



40 years

Altech[®]

1984 - 2024

Automation & Control Components

PRODUCT OVERVIEW

Contents



Your Source for Automation & Control Components

New Products	3	Marking Systems	27
Circuit Breakers	4-5	Busbars.....	28
Disconnect Switches	6-7	UL 1077 Recognized Supplementary Protectors.....	28
Terminal Blocks	8-11	Sensors.....	29
Printed Circuit Board Terminal Blocks	12-13	Sensor & Actuator Cables and Connectors.....	29
Industrial Enclosures	14-16	Voltage Monitoring Relays	30
Cable Glands / Cord Grips	17	Safety Relays.....	30
DIN Rail Mount Electronic Enclosure.....	17	Interface Relay Modules	30
Push Buttons	18	Industrial Relays.....	31
Fuseholders.....	19	Slim Line Relays	31
European & Photovoltaic Fuses	19	Slimline Solid State Relay Modules.....	31
Power Supplies.....	20	Enclosed Relays Modules	31
DC-Backup.....	21	Miniature Solid State Relays (SSR)	31
Foot Switches	22	Digital Panel Meters.....	32
Pin & Sleeve Devices / Receptacles.....	22	Process Controllers	32
Safety Switches	23	Wire Duct.....	32
Power Distribution Blocks	24	Digital Timers.....	33
Motor Contactors, Overload Relays & Manual Motor Starters	25	Smart Relays	33
Custom Assemblies.....	25	Test & Measurement	34
Terminal Strips and Ceramic Blocks	26	Mechanical Thermostats.....	34
Ferrules.....	26	Tower Lights.....	35
DIN Rail.....	27	Signaling Devices.....	35
		LED Panel Lights.....	35

NEW in 2024

30A Disconnect Switch

KU330UL98

FEATURES

- 3 or 4 poles
- 30A / 600V AC
- Every design is lockable in OFF position
- Silver contacts ensure safe and durable operation
- Switching mechanism speed is independent from the operator



Slimline Power Supplies

PSC Series

FEATURES

- Ratings: 10, 20, 40, 60 & 96W
- Outputs: 5, 12, 15, 24, 48V DC
- Universal AC input (90-264V AC)
- Protections: Short Circuit / Overload / Overvoltage
- All wiring 105°C long life electrolytic capacitors
- DC OK relay output
- Withstands 2G vibration test



Voltage Monitoring Relays

AMR Series

FEATURES

- Undervoltage Monitoring 1 and 3-Phase
- Phase Sequence and Phase Failure
- Supply Voltage = Measuring Voltage
- Compact DIN Rail Design
- 1 NO/NC contact



Voltage Protection Relay

PRSV600-2

FEATURES

- Voltage Monitoring 3-Phase/ 3 Wire, 3-Phase/ 4 Wire
- True RMS Measurement
- Power ON Delay, Trip Delay, Recovery Delay
- 2 Independent Relays (Protection or Alarm)
- Compact DIN Rail Design



Electronic Circuit Breaker

MRF102

FEATURES

The MRF102 2-channel electronic circuit breaker with Din Rail mounting is designed for current distribution and protection of 12V or 24V load circuits. Set the rated output current for each channel for 1A...10A through the push button.



DC-UPS with Ethernet Interface

CB16012A / CB16024A

FEATURES

- Power Supply
- Backup Module
- Battery Charger
- Battery Tester
- Specific battery charging profiles
- Temperature compensation charge
- Deep discharge protection
- MODBUS



Circuit Breakers

SUPERIOR Family of Circuit Protection



Coming
in 2024

New Color &
Streamlined Design

AC & DC models and the **Most** trip curves in the industry.



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 terminal barriers reduce the possibility of breakage if accidentally dropped.
Easy to replace!

Dual Connection Terminals

- A** Box terminal for solid conductors or flexible conductors with or without cable lug.
- B** Screw terminal for forked cable lug.



An Industry Leader



UL 489 DLS9 Series Miniature Molded Case Circuit Breaker

- Available in AC and DC models
- 0.3-63A / 240V AC, 0.3-32A / 480Y/277V AC
- 0.3-63A / 125V DC (1 pole) / 125/250V DC (2 pole)
- Thermal Magnetic
- 10kA Short Circuit Interrupting Capacity



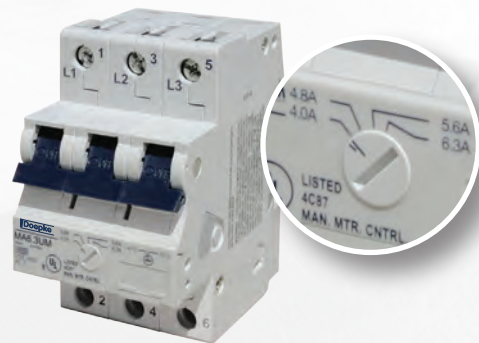
UL 508 DLS8 Series Manual Motor Controller

- Smallest in the industry
- Most Trip Curves in the Industry
- 0.3-60A/480Y/277V AC
- 0.3-25A / 42V DC (1 pole) / 80V DC (2 pole)
- 30-60A / 24V DC (1 pole) / 60V DC (2 pole)
- Thermal Magnetic
- 10kA Short Circuit Withstand Capacity



UL 1077 DLS7 Series Supplementary Protector

- 0.5-63A / 480Y/277V AC
- Thermal Magnetic
- 10kA Short Circuit Withstand Capacity



Three Phase Adjustable Trip Manual Motor Controller

- For high inrush loads
- 0.16-40A/480Y/277V AC rating
- Up to 42kA Short Circuit Withstand Capacity (depending on rating)



Disconnect Switches

UL 60947-4-1 (formerly UL 508)

16-150A / 600V AC | 16-40A / 600V AC / 60V DC

Features

- Very compact 40A version (LSF/RT series)
- One of the smallest 80A switches in the industry
- Across the line, motor starting - up to 75hp/600V AC
- General Use Rating - 16A to 150A/600V AC
- Enclosed switches are available in plastic, stainless steel, aluminum and sheet metal enclosures

