NO | 601.6869.252 |

**SK Keyed Safety Switch**
*Industrial Format Plastic Body*



Keys ordered separately

| Contacts | Part Number |
|---|---|
| 2NC | 601.6169.182 |
| 2NC/1NO | 601.6169.183 |

### Advantages

- Rotating head position
- Variety of actuators keys
- Plastic versions
- Industrial standard mounting

### COMPETITORS

| | | |
|---|---|---|
| Schmersal | Telemecanique | Banner* |
| Euchner | STI | Allen Bradley |
| IDEC | Automation Direct | Omron |
| Pizzato | | |

## Keyed Safety Switches

*Uses to detect the position of safety gates and guards.*



| Solenoid Operation | Solenoid Voltage | Contacts Key Insertion | Contacts Solenoid Lock | Part Number |
|---|---|---|---|---|
| Normally Locked | 24V DC | 1NC/1NO | 1NC/1NO | 601.8119.045 |
| (energize | 24V DC | 2NC | 1NC/1NO | 601.8169.050 |
| solenoid to | 110/230V AC | 1NC/1NO | 1NC/1NO | 601.8119.046 |
| unlock) | 110/230 V AC | 2NC | 1NC/1NO | 601.8169.051 |
| Normally Unlocked | 24V DC | 1NC/1NO | 1NC/1NO | 601.8119.047 |
| (energize | 24V DC | 2NC | 1NC/1NO | 601.8169.052 |
| solenoid to | 110/230V AC | 1NC/1NO | 1NC/1NO | 601.8119.048 |
| lock) | 110/230 V AC | 2NC | 1NC/1NO | 601.8169.053 |

**Actuator keys sold separately.*

### Advantages

- Locks guarding gates and doors closed
- Rotating head position
- Prevent access while machine winds down
- Variety of actuators keys
- Normally locked & unlocked versions
- Metal & plastic versions
- Mounts easily on extruded rail systems
- Industrial standard mounting

### COMPETITORS

| | | |
|---|---|---|
| Euchner | Banner* | Idem |
| IDEC | Omron | Honeywell |
| Telemecanique | Siemens | Sick |

## Safety Rope Pull Switches

*Provides emergency stop access over a large area*



| Maximum Cable Length | Contacts | Slack Warning | Part Number |
|---|---|---|---|
| 124 Feet | 2NC/2NO | No | 601.2929.085 |
| 124 Feet | 3NC/1NO | No | 601.2999.094 |
| 124 Feet | 2NC/2NO | Yes | 601.2929.086 |
| 124 Feet | 3NC/1NO | Yes | 601.2999.095 |
| 246 Feet | 2NC/2NO | No | 601.2929.087 |
| 246 Feet | 3NC/1NO | No | 601.2999.096 |
| 246 Feet | 2NC/2NO | Yes | 601.2929.088 |
| 246 Feet | 3NC/1NO | Yes | 601.2999.097 |




### ADVANTAGES

- Rugged metal IP67 rated housing
- BG, cCSAus and CCC approval
- Rope tension display for fast set up & monitoring
- Covered tamper-proof switching & mechanics
- Integrated emergency stop/reset button
- Slack tension monitor warning output available
- Time saving Quick-Fix rope clamping head
- Flexible application for different cable lengths

### COMPETITORS

| | | |
|---|---|---|
| Schmersal | Euchner* | Banner* |
| Leuze | Omron | Pilz* |

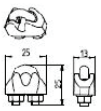
## Accessories

**Safety Cable (Sold per Meter)**



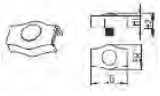
369.9100.025

**U - Clamp**



269.741.002

**Oval Clamp**



269.0000.005

**Stiffener**



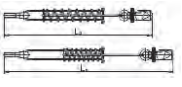
269.6899.014

**Turn-buckle**



269.1480.017

**Quick Fix Spring**



391.1042.153

**Swivel Pulley**



269.0000.023

# What is a Safety Relay?

A safety relay contains force guided contacts; they are also known as captive, locked or positive-guided contacts. Force guidance in a relay means that the contacts in a contact set must be mechanically linked together so that it is impossible for the NO (normally open) and NC (normally closed) contacts to be closed at the same time. The contacts are linked so that no one contact in a relay can change state without changing all the contacts in that relay. There must be a 0.5 mm minimum air gap between the open contacts for the entire service life of the relay, even in the case of a failure. The force guidance of the relay contacts must always be preserved even when a relay part fails to function correctly.

## Equipment Controls Systems

- Elevators and escalators
- Cranes
- Door and gate drive systems
- Printing and textile machinery
- Robots
- Stamping machines
- Medical equipment
- Cutting machines
- Rail transportation systems
- Signaling systems
- Press systems

## Typical Applications

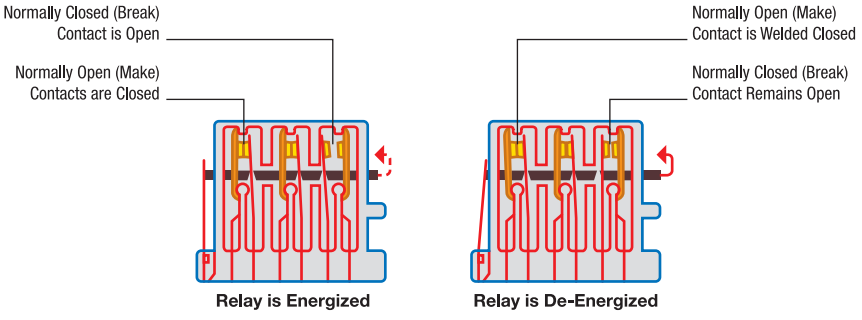
- Emergency stop modules
- DIN Rail safety modules
- Safety door controls
- Two-hand operating devices
- Pressure mat controls
- Light barriers and curtains
- Speed controls
- Monitoring devices

## FEATURES

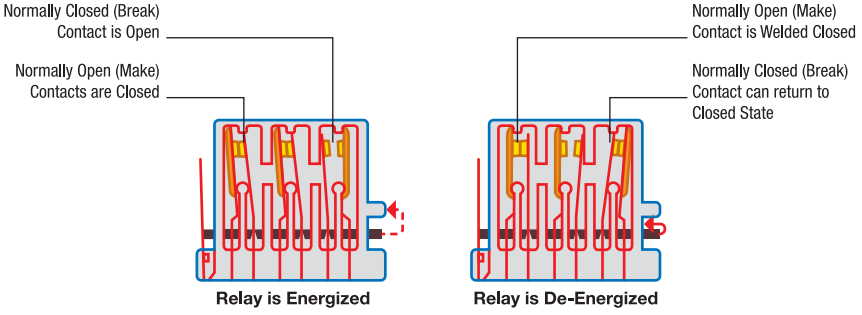
- 2-8 output contacts
- International approvals: TÜV, UL, cUL
- Quality control check for each safety relay
- Forced-guided contacts, all gold flash plated
- Contact Gap > 0.5 mm throughout life of relay
- DC Coils
- Various contact materials, mixed contact material optional
- High coil voltage range
- High switching voltage
- Solid connection between coil and contact housing
- Compact size
- Crown contacts
- Custom design available

## Comparison During Failure

### Forced-Guided Relay Contacts




### Standard Relay Contacts

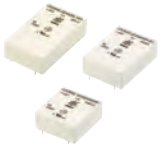


# DOLD Safety Relays
## AT A GLANCE

Order Catalog
PN - 280

| | Current Rating | | | Contacts | | | | | | Mounting | | | | Protection Type | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6A | 8A | 10A | DPST | DPDT | 3PST | 4SPT | 6SPT | 8SPT | Direct PC Board | PCB socket Available | DIN socket Available | Interface Module | RT II (flux-proof) | RT III (wash-tight) | Optional RT III |
| OA5642 | | • | | • | | | | | | • | | | | | • | |
| OA5643 | | • | | | | • | | | | • | | | | | • | |
| OA5644 | | • | | | | | • | | | • | | | | | • | |
| OA/OW5669 | | • | | • | • | | | | | • | • | • | • | • | • | |
| OA/OW5670 | • | | | | | | • | | | • | • | | | • | • | |
| OA5667 | • | | | • | • | | | | | • | | | | • | | |
| OA5621 | | • | | | | | • | | | • | • | | | | • | |
| OA5622 | | • | | | | | | • | | • | • | | | | • | |
| OA5623 | | • | | | | | | | • | • | | | | | • | |
| OA5611 | | • | | | | | • | | | • | • | | • | • | | • |
| OA5612 | | • | | | | | | • | | • | • | | • | • | | • |
| OA5601 | | | • | | | | • | | | • | • | | • | • | | • |
| OA5602 | | | • | | | | | • | | • | • | | • | • | | • |
| OA5603 | | | • | | | | | | • | • | • | | • | • | | • |