OPEN TYPE

LSF/RT



16-40A

KU



16-80A

VKA



80-150A

Toggle Handle KUE / EVA



16-80A

80-150A

ENCLOSED

Polycarbonate - UL 60947-4-1 (formerly UL 508) - KEM Series



16-25A



40-80A



100-125A



150A



30A - Fused

KKVM Series

Stainless - UL 60947-4-1 (formerly UL 508) - KER Series



16-40A



60-125A



16-125A



16-125A

OTHER & ACCESSORIES

Aluminum KEA Series



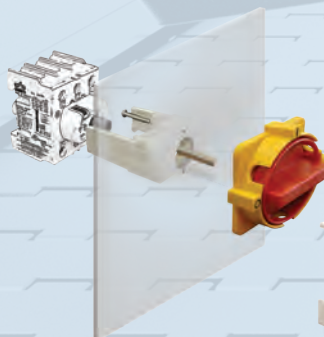
16-125A

Sheet Metal KET Series



16-125A

Door Mount Kits



Fuse Holders

Retrofitable
30 A, Class CC or
10x38, Midget



Auxiliary Switches

Retrofitable, front face
or side mount



For
KU/VKA

For
LSF/RT

Disconnect Switches

Altech Corp.[®]

COMING 2024
HIGH AMPERAGE
 200, 400 & 600A/600V AC

Features

- One frame size, 3 ratings
- Every design is lockable in OFF position
- Switching mechanism speed is independent from the operator
- Silver contacts ensure safe and durable operation
- Enclosed switches are available in polycarbonate, stainless steel, and sheet metal enclosures



UL 98

30-100A / 600V AC

KU



30, 60, 100A

Polycarbonate - UL 98 - KEM Series



60A



100A

Stainless - UL 98 - KER Series



60A

100A

Sheet Metal - UL 98 - KET Series



60A

100A

Handles

LK10

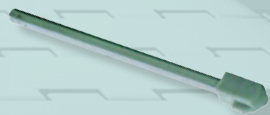
LK11



LKX50

Shafts

100-300 mm
(500 mm available)



Works with UL 508 & UL 98 open type switch

Auxiliary Switches

Side mount



Blue Touch Protector



1 Pole



3 Pole

Terminal Blocks



- Complete Broad Line
- High Quality
- Extremely Competitive
- Many Styles & Configurations
- Screw, Spring or Push-in Technology
- UL Recognized

CP Series

Push-In Terminal Blocks with Universal Push-In Jumper System



FEATURES

- No tools required
- State-of-the-art Connection Technology
- Stainless Steel Push-In spring
- Universal Push-In Jumper System
- 3 Marking Tag Areas (Center, Sides)
- Most Compact 3.5 mm Terminal

A Feed-Thru Terminals

- 3.5mm Terminal most compact in industry
- Up to 57A/ 8AWG
- Same profile Ground Blocks

B Multi-Connection Terminals

- 3 and 4 Connection Terminals
- Same profile Ground Blocks

C Double Level Terminals

- 3.5mm version (CPDL1.5)
- 5mm version (CPDL2.5)
- Ground Level versions (CPDLG1.5, CPDLG2.5)

D Disconnect Terminals

- Knife Disconnect
- Double Level Disconnects
- Shorting Levels separate or together
- Bottom level Feed-Thru version

E Sensor Terminals

- Extremely Compact 3.5mm width
- 3 or 4 wire sensor terminals (CPST1.5/x)
- Power Feed Terminal (CPPT2.5/x)
- Optional Grounding Point terminals
- Blue & Red color jumpers for clear circuit identification

F Triple Level Terminals

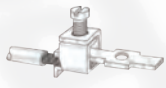
- 3 Levels for high density wiring
- Ground versions (CP3LG2.5, CP4LG2.5)

G Marshalling Terminal Block

- 32 total I/Os
- CP8L32: 8 Levels, 4 connections each
- CP8L32(I.S)H: 2 Potentials, 16 Connections each
- CP8L32(I.S): 32 Connections
- Test Point on each terminal

CY Series

Screw Clamp Terminal Blocks with Universal Push-In Jumper System



FEATURES

- Universal Push-In Jumper System
- Strong Clamping System
- Snap-On Ground Blocks
- 3 Marking Tag Areas

A Feed-Thru Terminals

- Up to 65A/ 6AWG
- Same profile Ground Blocks
- Many colors
- Same profile on all sizes for less accessories

B Multi-Connection Terminals

- 3 and 4 Connection Terminals
- Same profile Ground Blocks

C Disconnect Terminals

- Knife Disconnect (CYK4)

D Fuse Terminals

- 5x20mm fuse type (CYF4)
- LED Indicator for blown fuse)

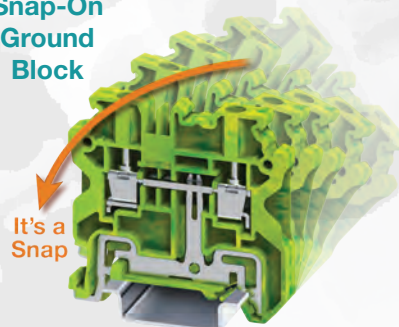
E Multi-Level Terminals

- 5mm and 6mm Double Level (CYDLG2.5, CYDLG4)
- Offset version (ODL2.5)
- Ground Level versions (CYDLG2.5, CYDLG4)

F Multi-Function Terminals

- CYDL-Series
- Many various design options
- Up to 60% space saving
- Top Level: Fuse, disconnect or Feed-Thru
- Mid Level: Feed-Thru
- Bottom Level: Ground (optional)

Snap-On Ground Block

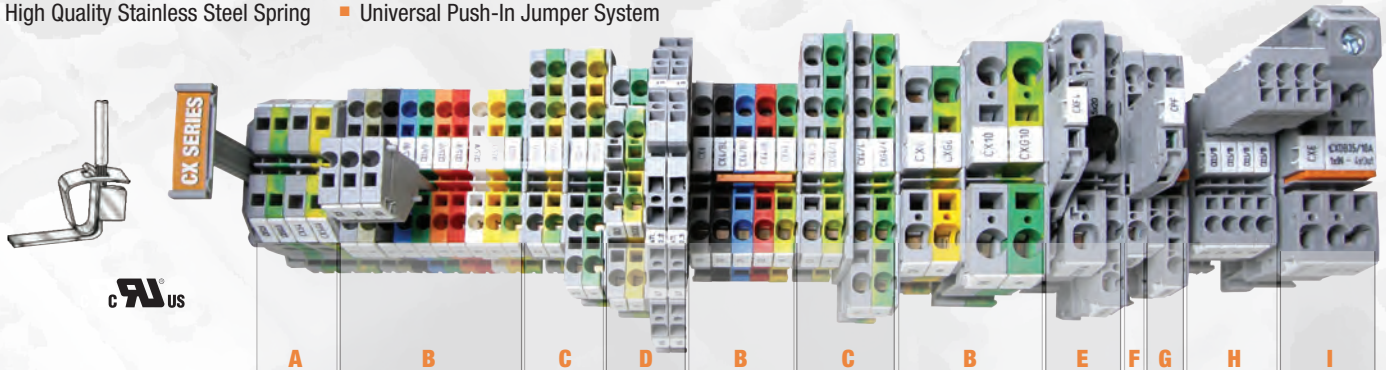


CX Series

Spring/ Cage Clamp Terminal Blocks with Universal Push-in Jumper System

FEATURES

- Compact Design
- High Quality Stainless Steel Spring
- 3 Marking Tag Areas (Center, Sides)
- Universal Push-In Jumper System



A Side Entry Terminals

- 5mm and 6mm Feed-Thru
- Same profile Ground Blocks
- Universal Push-In Jumpers

B Feed-Thru Terminals

- Up to 85A
- Same profile Ground Blocks
- Plug-In Test plugs

C Multi-Connection Terminals

- 3 and 4 Connection Terminals
- Same profile Ground Blocks

D Multi-Level Terminals

- Double Level (CXDL2.5)
- Triple Level (ATL2.5)
- Built-in Electronic Components (CXDL2.5(E)xx)
- Ground Level versions (CXDLG2.5, ATLG2.5)

E Fuse Terminals

- 5x20mm fuse type (CXF4)
- Vertical Fuse Block (CXVFXx)
- Auto Fuse Type (CXAF4/3)

F Plug-In Component Carrier

- Fuse Plug 5x20mm (CPF)
- Diode Plug (CPD)
- Flexible Plug options

G Disconnect Terminals

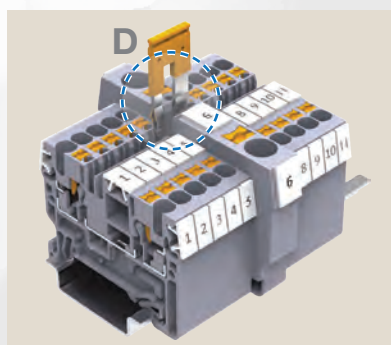
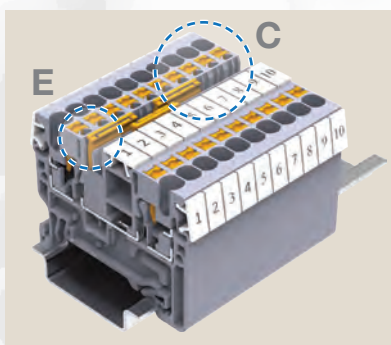
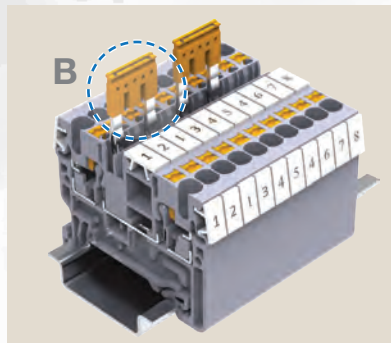
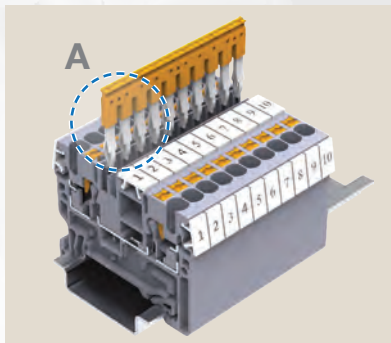
- Knife Disconnect
- 5mm, 6mm version
- 2 or 4 connections

H Pluggable Feed-Thru Terminals

- Stackable Terminal Plug (CX2.5PN)
- Pluggable Wire to DIN Rail
- Pluggable Wire to Wire
- Various bases:
(2, 3, 4 connections, double level)

I Hybrid Distribution Block

- Screw Input (115A)
- 4 Spring/ Cage Clamp Outputs (4x41A)
- Modular system
- Expandable with standard CX6 Terminals and JX6 jumpers



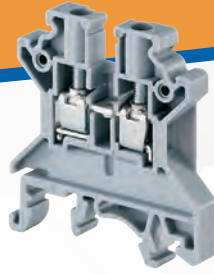
Universal Push-In Jumper Technology

Compatible with Spring, Screw and Push-In Terminals.