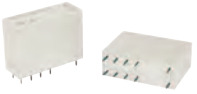
### OA 5642/43/44



### OA / OW 5669



### OA / OW 5670



### OA 5621 / OA 5621S



### OA 5622 / OA 5622S



### OA 5623 / OA 5623S



### OA 5667 / OA 5667S



### OA 5611



### OA 5612



### OA 5601



### OA 5602



### OA 5603



## Safety Relay Modules

- Screw-Cage Clamp Connection
- LED Coil Voltage Indicator
- Reverse DC Polarity LED Protection
- Surge Suppression With DC Coils
- Industry Standard Relays
- DIN Rail Mount, Panel Mount Available



## Applications

- Emergency stop modules
- Safety door controllers
- 2 hand safety devices
- Light curtains
- Elevator and escalators
- Mail sorting
- Robots
- Railway

## Advantages

- Highest quality
- Highest mechanical and electrical life
- Quality control check for each relay
- International approvals
- Large selection
- Custom designs

**COMPETITORS**

Elesta Omron
Hengstler Tyco


35 Royal Road • Flemington, NJ 08822-6000 • t 908-806-9400 • f 908-806-9490 • altechcorp.com



# How to Select a Cable Connector

### 1. Connector/Cable Types

- Field wireable connectors
- Overmold connector/ cable assembly with flying leads
- Dual connector cables
- Panel mount bulkhead connectors

### 2. Connector Type(s), Pin No. & Coding

M8, M12 size connectors with various codings (see below)

### 3. Cable Type

PVC, PUR, TPE, Ethernet CAT5, CAT6, etc...

### 4. Cable Length

1, 2, 5 and 10m standard cable length, others available on request

**COMPETITORS**

Balluf
Belden
Mencom
Murr Elektronik
Phoenix Contact
TE Connectivity
Turck

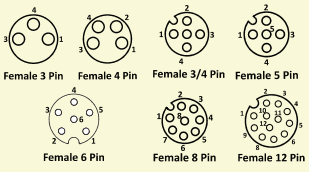
## Coding Types Explained

**A-Coding**

Widely used and most common type of connectors. Support AC/ DC connections. Available in M8 and M12 connectors in various pin configurations 3 - 12 pins.

Main applications are signal transmission for sensors, actuators and motors. Also Ethernet connections up to Cat 5e, CC-Link and CAN Open.

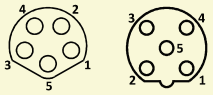
M8 M12




**B-Coding**

Available in M8 and M12 connectors with 5 pins.
Main applications are data transmission in network cables for fieldbus connections, e.g Profibus.

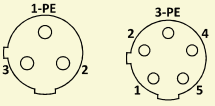
M8 M12




**C-Coding**

Less common and primarily used with AC sensors and actuators. M12 3 and 5 pin are available.

M12

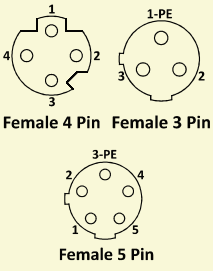



**D-Coding**

Available in M8/ M12 4 pin versions.

Mainly used in industrial Ethernet connections, e.g. Profinet and Ethernet/ IP. Speeds up to 100Mb/s.

M8 M12




**X-Coding**

M12 connector with 8 Pins

High Speed data transfer in industrial applications, e.g connecting High-Def cameras. Speeds up to 10 Gb/s in CAT 6/6a cables.

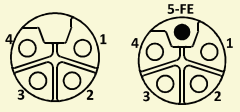


Female 8 Pin

**L-Coding**

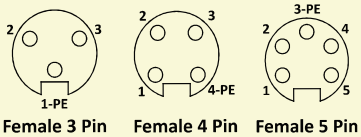
M12 with 4/ 5 pins

Used for power connections up to 16A/ 630V, e.g. DC motors & Drives, LED fixtures, I/O modules.




**7/8" Connectors**

Available in European and American color code.



# Overview and Ordering Information

## Molded Sensor & Actuator Cable Assemblies

- Female/ Male connectors to open cable
- Straight and angled connectors
- PVC and PUR cables
- M8 and M12 versions
- 2, 5, 10m standard length
- Custom length available



| CB | F | 12 | - | S | 4 | 4 | N | 0 | - | 02 | B | PVC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

**TYPE**
**CB** = Cable Assembly

**M/F**
**M** = Male
**F** = Female

**Size**
**08** = M8
**12** = M12

**Orientation**
**S** = Straight
**R** = Right Angled

**Pins**
**4**
**5**
**8**
**12**

**No. Wires**
**3**
**4**
**5**
**8**
**12**

**Shielded**
**S** = Shielded
**N** = Non Shielded

**LEDs**
**0**
**2**
**3**

**Cable Length**
**02** = 2m
**05** = 5m
**10** =10m
**–**

**Cable Color**
**B** = Black
**G** = Green
**U** = Blue
**O** = Orange
**T** = Teal
**Y** = Yellow

**Cable Type / Cross Section**
**PVC**
**PUR**
**TPE**
**P34** : PVC 22AWG
**P75** : PVC 18 AWG
**PTFE**

## Field-Wired Connectors

- Female/ male versions
- M8 and M12 versions
- Straight and angled connectors
- M8: 3, 4 pole
- M12: 4, 5, 8 pole
- Screw/ solder terminals
- A-Coding



| CN | F | 12 | – | S | 3 | S | P | 0 | – | B | P | 7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

**TYPE**
**CN** = Field-Wired Connector

**M/F**
**M** = Male
**F** = Female

**Size**
**08** = M08
**12** = M12

**Orientation**
**S** = Straight
**R** = Right Angled

**Pins**
**3**
**4**
**5**

**Connection**
**S** = Screw
**L** = Solder

**Housing Material**
**P** = Plastic (PA66)
**B** = Brass
**S** = Stainless Steel
**Z** = Zin Die Cast

**LEDs**
**0**
**2**
**3**

**Coupling Nut**
**B** = Brass
**P** = Plastic

**Cable Outlet MOC**
**P** = Plastic
**B** = Brass
**Z** = Zinc Casted
**S** = Stainless Steel

**Cable Outlet**
**7** = PG7
**9** = PG9

## Bulkhead/ Panel-Mount Connector

- Female/ male versions
- M8 and M12 versions
- Front/ rear mount connectors
- M8: 3, 4 pole
- M12: 4, 5, 8, 12 pole
- Custom cable length
- A-Coding



| ALBK | F | 12 | – | F | P | B | R | 5 | – | P | 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|

**TYPE**
**ALBK** = Bulkhead/ Panel-Mount Connector

**Male/Female**
**M** = Male
**F** = Female

**Type**
**08** = M8
**12** = M12

**Mounting**
**F** = Front
**R** = Rear

**Thread**
**P** = PG9
**M** = M16
**M20** = M20
**M8** = M8
**M10** = M10

**Nut Material**
**B** = Brass
**P** = Plastic
**S** = Stainless

**Housing Material**
**L** = Plastic
**R** = Brass
**S** = Stainless

**No. Pins**
**3**
**4**
**5**
**8**
**12**

**Termination**
**P** = Pre-Wired
**S** = Solder / Screw / PCB

**Cable / Wire Length**
**0** = No Wire/PCB
**L** = Solder
**1** = 100mm
**2** = 200mm
**3** = 300mm
**5** = 500mm

**APPLICATIONS**

- Machine Tools
- Wood Industry
- Food Industry
- Conveyor Belts
- Parts sorting
- Speed
- Metal detection

**COMPETITORS**

Automation
Allen Bradley
Balluf
Direct
Omron
Sick
Turck



# How to Select a Sensor

## Sensor Size

- Barrel size
- Size of the sensor: standard sizes are M8, M12, M18, M30. Larger barrel size in general have larger sensing distances.
- Sensor length

## Sensing Distance

- Standard sensing distances for mild steel targets. Other targets have correction factors.

See table below:

- Flat targets are preferred. Targets larger than sensing head usually mean increased sensing distance.

| | |
|---|---|
| **Nickel** | **0.90xSn** |
| **Stainless-Steel** | **0.85xSn** |
| **Brass** | **0.50xSn** |
| **Aluminum** | **0.45xSn** |
| **Copper** | **0.40xSn** |

## Mounting

- "Flush - The resulting electromagnetic field is directed in front of the sensor face. Flush sensors have a narrow sensing field which may be desirable in certain applications. "
- "Non-Flush - Non flush sensors have a larger sensing distance than flush sensors."