FEATURES

- A Standardized in various pole configurations
- B Easy breakout pins to skip terminals
- C 2 jumper channels for various circuit options
- D Step down jumpers to short different wire size terminals
- E Felt-tip pen marking area

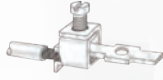
Terminal Blocks



Top Selling - CTS4U-N
Single Level Feed-Thru
Screw Clamp Terminal Block

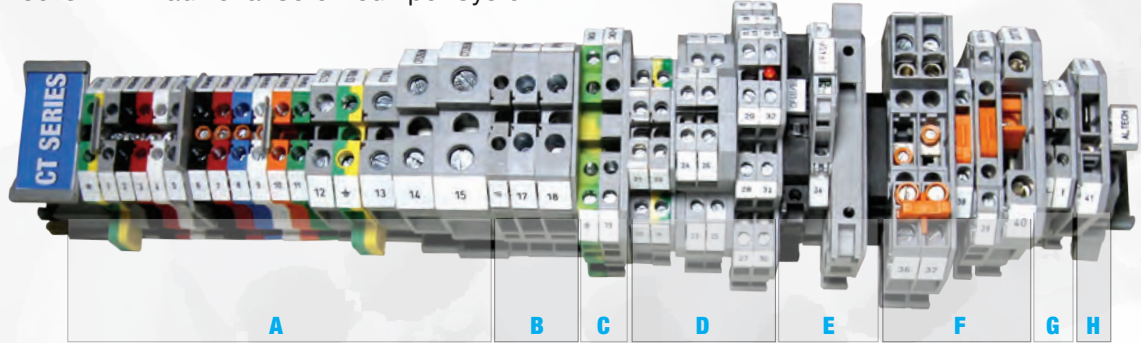
CT Series

Screw Clamp Terminal Blocks with Traditional Screw Jumper System



FEATURES

- Large Range of Block types for many applications
- Screw-Type Jumper system
- Various accessories



A Feed-Thru Terminals

- Up to 240A/ 250kcmil
- Same profile Ground Blocks
- Many colors

B High Voltage Terminals

- 1000V UL
- 1500V IEC DC Rating
- Up to 65A/ 6AWG

C Multi-Connection Terminals

- 3 and 4 Connection Terminals
- Same profile Ground Blocks

D Multi-Level Terminals

- Double Level (CDL4UN)
- Offset version (ODL4U)
- Triple Level (CTL2.5U)
- Sensor Terminals with LED
- Built-in Electronic Components (CDL4U(E)xx)
- Ground Level versions (CDLGxx, CTLG2.5)

F Fuse Terminals

- 5x20mm fuse type (CF4U, CF4SP)
- Double Level (DDFL4U)
- ¼ x 1¼ (CAFL4U)
- LED Indicator

G Disconnect Terminals

- Shorting Block System (CDS6U)
- Knife Disconnect (CKT4U)
- Slider Style (CDTTU)

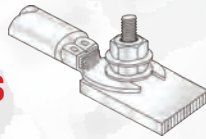
H Thermocouple Terminals

- K, J, T, E Type
- Includes markers (+, -)

I Tab Connection Terminals

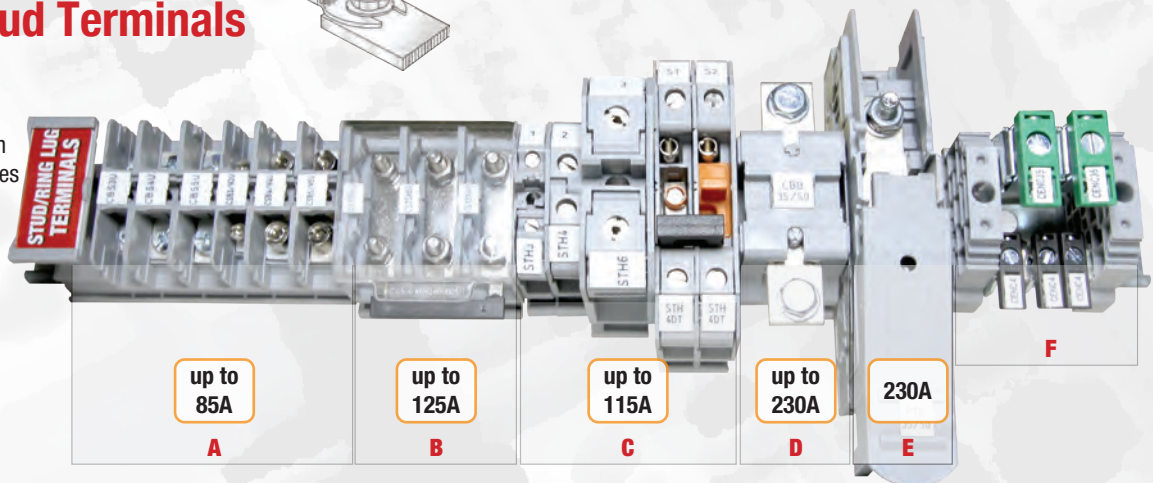
- Standard "Quick-Connect" Tabs

Ring Lug & Stud Terminals



FEATURES

- Accept Ring/ Fork Lugs
- Withstands severe vibration
- Accepts very large wire sizes
- High Torque values



A Ring Lug Barrier Terminals

- Phillips screw (CBS Series)
- Slotted Hex Nut (CSB Series)
- Up to 85A/ 4AWG
- Protective Cover

B Ring Lug Stud Terminals

- Hex Nut
- Up to 125A/ 2AWG
- Protective cover

C Hinge-Type Ring Lug Terminals

- Captive Nut Built-In hinge
- Feed-Thru Terminals
- Shorting Terminal Blocks (STH4DT)
- Up to 115/ 2AWG

D Power Terminals

- Nut/ Bolt Connection
- Up to 230A/ 4/0AWG
- Protective Cover

E High Current Power Terminals

- Up to 230A/ 4/0
- Hinged Finger Safe cover
- Stackable
- 2, 3, 4 pole jumpers

F Grounding / Distribution System

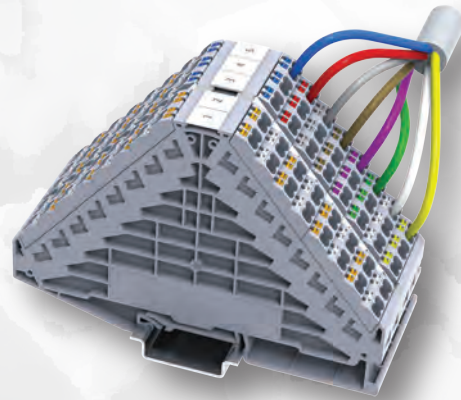
- 3 Clamp sizes
- Panel Mount
- DIN Mount

Marshalling & Potential Distribution Terminal Blocks with Push-In Technology for efficient wiring

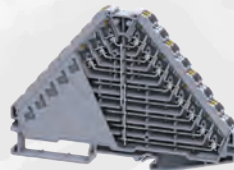


SPACE & TIME SAVING

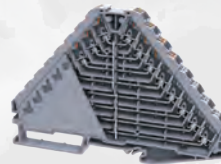
- Organized wiring of large number of wires
- Push-In connection Technology
- Test point on each terminal
- Marking options to organize wiring
- Over 1000 connections per foot



CP8L32

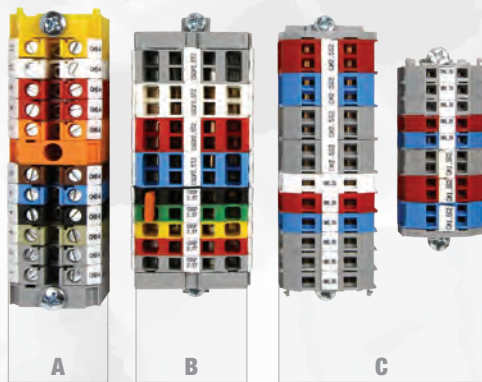


CP8L32(I.S)



CP8L32(I.S)H

- CP8L32** 8-Level Marshalling Terminal Block with 8x4 Connections each
- CP8L32(I.S)** Potential Distribution Terminal Block with 32 connections
- CP8L32(I.S)H** Potential Distribution Terminal Block with 2x16 connections



A Panel Mount, Screw Clamp

- CMB4, 35A
- Modular/ Stackable
- Snap-together design

B Panel Mount, Spring Clamp

- CSCP2.5T, 20A
- 2 or 4 connection version
- Modular/ Stackable
- Snap-together design
- DIN Rail option



C Micro Panel Mount, Spring Terminals

- 3 sizes
- Up to 26A/ 14AWG
- 2 or 4 connection versions
- Modular/ Stackable
- Snap-together design

D 15mm Mini Rail Spring Terminals

- Feed-Thru Terminal (CXMG2.5)
- Ground Terminal (CXMG2.5)
- Push-In Jumper System

E 15mm Mini Rail Screw Terminal

- Feed-Thru Terminal (CMT4)
- Ground Terminal (CGMT4)

F Ceramic Terminal Block

- Suitable for temperatures up to 600°C
- 3 Sizes
- 1-4 pole configurations
- Free floating or panel mount

Panel & 15mm Mini Rail Terminal Blocks

Spring / Screw Clamp Technology

FEATURES

- Extremely Compact wiring solutions
- Screw & Spring/ Cage Clamp Technology
- 15mm Mini Rail Terminals
- Modular Panel Mount Terminals

PCB Terminal Blocks



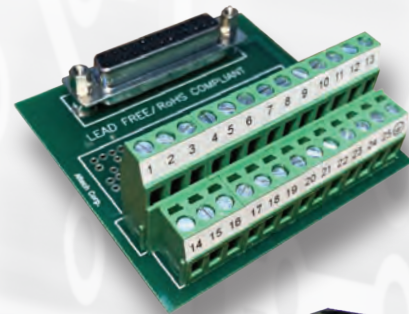
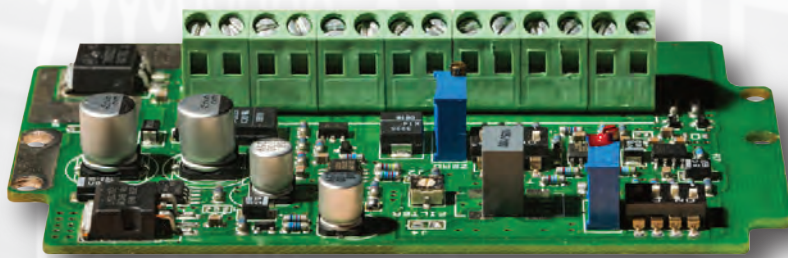
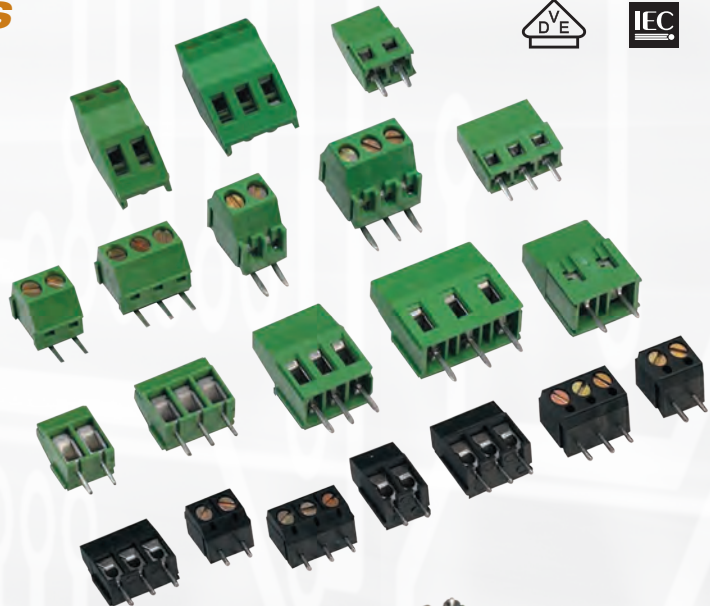
EXPANDED - now with over **20,000** parts
Selection & Styles
visit altechcorp.com/PCBs