## Output Configuration

- "Outputs can be normally open (NO) or normally closed (NC). DC Sensors are 3-wire, which can be a NPN or PNP output transistor. If the output load is connected to the negative power source then a sensor with a PNP transistor is required. If the output load is connected to the positive power source, a sensor with a NPN transistor is required."
- AC sensors are 2-wire devices.

## Housing Material

A variety of housing materials are available for different environments. Brass and stainless steel are common.

## Operating Voltage

Most common output voltages are 24DC or 20-250V AC

# Ordering Information

| AI | S | 12 | F | 2 | AP | 24 | R | - | Q65 |
|---|---|---|---|---|---|---|---|---|---|

**TYPE**
**AI** =Inductive

**Body Length**
**S** = Standard
**K** = Standard

**Barrel Size**
**08** = M8
**12** = M12
**18** = M18
**30** = M30

**Mounting**
**F** = Front
**R** = Rear

**Sensing Distance**
**1.5** = 1.5mm
**2.0** = 2.0mm
**4.0** = 4.0mm

**Output**
**AN** = NPN NO
**AP** = PNP NO
**UN** = NPN NO/NC
**UP** = PNP NO/NC
**AD - DC 2-wire NO**
**RD - DC 2-wire NC**
**AW - AC NO**
**RW - AC NC**

**Voltage**
**24** = 24V DC
220 = 90-250V AC

**Housing Material**
**L** = Plastic
**R** = Brass
**S** = Stainless

**Connection**
**2M** = 2m cable
**Q65** = M12 connector

# Plug-in Series Safety with OSSD Outputs, IO-Link Compatible; PLC & NFC Diagnostics

## The SMART Safety System

offers plug in convenience allowing up to 32 switches to be run in series. The system features redundant cascading OSSD outputs which eliminates the possibility of fault masking (TR24119) and offers superior diagnostics and communication via IO-Link, NFC or PLC.




## Other Output Options



OSSD Safety Relay



PLC USB, NFC Diagnostics, IO-Link

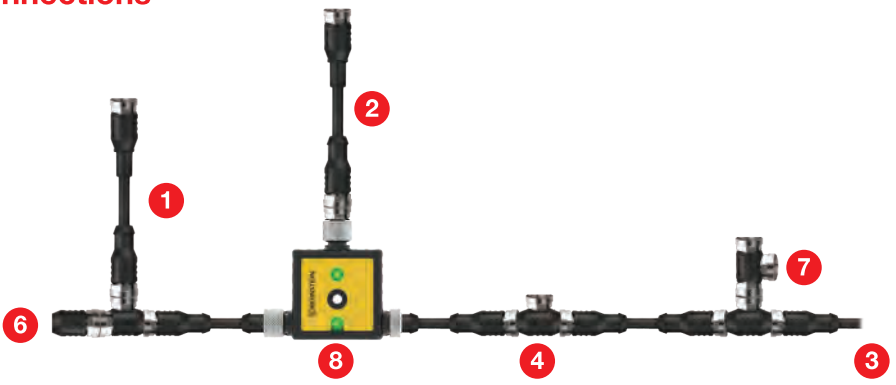



IO-Link with Profibus Bridge

### Features

- Plug and play installation
- M12 basic connectors
- Series installation to 32 switches
- Change/add without programing
- PLe - Cat.4 - Sil Cl 3 safety rating
- Three levels of switch coding
- Prevents "Fault Masking"
- OSSD safety outputs
- Fault tolerant outputs
- Daisy chain diagnostics
- I/O Link & NFC communications

## M12 Cables and Connections




| Position | Part Number | Description | Notes |
|---|---|---|---|
| 1 | 607.5689.085 | S1W-M12A8/8W/BW-1PU | Sensor Extension Cable Male to Female 8 Pin 1M (3.2') |
| 1 | 607.5689.086 | S1W-M12A8/8W/BW-2PU | Sensor Extension Cable Male to Female 8 Pin 2M (3.2') |
| 2 | 607.5689.087 | S1W-M12C4/AW-2PU | Series Line Extension Cable Male to Female 4 Pin 2M (3.2') |
| 2 | 607.5689.088 | S1W-M12C4/AW-5PU | Series Line Extension Cable Male to Female 4 Pin 5M (16.4') |
| 2 | 607.5689.089 | S1W-M12C4/AW-10PU | Series Line Extension Cable Male to Female 4 Pin 10M (16.4') |
| 3 | 607.5689.090 | SFW-M12C4/AW-0.5PU | Controller Connection Cable Female to Open 4 Pin .5M (1.6') |
| 3 | 607.5689.091 | SFW-M12C4/AW-2PU | Controller Connection Cable Female to Open 4 Pin 2M (3.2') |
| 4 | 607.5989.082 | ATS-M12/4-M12/8 | T Adapter at end of sensor |
| 6 | 607.5689.084 | AEP-M12/4 | End of String Terminator |
| - | 607.5689.127 | AT-CLIP-M12 | M12 Mounting Clip for T Adapter |
| 7 | 607.5989.083 | ATD-M12/8-M12/4 | T Adapter for I/O Link Connection, PNP or Reset |
| 8 | 607.5689.190 | SEU-1/0-T456 | Smart T Adapter |

## SRF Non-Contact Switches



**Basic PNP Diagnostics**
**Low Coding**
**Switch (9.8" cable)**
**Part Number - 607.5685.096**
**Description - SRF-4/1/1-E-L**

**Actuator**
**Part Number - 607.5687.078**
**Description - SRF-0**

**Basic PNP Diagnostics**
**Unique Coding**
**Switch (9.8" cable)**
**Part Number - 607.5685.094**
**Description - SRF-4/1/1-E-U**

**Actuator**
**Part Number - 607.5687.078**
**Description - SRF-0**

**Daisy Chain Diagnostics (DCD)**
**Low Coding**
**Switch (9.8" cable)**
**Part Number - 607.5685.102**
**Description - SRF-5/1/1-E-L**

**Actuator**
**Part Number - 607.5687.078**
**Description - SRF-0**

*Other coding/diagnostic options available*

## Safety Switches

### OSSD Connection Box

Converts Dry Contact Switches to OSSD
Plugs in Between Switch and Main Line



Smart "T"
Part Number - 607.5689.190
Description - SEU-1/0-T45-C



Transition Box
Part Number - 607.5689.137
Description - SEU-1/0-M64-C

### Keyed Safety Switch with M12 connector



Part Number – 699.6469.066A
Description – SKT-A2Z-M3-M12

### Keyed Safety Switch with M12 connector



Part Number – 699.6169.036A
Description – SK-A2Z-M-M12

## Solenoid Locking Switch
### with M12 connector



Power for the locking solenoid must be supplied from an external

Normally Locked (Power to Unlock)
Part Number - 699.8200.007A
Description - SLC-F-024-20/20-R4-M12

Normally Unlocked (Power to Lock
Part Number - 699.8200.017A
Description - SLC-M-024-20/20-R4-M12

## Hinged Safety Switch
### with field wire M12



Left Hinged
Part Number - 699.9490.051A
Description - SHS3-U15Z-KA5-L-M12

Right Hinged
Part Number-699.9490.050A
Description - SHS3-U15Z-KA5-R-M12

## Safety Limit Switch
### with M12 connector



Actuators Sold Separately

Safety Limit Switches
Part Number - 699.3000.274A
Description -IN65-A2Z-M20-M12

## Emergency Stop Button
with LED Status Light
Plugs directly into the sensor chain



SEU-2 SEU-3 SEU-4

SEU-2
Part Number - 607.5689.138
Description - SEU-2/0-P80-C

SEU-3
Part Number - 607.5689.177
Description - SEU-3/3/2-P81-C

SEU-4
Part Number - 607.5689.174
Description - SEU-3/3/2-P86-C

## OSSD Safety Relay
Simple safety, without diagnostics
Basic safety relay for monitoring two OSSD inputs, manual or auto restart with 3 N/C Output Contacts



Part Number - 607.5111.020
Description - SCR-ON4-W22-3.6-S

## Safety/Diagnostics Relay
Safety, diagnostics and I/O Link communication in one device



I/O Link, NFC and USB 2.0
Part Number - 607.5113.141
Description - SCR DI-1/01-T

I/O Link with 8 Digital Outputs
Part Number - 607.5113.140
Description - SCR DI-1/8/3-T

## Diagnostic Field Device
Plugs in the main line via T-connector
Converts Diagnostic to IO-Link which is accessed with 8 pole T connector
Direct access with NFC device




Part Number - 607.5689.126
Description – SRF DI-F-0/2-E0.25

## Diagnostics Module
With IO-Link, NCF and USB 2.0
One or Six Diagnostics Circuit



With One Diagnostic Circuit
Part Number - 607.5619.122
Description- SRF DI-C-0/1-T

With Six Diagnostics Circuits
Part Number-607.5619.125
Description-SRF DI6-C-0/1-T

## Diagnostics Module
With IO-Link, NCF and USB 2.0
One Diagnostics Circuit and 8 or 16 Digital Outputs



With 8 Digital Outputs
Part Number - 607.5619.123
Description- SRF DI-C-8/1-T

With 16 Digital Outputs
Part Number - 607.5619.124
Description-SRF DI-C-16/1-T

# Standard Safety Products

## Keyed Safety Switches

### Positive opening position switches for safeguarding machines and systems

Safety switches with separate actuator are positive-opening position switches. Typically used to control two redundant closed safety circuits, when the actuator is pulled out, the positive break contact will always open. These switches are assigned to type 2. Key sold separately.