Screw Clamp

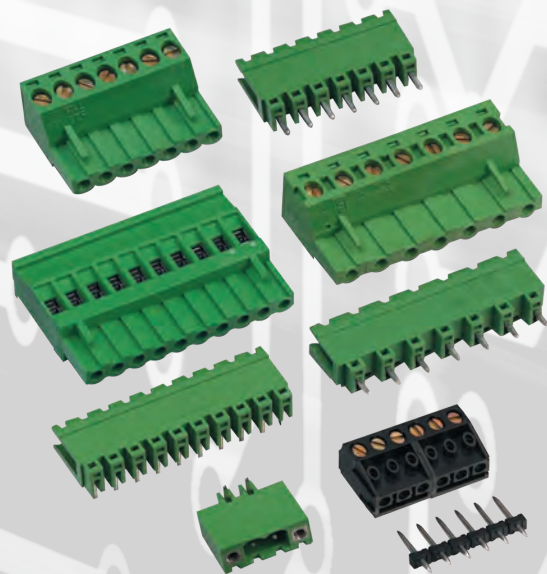
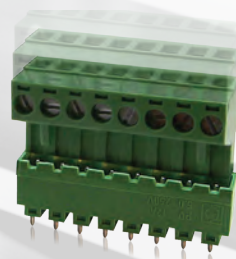
Fixed PCB Terminal Blocks

- Ratings up to 125A
- Metric (mm) and US (inch) pin spacing
- 3.50mm to 20.32mm pitch
- Single, Double, Triple Level versions
- Different clamping styles: Wire Protector & Cage Clamp & Push-In
- Open and closed clamping space
- Vertical/ horizontal types
- Angled versions for easy wire access
- Modular configuration for faster availability
- Various colors for easy wire identification
- Custom Imprints



PCB Plugs & Headers

- Metric (mm) and US (inch) pin spacing
- 3.50mm to 7.62mm
- Ratings up to 15A
- Vertical/ horizontal Plugs/ Headers
- Screw Clamp & Push-In Type connections
- Screw Flange versions for secure connection
- Double Level Headers
- Multi Connection Plugs
- Inverted Plug/ Header combinations
- Test connection for measurement and test purposes
- Coding Accessories for fail-proof connection
- Many color options
- Custom Marking options



PCB Terminal Blocks



EXPANDED - now with over **20,000** parts
Selection & Styles
visit altechcorp.com/PCBs

Spring Clamp & Push-In



FIXED PUSH-IN

- 2.50 / 2.54 / 3.50 / 3.81 / 5.00 / 5.08mm pin spacing
- 2A / 6A / 10A current rating
- 150V / 300V
- Vertical / horizontal
- Lever version



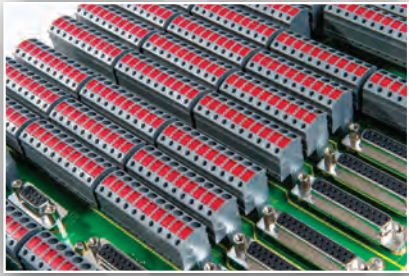
PUSH-IN PLUGS

- 3.50 / 3.81 / 5.00 / 5.08mm pin spacing
- 10A current rating
- 300V
- Screw flange



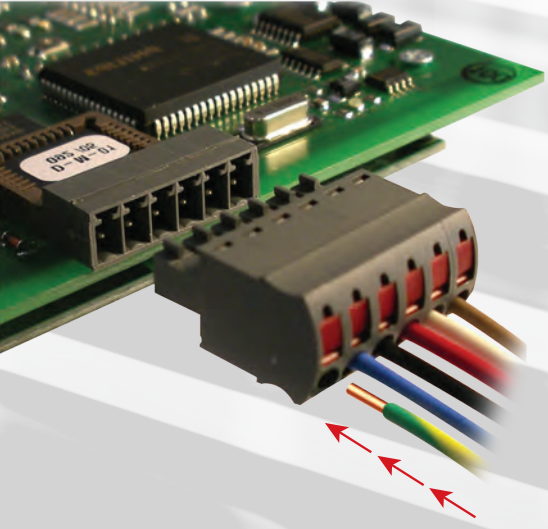
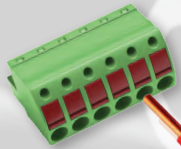
PCB POWER TERMINALS PUSH-IN

- 5.00 / 7.50 / 11.50mm pin spacing
- 20A / 35A current rating
- 300V
- Vertical / horizontal



TENSION SPRING TERMINALS

- 2.50 / 2.54 / 5.00 / 5.08 / 7.50 / 10.00mm pin spacing
- 4A / 6A / 15A / 16A current rating
- 150V / 300V
- Lever version
- Double level



Industrial Enclosures

GEOS

Tough

- UV and weather resistant
- Corrosion resistant
- Temperature resistant -35° to 80°C
- High impact resistance - IK 09

Flexible

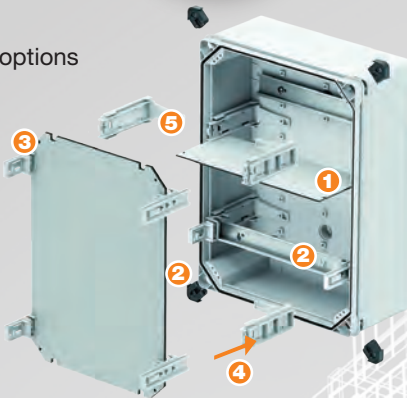
- Modular component mounting system
- Lightweight
- Easily machined
- Multiple mounting and closure options

Safe

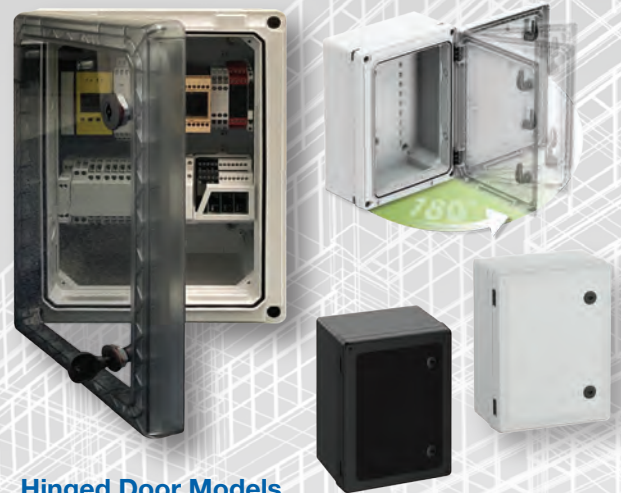
- Drain Protect seal system
- Air ventilation element option
- High protection rating
IP67 / UL TYPE 4X
- Insulated protection

Modular Component Mounting System

- 1 Partition walls
- 2 Universally usable for plates and rails
- 3 Different installation heights
- 4 Subsequent insertion of modules
- 5 Mounting brackets, no tools needed



- 5 sizes - up to 15.75 x 19.69 x 8.9 in.
- Gray or Transparent cover
- 2 different depths



Hinged Door Models

- Can be opened quickly and easily and closed safely
- Good operability of components
- No restrictions for the assembly of internal fittings

AKIII



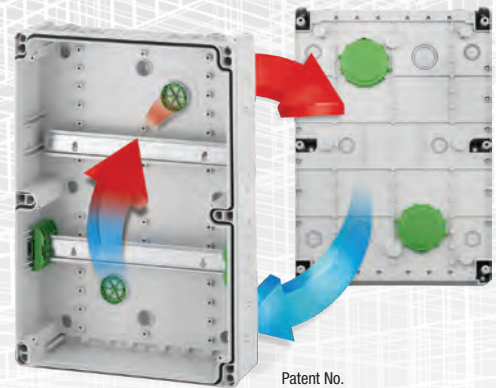
The Unique AKIII Enclosure with Patented Air Ventilation System

- Prevention of condensate water while preserving the high protection class IP65 / UL TYPE 3R
- High air exchange rate
- 100% pressure compensation
- Foreign object protection • Maintenance-free

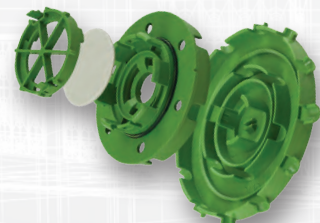


Wide Range of Features:

- Integrated air ventilation
- Top/bottom interchangeable flange endwalls
- Height-adjustable mounting rail
- 150 mm rail spacing
- Optimized hinged window • Combinable
- Multiple installation options
- DLG focus test: Ammonia resistance
- Indoor and outdoor installation
- Free of halogen, PVC and silicone



Accessories available including air ventilation element for use in other enclosures.



Enclosure Size Range:
12.4 x 11.8 x 6.1 in to 12.4 x 29.5 x 6.1 in
Knockouts Sizes:
M40/50 - M20/25 - M20 - M20/25 - M32/40

Industrial Enclosures

TK SERIES

- 18 different enclosures with up to 3 different cover heights
- IP66 (UL Type 4X); polycarbonate models only
- Polystyrene or Polycarbonate
- Gray or tinted transparent covers
- Smooth sidewalls or sidewalls with knockouts
- Multiple mounting options
- Tongue and groove with polyurethane gasket (CFC free)
- Non flammable and halogen free



HF - EMC models available

50 x 52 x 35 to 360 x 254 x 165 mm
1.97 x 2.05 x 1.38 to 14.2 x 10.0 x 6.50 in



84 x 82 x 55 to 302 x 232 x 110 mm
3.31 x 3.23 x 2.17 to 11.89 x 9.13 x 4.33 in

TG SERIES

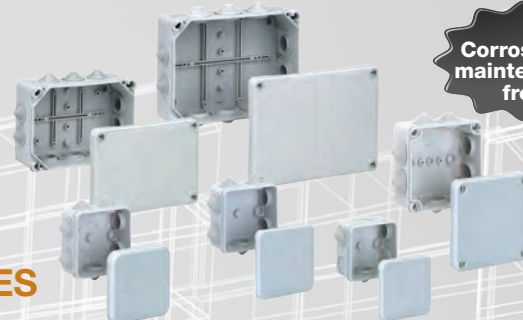
- 16 sizes available
- IP67 (UL Type 4X); polycarbonate models only
- ABS or Polycarbonate
- Gray or transparent covers
- Smooth sidewalls
- Integral cover retainers
- Flame resistant and halogen free
- Recessed cover for labels or membrane keypads
- Quickturn screws available



Custom Assemblies & Printing



Protect Components



Corrosion & maintenance free

HP SERIES

- Direct mount
- Semi rigid polypropylene
- Dust and splash proof
- Contact labyrinth seal
- IP54 protection • Non-flammable • Low halogen
- Universal entry seals • Standard rear knockouts • Drainage inlets
- Temperature range up to 100°C (212°F)

75 x 75 x 42 to 199 x 149 x 70 mm
2.95 x 2.95 x 1.65 to 7.83 x 5.87 x 3.03 in

EK SERIES

130 x 94 x 80 to 361 x 254 x 110 mm
5.12 x 3.70 x 3.15 to 14.21 x 10.0 x 4.33 in

- Direct mount
- Small to medium size
- Polycarbonate base and cover
- Integral seals
- Dust and moisture proof
- IP65 protection (UL Type 4X)
- High mechanical strength
- Corrosion and maintenance free
- Halogen free

ABOX-i SERIES

- Direct mount
- Glass reinforced Polycarbonate
- IP65 protection • Integral seal
- High temperature resistance 120°C (248°F)
- Corrosion and maintenance free
- Halogen free • High chemical resistance
- UV fade resistance for optimal outdoor use
- Ideal for installations in high risk fire areas