**SKT Series**

- Slim design
- Short height for confined installation situations
- Rotatable actuating head
- Can be approached from five directions
- Large variety of actuator keys available
- Low coding according to EN ISO 14119



**SKI Series**

- Slim design
- Rotatable actuating head
- Can be approached from five directions
- Generous connection space
- Up to three contacts
- Large variety of actuator keys available
- Low coding according to EN ISO 14119



**SK Series**

- Cable entry from three sides
- Three directions of actuation
- Up to three contacts
- Optional increased pull-out force
- Large variety of actuator keys available
- Low coding according to EN ISO 14119

## Keyed Solenoid Locking Safety Switches

Machines that continue running after being switched off are often part of automated production processes. Safety guards prevent operator access and must therefore be kept closed until the hazards posed by machine movement have ceased. Safety position switches with interlock function ensure that safety gates, safety doors and other protective guards remain closed for as long as a hazardous situation exists.



**SKC Series**

- Lightweight yet robust: Hybrid of metal and plastic with 3 cable entry options
- Normally locked or unlocked functions
- Flexible contact assembly
- Contacts monitor key position and lock function
- Cost effective efficient circuit design
- Integrated manual release
- Five actuating positions
- Fail-safe guard locking system
- Optional emergency release
- Optional escape release
- Large variety of actuator keys available
- M12 connector as an option



**SLK Series**

- Lightweight plastic construction with 3 cable entry options
- Normally locked or unlocked functions
- Spring terminal connection
- Contacts monitor key position and lock function
- 24V AC/DC and 110-230V AC solenoid operating voltage
- Integrated manual release
- Five actuating positions
- Fail-safe guard locking system
- Horizontal or vertical 4x 90° key insertion
- Large variety of actuator keys available
- Optional emergency release

## Safety Switches for Hinged Applications

This switch mounts on the top of the machine and is connected to the door with a pin that goes through the actuator slot. The movement of the door changes the angle of the actuator, activating the switch. This switch mounts on the top of the machine and is attached to a rod that extends to the pin of the door hinge. When the door is opened the pin is rotated causing the switch to activate.



**IN62 - VKW/VKS**

- Standard switch conforming to DIN EN 50047
- Highest reliability at low currents (1 mA)
- Protection class IP67



**IN62 - AHDB**

- Standard switch conforming to DIN EN 50047
- Highest reliability at low currents (1 mA)
- Protection class IP67

## Hinges with Built-in Safety Switches

These switches replace the standard door hinge with an active hinge with built-in safety switch. Easy to install since the switch mechanism is safety integrated into the hinge without a separate actuator key, eliminating alignment and wear issues and providing a tamper proof installation. Saves labor since it eliminates the need to install a standard hinge. The available rear cable exits allow connection wire to be hidden.



**SHS3 Series**

- 2 positive opening safety contacts with one normally-open signaling contact
- Adjustable switch point with 270° range and 1.5° fine adjustment can be reset if needed
- Left & right side mounting with bottom or rear cable or connector exit; blank hinges available



**SHS Series**

- 1 NC or 1 change over contact
- Very rugged full metal zinc pressure die-cast construction
- Adjustable switch point with 0° to 225° range
- Bottom or rear cable or connector exits
- Up to 1000N radial and 750N axial load bearing
- IP67 with blank hinges available

# Rope Pull Switches

## Safety Rope Pull Switches

Special switches activate when safety rope is pulled, latching with emergency stop and/or reset function, quick safety rope attachment and tension monitoring provide a very safe installation.



### SRM Metal Body

- Rugged aluminum die-cast housing
- Rope tension status display allows fast and correct setting and inspection
- Integrated emergency stop and or reset button
- Suitable for outside use (-30°C to +80°C)
- Quick-Fix rope connection head
- 3 Cable entry port options
- Optional slack cable warning
- Large connection area



### SR Plastic Body

- Durable glass fiber reinforced housing (PA6 GV)
- Rope tension status display allows fast and correct setting and inspection
- Integrated emergency stop and or reset button
- -25°C to +75°C temperature range
- Quick-Fixrope connection head
- 3 Cable entry port options
- Large connection area

## Safety Rope Pull Switches

Rope pull switch for automation and safety application is available in momentary or latching, metal or plastic, straight or 90° degree versions.



### SRO Metal & Plastic Switch Body

- All metal or as combination with plastic
- IEC Compact design for confined spaces
- Suitable for safety or control applications
- Emergency/ reset stop button upon request
- Max. rope length of 30 m
- Up to 4 contacts



### Standard Rope Pull Switches

- With metal or plastic switch bodies
- For switching control and activation signals
- IEC standard body size
- Momentary or latching with reset
- Tension monitoring versions available
- 1NC/1NO contacts



### Larger Rope Pull Switches

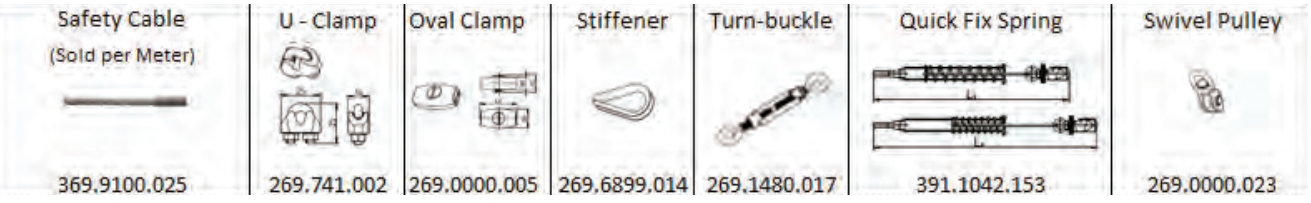
- With rugged metal switch bodies
- For switching control and activation signals
- Momentary or latching with reset
- 1NC/1NO contacts
- Up to 12M rope length



### Double Sided Rope Switches

- Mounts in the middle of the cable run
- Ideally suited for long cable runs
- Separate contacts activate in each direction
- Latching style with lanyard ring reset
- Remote reset possible using a pull cable

## Basic Accessories



# Altech® DIN Rail Terminal Blocks AT A GLANCE

Order Catalog PN- 310CY

## SCREW CLAMP CY Series

E220514 60947-7-1

### SCREW CLAMP CONNECTION

- Additional center marking area
- Space & time saving multi-function terminals
- Universal plug-in jumper system
- Proven connection system in millions of applications



### APPLICATIONS / INDUSTRIES

- **UL508 panel shops**
- **Power distribution**
- **Automation / control**
- **HV ACR**
- **Oil & gas**

### MANUFACTURES ALTECH CROSSES (PLUS OTHERS)

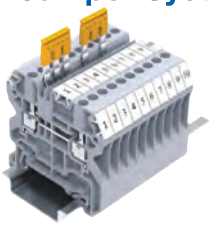
| | |
|---|---|
| Phoenix | UT-Series |
| Weidmüller | W-Series |
| Conta-Clip | SRK Series |
| Allen Bradley | 1492-J Series |
| Eaton | XB Series |
| Entrelec/TE | Z-Series |

### CY SERIES FEATURES AND SELLING POINTS

#### ▶ Universal Push-In Jumper System



Jumper channels for any jumper combination

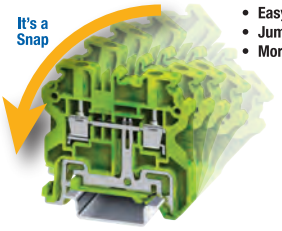


Alternate/ bridge jumpers by easy removal of pins

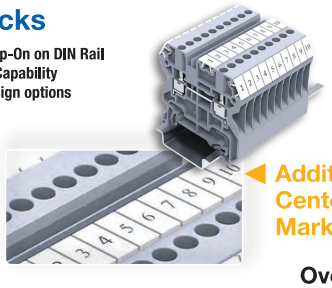


Multipole jumpers (2, 3, …, 16 Poles)

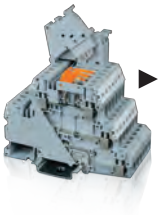
#### ▶ Snap-On Ground Blocks




- Easy Snap-On on DIN Rail
- Jumper Capability
- More design options



◀ Additional Center Marking Area

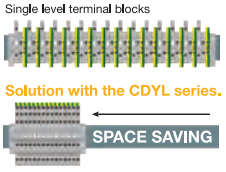


The Space & Time Saving
▶ CYDL Series
Multi-Function Terminal

**3 Levels:**

Top: Fuse, Disconnect or Feed Through
Middle: Feed-Through
Bottom: Grounding Terminal (optional)

Over **60%** More Space

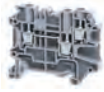



### Single Level Feed-Through Terminal Blocks



| Part No. | Wires | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CY2.5 | 2 | 20A | 24-12AWG | 600V | 5 |
| CY4 | 2 | 30A | 24-10AWG | 600V | 6 |
| CY6 | 2 | 50A | 24-8AWG | 600V | 8 |
| CY10 | 2 | 65A | 24-6AWG | 600V | 10 |
| CY16 | 2 | 85A | 16-4AWG | 600V | 12 |

### Multiple Connection Terminal Blocks



| Part No. | Wires | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CY4/3 | 3 | 30A | 24-10AWG | 600V | 6 |
| CY4/4 | 4 | 30A | 24-10AWG | 600V | 6 |

### Multi-Level Feed-Through Terminal Blocks



| Part No. | Wires | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CYDLF4FT | 2 | 30A | 24-10AWG | 300V | 6 |
| CYDLGF4FT | 3 | 30A | 24-10AWG | 300V | 6 |

### Double Level Terminal Blocks



| Part No. | Levels | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CYDL2.5 | 2 | 20A | 24-12AWG | 600V | 5mm |
| CYDL2.5(I.S) | 2, shorted | 20A | 24-12AWG | 600V | 5mm |
| CYDLG2.5 | 2, Bottom ground | 20A | 24-12AWG | 600V | 5mm |
| CYDLG2.5(I.S) | 2, Ground | - | 24-12AWG | 600V | 5mm |
| CYDL4 | 2 | 30A | 24-10AWG | 600V | 6mm |
| CYDL4(I.S) | 2, shorted | 30A | 24-10AWG | 600V | 6mm |
| CYDLG4 | 2, Bottom ground | 30A | 24-10AWG | 600V | 6mm |
| CYDLG4(I.S) | 2, Ground | - | 24-10AWG | 600V | 6mm |

### Ground / Earth Terminal Blocks



| Part No. | Wires | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CYG2.5 | 2 | - | 24-12AWG | 600V | 5mm |
| CYG4 | 2 | - | 24-10AWG | 600V | 6mm |
| CYG4/X | 3, 4 | - | 24-10AWG | 600V | 6mm |
| CYG6 | 2 | - | 24-8AWG | 600V | 8mm |
| CYG10 | 2 | - | 24-6AWG | 600V | 10mm |
| CYG16 | 2 | - | 16-4AWG | 600V | 12mm |

### Fuse Terminal Blocks (LED versions 6-60V & 110-240V available)



| Fuse Type | Current | Wire Size | Voltage | W (mm) | Part No. |
|---|---|---|---|---|---|
| CYF4 | 5x20mm | 10A | 24-10AWG | 600V | 6mm |
| CYDLF4 | 5x20mm, Feed-Thru | 10A | 24-10AWG | 600V | 6mm |
| CYDLGF4 | 5x20mm, Feed-Thru, Ground | 10A | 24-10AWG | 600V | 6mm |
| CYDLF4LR | 5x20mm, Feed-Thru | 10A | 24-10AWG | 600V | 6mm |
| CYTLF2.5 | 3-Level, Top Fuse | 10A | 24-12AWG | 600V | 6mm |
| CYTLGF2.5 | 3-Level, Top Fuse, Ground | 10A | 24-12AWG | 600V | 6mm |

### Disconnecting Terminal Blocks



| Part No. | Wires | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CYK2.5 | Knife | 16A | 24-12AWG | 300V | 6mm |
| CYK4 | Knife | 26A | 24-10AWG | 600V | 6mm |
| CYDLK4 | Knife, Feed-Through | 26A | 24-10AWG | 600V | 6mm |
| CYDLGK4 | Knife, Feed-Through | 26A | 24-10AWG | 600V | 6mm |


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# Altech® DIN Rail Terminal Blocks AT A GLANCE

Order Catalog PN- 310CP

## Push-In CP Series

### PUSH-IN CONNECTION

- No tool required for easy connection
- Direct connection of solid wires and flexible wires with ferrules
- 3.5mm wide terminal, thinnest in the industry
- Stainless steel push-in spring
- Easy pushbutton release with any tool
- VO Material



E220514 60947-7-1

### APPLICATIONS / INDUSTRIES

- UL508 Panels
- Panel Shops
- High Vibration
- Compact Wiring
- Automation/ Control
- Transportation

### MANUFACTURES ALTECH CROSSES (PLUS OTHERS)

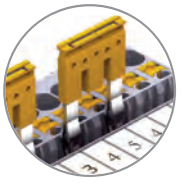
| | |
|---|---|
| Phoenix | PT Series |
| Entrelec / TE | ZU1P1-Spring Series |
| Weidmueller | A-Series |
| Allen-Bradley | 1492-L Series |
| Wago | 2000 Series |

### PUSH-IN ACCESSORIES AND FEATURES



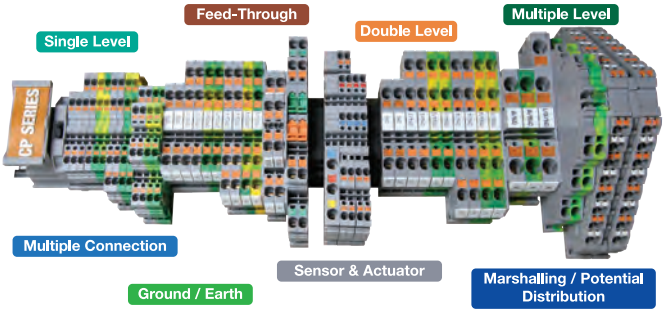
**LARGE MARKING AREA**
- Center and side marking area
- Good visibility for clear block identification

**UNIVERSAL JUMPER SYSTEM**
- Various standard pole configurations
- Easy pin breakout for skipping terminals
- 2 jumper channels
- Step-Down jumpers





**STANDARD TEST PLUGS**
- Test Plugs available for quick test & measurement




### Single Level Feed-Thru Terminal Blocks



| Part No. | Wires | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CP1.5 | 2 | 15A | 24-14 AWG | 600 | 3.5 |
| CP2.5 | 2 | 20A | 24-12 AWG | 600 | 5 |
| CP4 | 2 | 30A | 24-10 AWG | 600 | 6 |
| CP6/10 | 2 | 44A | 24-8 AWG | 600 | 8 |

### Multiple Connection Terminal Blocks

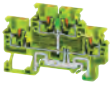




| Part No. | Wires | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CP1.5/3 | 3 | 15A | 24-14 AWG | 600V | 3.5 |
| CP1.5/4 | 4 | 15A | 24-14 AWG | 600V | 3.5 |
| CP2.5/3 | 3 | 20A | 24-12 AWG | 600V | 5 |
| CP2.5/4 | 4 | 20A | 24-12 AWG | 600V | 5 |
| CP2.4/3 | 3 | 30A | 24-10 AWG | 600V | 6 |
| CP2.4/4 | 4 | 30A | 24-10 AWG | 600V | 6 |
| CP6/10/3 | 3 | 44A | 24-8 AWG | 600V | 8 |

### Double Level Terminal Blocks





| Part No. | Levels | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CPDL1.5 | 2 | 15A | 24-14 AWG | 300V | 3.5 |
| CPDL1.5(I.S) | 2 | 15A | 24-14 AWG | 300V | 3.5 |
| CPDLG1.5 | 2 | 15A | 24-14 AWG | 300V | 3.5 |
| CPDLG1.5(I.S) | 2 | - | 24-14 AWG | 300V | 3.5 |
| CPDL2.5 | 2 | 20A | 24-12 AWG | 600V | 5 |
| CPDL2.5(I.S) | 2 | 20A | 24-12 AWG | 600V | 5 |
| CPDLG2.5 | 2 | 20A | 24-12 AWG | 600V | 5 |
| CPDLG2.5(I.S) | 2 | - | 24-12 AWG | 600V | 5 |

### Multiple Level Terminal Blocks





| Part No. | Levels | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CPTL2.5 | 3 | 20A | 24-12AWG | 300V | 5 |
| CPTL2.5(I.S) | 3, shorted | 20A | 24-12AWG | 300V | 5 |
| CPTLG2.5 | 3, Bottom Ground | 20A | 24-12AWG | 300V | 5 |
| CPTLG2.5(I.S) | 3, Ground | - | 24-12AWG | 300V | 5 |
| CP4LG2.5 | 4, bottom ground | 20A | 22-12AWG | 300V | 5 |

### Ground / Earth Terminal Blocks





| Part No. | Wires | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CPG1.5 | 2 | - | 24-14 AWG | 600V | 3.5 |
| CPG2.5 | 2 | - | 24-12 AWG | 600V | 5 |
| CPG4 | 2 | - | 24-10 AWG | 600V | 6 |
| CPG6/10 | 2 | - | 24-8 AWG | 600V | 8 |
| CPG1.5/X | 3, 4 | - | 24-14 AWG | 600V | 3.5 |
| CPG2.5/X | 3, 4 | - | 24-12 AWG | 600V | 5 |
| CPG4/X | 3, 4 | - | 24-10 AWG | 600V | 6 |
| CPG6/10/3 | 3 | - | 20-8 AWG | 600V | 8 |

### Sensor & Actuator Terminal Blocks



| Part No. | Wires | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CPST1.5/3 | 3, LED | 15A | 24-14 AWG | 150V | 3.5 |
| CPST1.5/4 | 4, LED | 15A | 24-14 AWG | 150V | 3.5 |
| CPSTG1.5/4 | 4, Ground, LED | 15A | 24-14 AWG | 150V | 3.5 |
| CPPT2.5/3 | 3 | 16A | 24-14 AWG | 300V | 7 |
| CPPTG2.5/4 | 4, Ground | 16A | 24-14 AWG | 300V | 7 |

### Disconnecting Terminal Blocks



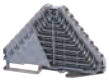
| Part No. | Disconnect Type | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CPK2.5 | Knife | 16A | 24-12AWG | 600V | 5 |
| CPK4 | Knife | 20A | 24-10AWG | 600V | 6 |
| CPK6 | Knife | 20A | 20-8AWG | 600V | 8 |
| CPDLK2.5 | 2 x knife | 14A | 24-12AWG | 300V | 5 |

### Fuse Terminal Blocks (LED versions 6-60V & 110-240V available)



| Part No. | Fuse Type | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CPF4 | 5x20mm | 10A | 24-10AWG | 600V | 6 |
| CPF6 | 1/4" x 1 1/4" | 16A | 20-8AWG | 600V | 8 |
| CPDLF2.5 | 5x20mm, feed through | 6.3A | 24-10AWG | 300V | 6 |
| CPAF6 | Auto Fuse | 30A | 20-8AWG | 600V | 8 |

### Marshalling / Potential Terminal Blocks



| Part No. | Wires | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CP8L32 | 8x4 | 10A | 24-14 AWG | 300V | 9 |
| CP8L32(I.S)H | 2x16 | 10A | 24-14 AWG | 300V | 9 |
| CP8L32(I.S) | 1x32 | 10A | 24-14 AWG | 300V | 9 |


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# SPRING CLAMP CX Series

E220514 60947-7-1

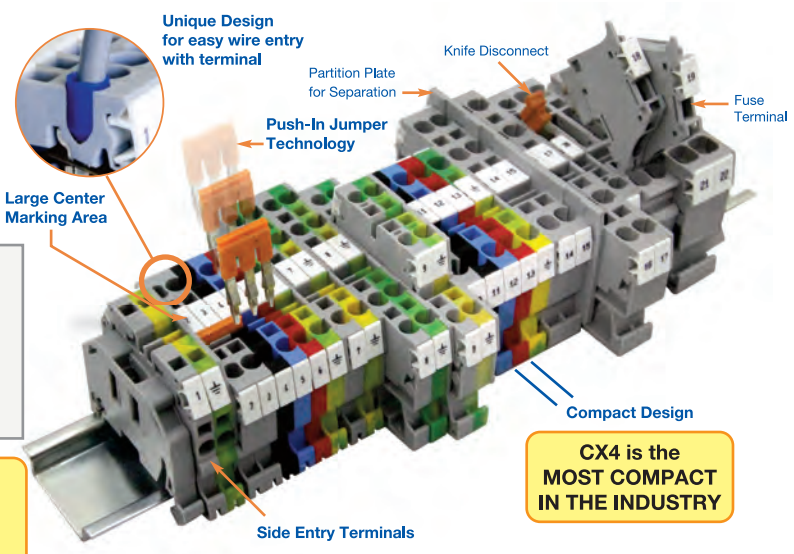
## SPRING (CAGE) TERMINAL BLOCKS



- Quick & easy installation
- Top wire entry
- Versatile and vibration proof
- Fail-proof, safe connection
- NO torque requirements
- Maintenance free - no need to re-tighten

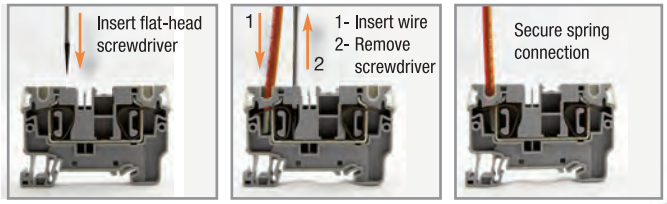
WATCH VIDEO

## CX SERIES FEATURES AND SELLING POINTS




CX4 is the MOST COMPACT IN THE INDUSTRY

## EASY TO INSTALL



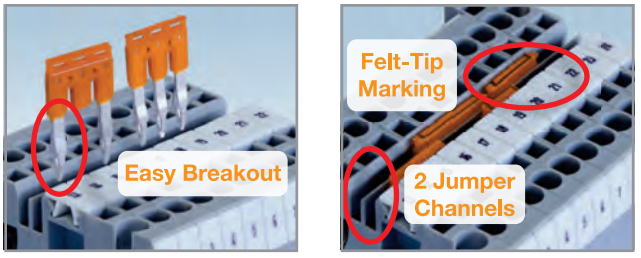

## APPLICATIONS / INDUSTRIES

- **Transportation**
- **Escalators / elevators**
- **Machinery**
- **Vehicles**
- **"Moving" high vibration applications**

## MANUFACTURES ALTECH CROSSES (PLUS OTHERS)

| | |
|---|---|
| **Phoenix** | ST Series |
| **Wago** | 2000 (Topjob Series) |
| | 280 Series |
| **ABB** | SNK Series |
| **Allen Bradley** | 1492-L Series |
| **Automation Direct** | DINnector Series |
| **Weidmüller** | Z Series |

## Push-In Jumper Technology




### Feed-Thru Terminal



| Part No. | Wires | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CX2.5 | 2 | 20A | 24-12AWG | 600V | 5 |
| CX4 | 2 | 30A | 24-10AWG | 600V | 6 |
| CX6 | 2 | 50A | 24-8AWG | 600V | 8 |
| CX10 | 2 | 65A | 24-6AWG | 600V | 10 |
| CX2.5/3 | 3 | 20A | 24-12AWG | 600V | 5 |
| CX2.5/4 | 4 | 20A | 24-12AWG | 600V | 5 |
| CX4/3 | 3 | 30A | 24-10AWG | 600V | 6 |
| CX4/4 | 4 | 30A | 24-10AWG | 600V | 6 |
| CX6/3 | 3 | 50A | 24-8AWG | 600V | 8 |
| CX10/3 | 3 | 65A | 24-6AWG | 600V | 10 |

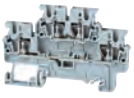


### Ground Terminals



| Part No. | Wires | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CXG2.5 | 2 | - | 24-12AWG | 600V | 5 |
| CXG4 | 2 | - | 24-10AWG | 600V | 6 |
| CXG6 | 2 | - | 24-8AWG | 600V | 8 |
| CXG10 | 2 | - | 24-6AWG | 600V | 10 |
| CXG2.5/3 | 3 | - | 24-12AWG | 600V | 5 |
| CXG2.5/4 | 4 | - | 24-12AWG | 600V | 5 |
| CXG4/3 | 3 | - | 24-10AWG | 600V | 6 |
| CXG4/4 | 4 | - | 24-10AWG | 600V | 6 |
| CXG6/3 | 3 | - | 24-8AWG | 600V | 8 |
| CXG10/3 | 3 | - | 24-6AWG | 600V | 10 |

### Double Level Terminals



| Part No. | Levels | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CXDL2.5 | 2 | 20A | 24-12AWG | 600V | 5 |
| CXDL2.5(I.S) | 2, Shorted | 20A | 24-12AWG | 600V | 5 |
| CXDLG2.5 | 2, Bottom Ground | 20A | 24-12AWG | 600V | 5 |
| CXDLG2.5(I.S) | 2, Ground | 20A | 24-12AWG | 600V | 5 |

### Fuse Terminals



| Part No. | Fuse Type | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CXF4 | 5x20mm | 10A | 24-10AWG | 600V | 6 |
| CXF4(L)6-60V | 5x20mm, LED | 10A | 24-10AWG | 600V | 6 |
| CXF4(L)110-240V | 5x20mm, LED | 10A | 24-10AWG | 600V | 6 |

### Disconnect Terminals



| Part No. | Wires | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CXK2.5 | 2 | 16A | 24-12AWG | 600V | 5 |
| CXK2.5/4 | 4 | 16A | 24-12AWG | 600V | 5 |
| CXK4 | 2 | 22A | 24-10AWG | 600V | 6 |

### Side Entry Terminals

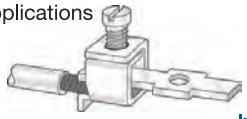


| Part No. | Wires | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CXS2.5 | 2 | 20A | 24-12AWG | 600V | 5 |
| CXS4 | 2 | 30A | 24-10AWG | 600V | 6 |

# SCREW CLAMP CT Series

E220514 60947-7-1

## SCREW CLAMP CONNECTION



- Proven connection system in millions of applications
- Connection stability & efficiency
- Large and easy entry space
- Supplied with open clamps
- Steel clamp accepts standard flat-head screwdriver
- Use with/ without ferrules
- Designed for most stringent requirements

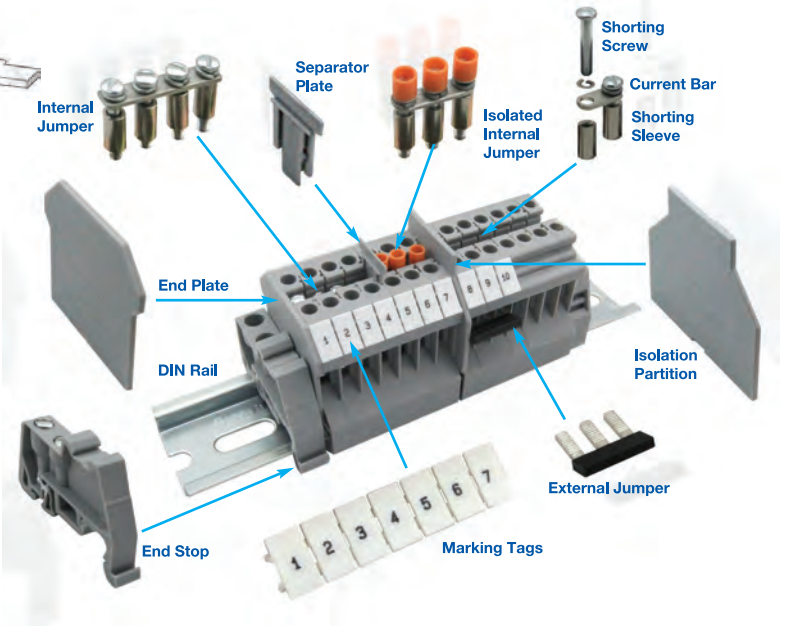
## APPLICATIONS / INDUSTRIES

- **UL508 panels**
- **Panel shops**
- **Power distribution**
- **High currents/ large wire sizes**
- **Automation/ control**
- **Grounding applications**

## MANUFACTURES ALTECH CROSSES (PLUS OTHERS)

| | |
|---|---|
| **Phoenix** | UT/ UK Series |
| **ABB/ Entrelec** | Screw Series |
| **Weidmueller** | W-Series |
| **Conta-Clip** | SRK Series |
| **Allen-Bradley** | 1492-J Series |
| **Eaton** | XB Series |

## SCREW CLAMP ACCESSORIES AND FEATURES




### Feed-Thru Terminals




| Part No. | Wires | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CTS2.5U-N | 2 | 25A | 22-12AWG | 600V | 5 |
| CTS4U-N | 2 | 35A | 22-10AWG | 600V | 6 |
| CMC1-2 | 3 | 35A | 22-10AWG | 600V | 6 |
| CMC2-2 | 4 | 35A | 22-10AWG | 600V | 6 |
| CTS6U | 2 | 50A | 22-8AWG | 600V | 8 |
| CTS10U | 2 | 65A | 16-6AWG | 600V | 10 |
| CTS16U | 2 | 85A | 20-4AWG | 600V | 12 |
| CTS25UN | 2 | 105A | 14-2AWG | 600V | 12 |
| CTS35UN | 2 | 150A | 12-1/0AWG | 600V | 16 |
| CTS50/70N | 2 | 175A | 8-2/0AWG | 1000V | 20.5 |
| CTS95/120N | 2 | 240A | 2-250KCMIL | 1000V | 27 |

### Multi Level Terminals




| Part No. | Wires | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CDL4UN | 2 | 35A | 22-10AWG | 600V | 6 |
| CDL4UN (I.S) | 2, Shorted | 35A | 22-10AWG | 600V | 6 |
| CDLG4 | 2, Bottom Ground | 32A | 24-10AWG | 150V | 6 |
| CDLG4(I.S) | 2, Ground | - | 24-10AWG | 150V | 6 |
| CDLG2.5 | 2 + Ground | 24A | 24-12AWG | 300V | 6 |
| ODL2.5 | 2, Offset | 25A | 24-10AWG | 600V | 5 |
| ODL4 | 2, Offset | 35A | 22-12AWG | 300V | 6 |
| CTL2.5U | 3 | 25A | 22-12AWG | 300V | 6 |
| CTLG2.5 | 3 + Ground | 24A | 24-12AWG | 300V | 6 |

### Ground Terminals



| Part No. | Wires | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CGT4U | 2 | - | 22-10AWG | 600V | 6 |
| CGT4N | 2 | - | 22-10AWG | 600V | 6 |
| CGT6N | 2 | - | 22-8AWG | 600V | 8 |
| CGT10U | 2 | - | 16-8AWG | 600V | 10 |
| CGT10N | 2 | - | 16-6AWG | 600V | 10 |
| CGT16N | 2 | - | 20-4AWG | 600V | 12 |
| CGT35U | 2 | - | 8-2AWG | 600V | 16 |

### Fuse Terminals



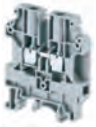
| Part No. | Fuse Type | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CF4U | 5x20mm | 10A | 22-10AWG | 600V | 6 |
| CF4(L)xxV | 5x20mm, LED | 10A | 22-10AWG | 600V | 6 |
| CF4SP | 5x20mm | 10A | 24-10AWG | 600V | 6 |
| CF4(L)xxV | 5x20mm, LED | 10A | 24-10AWG | 600V | 6 |
| DDFL4U | 5x20mm, 2 Level | 35A | 22-10AWG | 600V | 8 |
| DDFL4U(L)/xxV | 5x20mm, 2 Level | 35A | 22-10AWG | 600V | 8 |
| CAFL4U | 1/4 x 1 1/4 in | 16A | 22-10AWG | 600V | 6 |
| CAFL4U(L)/xxV | 1/4 x 1 1/4 in, LED | 16A | 22-10AWG | 600V | 6 |

### Disconnect & Test Terminals



| Part No. | Disconnect Type | Current | Wire Size | Voltage | W (mm) |
|---|---|---|---|---|---|
| CDS6U | Slider | 45A | 22-8AWG | 600V | 8 |
| CKT4U | Knife | 35A | 22-10AWG | 600V | 6 |
| CKT4SP | Knife | 30A | 24-10AWG | 600V | 6 |
| CDTTU | Slider | 41A | 16-8AWG | 600V | 8 |
| CSDL4U | Lever | 14A | 22-10AWG | 600V | 8 |

## SPECIAL APPLICATION TERMINAL BLOCKS



**High Voltage Terminals**
CHV Series
- 1000V UL rating
- CHV4U, CHV6U, CHV10U
- Solar applications



**Thermocouple Terminals**
- CTT2.5U Series
- K, J, T, E type
- Temperature measurement



**Power Distribution Terminals**
- CDB , CMDB Series
- CXDB35/10 Hybrid
- up to 24 IOs



**Spring Loaded Terminals**
- CTS4/6/10 USC
- Springs below clamps guarantees secure connection



**Electronic Component Terminals**
- Standard / custom versions
- Soldered in diodes & resistors
- MOV / lightning arrestors

# Altech® Timers & Smart Relays AT A GLANCE

Order Catalog PN- 120

CE cULus LISTED E351145 RoHS COMPLIANT



## Universal Multi-Timer

- Dials for settings/ configuration
- Universal supply 12-265V AC/ DC
- Timing range 0.1s - 100h
- Output contacts: 1 x C/O (Form C)
- 10 or 2 timing functions

**10 Timing Functions**
**AMT10-S1**

**2 Timing Functions**
**AMTAS-S1** (Asymmetric ON/ OFF - OFF/ ON)



## Digital Multi-Timer

- 3 Digit LCD display (configuration, timing info)
- Universal supply 24-265V AC/ DC
- Timing range 0.1s - 999h
- Output contacts: 1 x C/O (Form C), 2 x NO
- 8 or 18 timing function

**8 Timing Functions**
**AMT8-S1** (1 x C/O)
**AMT8-D2** (2 x NO)

**18 Timing Functions**
**AMT12-S1** (1 x C/O)
**AMT12-D2** (2 x NO)



## Programmable Digital Multi-Timer

- Panel/ DIN rail mount
- 7 Segment LED display
- Supply 110-240V AC/ DC
- Timing range 0.1s - 999 days
- 2 independent outputs (2 x C/O)
- 33 built-in timing functions
- Custom timing functions programmable

**33 Built-In Timing Functions**
**AMT33-S2** (Panel Mount)
**AMT33-S2-11** (DIN Rail Mount, 11 pin socket)



## Time Switch

- LC display (time & program info)
- Supply 12, 24V DC - 110-240V AC
- Real time clock (12/24h format)
- Output contacts: 1 x C/O (Form C)
- 25 individual timing programs
- Chrono version (ON/ OFF Time)
- Pulse version (ON time, 1-59s)

**Chrono**
**ATS-C12** (12V DC)
ATS-C24 (24V DC)
ATS-C120 (110-240V AC)

**Pulse**
**ATS-P12** (12V DC)
ATS-P24 (24V DC)
**ATS-P120** (110-240V AC)



## Smart Relay

- AC/ DC model
- Base unit (8 IN/ 4 OUT)
- Base unit (8 IN/ 4 OUT), up to 3 per base unit
- Backlit LC screen
- Optional modbus communication

**Base Unit**
**ASR-B24DC**
**ASR-B120AC**

**Expansion Unit**
**ASR-E24DC**
**ASR-E120AC**

**Starter Packs**
(Base unit, Software, Prog. Cable)
**ASR-B24DC-START**
**ASR-B120AC-START**

### Software Features

- Free download altechcorp.com/100-smart-relays
- Ladder programming, 250 lines
- Timers, counters, time switches, analog functions, text messages, auxiliary relays

**SEE REVERSE SIDE FOR SELECTION CHART ▶**



## Universal Multi-Timer

**AMT10-S1**
**AMTAS-S1**



## Universal Digital Multi-Timer

**AMT8-S1** **AMT12-S1**
**AMT8-D2** **AMT12-D2**



## Programmable Panel-Mount Digital Multi-Timer

**AMT3-S2**
**AMT33-S2-11**



## Digital Time Switch

**ATS-C120** **ATS-P120**
**ATS-C24** **ATS-P24**
**ATS-C12** **ATS-CP12**



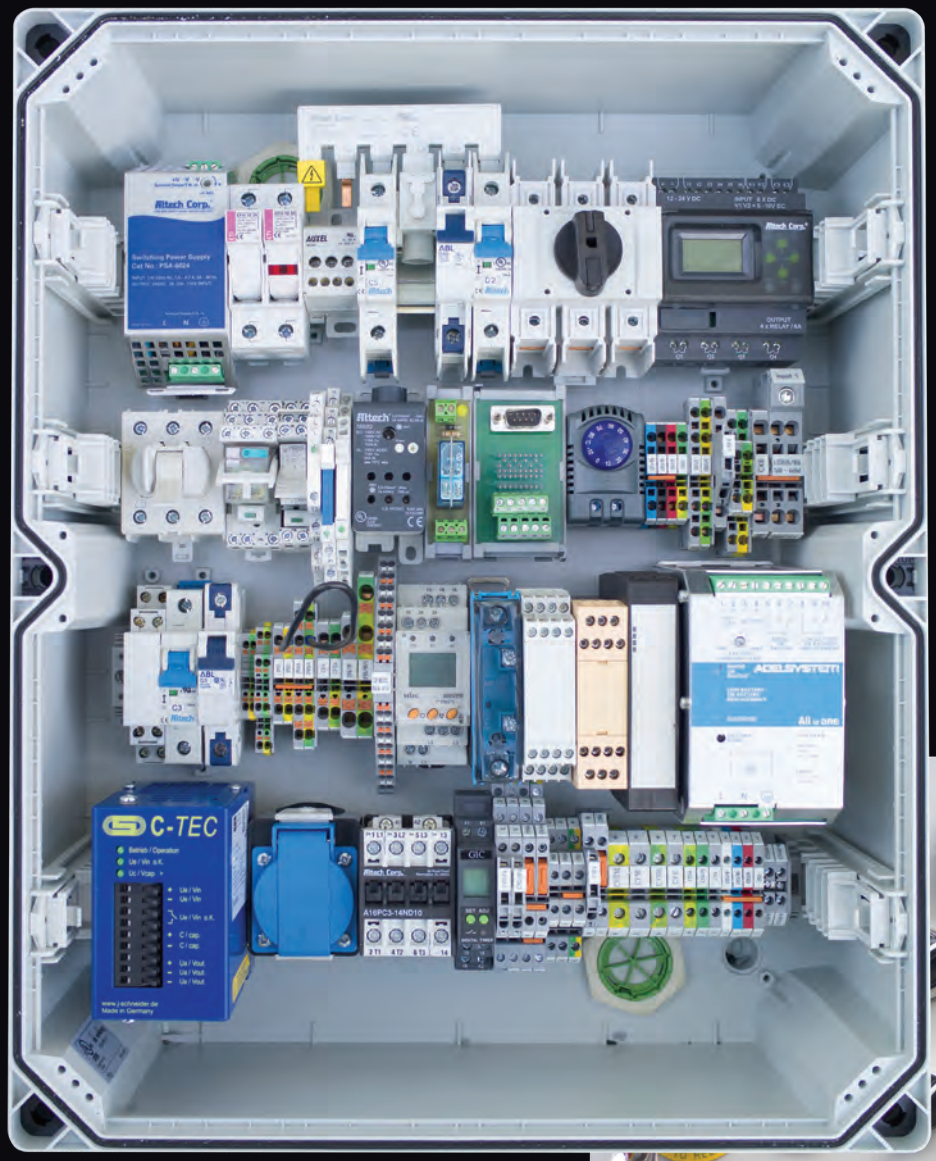
## Smart Relay

**ASR-B24DC**
**ASR-B24DC-START**
**ASR-B120AC**
**ASR-B120AC-START**

| | Mounting | | Voltage | | | | | | Functions | | | | | | Outputs | | | Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DIN-Rail | Panel Mount | AC | DC | 12V | 24V | 110V | 240V | 10 | 2 | 33 | 8 | 18 | Time Switch | 1 C/O | 2 C/O | NO | |
| AMT10-S1 | ● | | ● | ● | ● | ● | ● | ● | ● | | | | | | ● | | | 3 |
| AMTAS-S1 | ● | | ● | ● | ● | ● | ● | ● | | ● | | | | | ● | | | 3 |
| AMT8-D2 | ● | | ● | ● | | ● | ● | ● | | | | ● | | | ● | | | 4-5 |
| AMT8-S1 | ● | | ● | ● | | ● | ● | ● | | | | ● | | | ● | | | 4-5 |
| AMT12-D2 | ● | | ● | ● | | ● | ● | ● | | | | | ● | | | | 2 x | 4-5 |
| AMT12-S1 | ● | | ● | ● | | ● | ● | ● | | | | | ● | | | | 2 x | 4-5 |
| AMT33-S2 | | ● | ● | | | | ● | ● | | | ● | | | | | ● | | 6-7 |
| AMT33-S2-11 | | ● | ● | | | | ● | ● | | | ● | | | | | ● | | 6-7 |
| ATS-C120 | ● | | ● | | | | ● | ● | | | | | | ● | ● | | | 8 |
| ATS-P120 | ● | | ● | | | | ● | ● | | | | | | ● | ● | | | 6-7 |
| ATS-C24 | ● | | | ● | | ● | | | | | | | | ● | ● | | | 6-7 |
| ATS-P24 | ● | | | ● | | ● | | | | | | | | ● | ● | | | 6-7 |
| ATS-C12 | ● | | | ● | ● | | | | | | | | | ● | ● | | | 6-7 |
| ATS-P12 | ● | | | ● | ● | | | | | | | | | ● | ● | | | 6-7 |
| ASR-B24DC | ● | | | ● | ● | ● | | | Supports up to 48 I/O's, individual programming, Timer, Counters, etc… | | | | | | | | 4 x | 9-11 |
| ASR-B120AC | ● | | ● | | | | ● | ● | | | | | | | | | | 4 x |

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| Crouzet | Finder |
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