Ideal for harsh environments



80 x 80 x 52 to 250 x 250 x 115 mm
3.15 x 3.15 x 2.05 to 9.84 x 9.84 x 4.53 in

Find your enclosure at

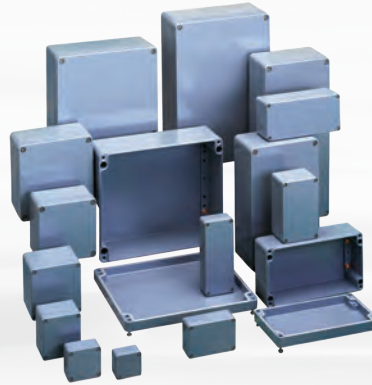


altechcorp.com/Enclosures

Industrial Enclosures

AL SERIES

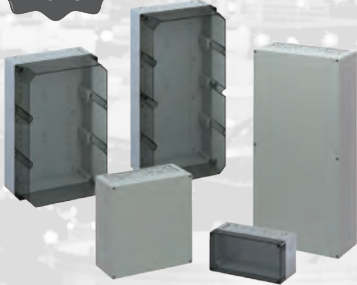
- Cast aluminum
- 16 enclosure sizes
- Exterior of the enclosure is protected by powder coating (silver-gray - RAL 7001)
- IP66 protection
- High degree of resistance to chemicals and other damaging materials
- Protection against electromagnetic interference (EMI)



Protect from weather & corrosion

50 x 45 x 30 to 330 x 230 x 111 mm
1.97 x 1.77 x 1.18 to 12.99 x 9.06 x 4.37 in

Smooth exterior walls



150 x 300 x 132 to 600 x 300 x 210 mm
5.91 x 11.81 x 5.20 to 23.62 x 11.81 x 8.27 in

ABOX SERIES

- 6 types
- Modern design and shape that allow for optimum use of installation space
- IP65 protection
- 2 to 4 high grade self tapping screws secure the lid
- Tongue and groove sealing system with polyurethane gasket
- Made from non-flammable Polystyrene

Metric Knockouts



130 x 94 x 80 to 361 x 254 x 110 mm
5.12 x 3.70 x 3.15 to 14.21 x 10.0 x 4.33 in

AKL SERIES

- Knockout patterns are on the inside
- Up to IP65 protection
- Corrosion and maintenance free
- Polystyrene or Polycarbonate base and cover
- Polycarbonate transparent covers
- Integral seals • Halogen free
- High mechanical strength



Suspension Systems and HMI Enclosures

- Modular Design
- Aluminum and Steel Constructions
- Light Duty (up to 99 lbs.)
- Medium Duty (up to 275 lbs.)
- Heavy Duty (up to 330 lbs.)
- Special Stainless Steel Tubing
- Custom HMI Enclosures

PB SERIES

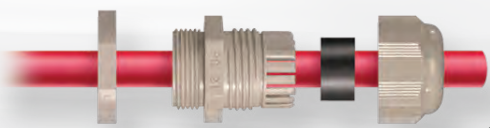
- IP66
- Universal fit for 22.5 mm diameter push buttons
- Compatible with the EK and TK Enclosure Series
- Metric knockout sidewalls
- Black cover screws are standard with all models
- UV, weather and impact resistant
- Modern, rugged enclosures made of glass fiber reinforced Polycarbonate



94 x 94 x 81 to 180 x 94 x 81 mm
3.70 x 3.70 x 3.19 to 7.09 x 3.70 x 3.19 in

Cable Glands / Cord Grips

- Full line of Liquid Tight Strain Reliefs (Cord Grips)
- Standard and Industrial Series
- Available in polyamide, nickel-plated brass and stainless steel
- Straight-through, strain relief, bend protection, pull/bend protection, flat cable, multi-conductor and EMI/RFI functions
- Compatible with almost any type of cable, cord or conductor
- Available in PG, Metric and NPT thread sizes

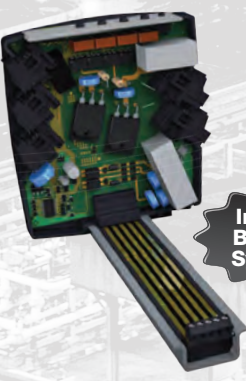
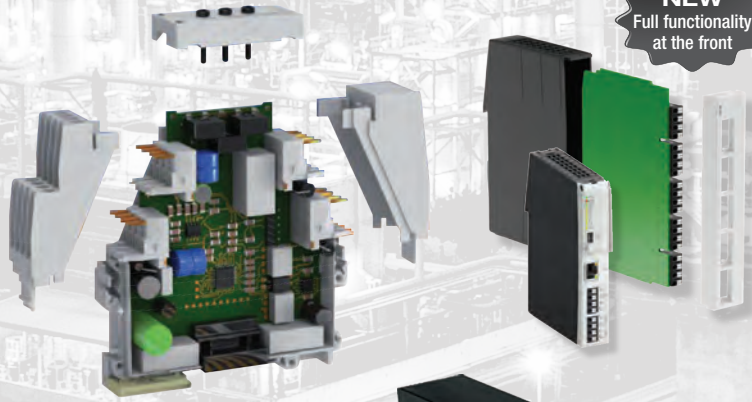


Corrugated Tubes

- Material: Polyamide 6
- Flame retardant according to DIN 75200 and UL
- No halogen
- Durable
- Temperature Range: -40 to 120°C, short term 150°C
- Connectors, Seal Rings, O-Rings, Mounting Clips
- Various Sizes Available



DIN Rail Mount Electronic Enclosures

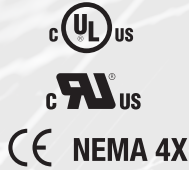


- DIN Rail or optional panel mount
- Protect electrical, electronic and electromechanical devices with any of seven DIN Enclosure series
- Up to 144 ready-to-wire terminals, integral PC Board guides and terminal-to-board connector options
- Fixed and pluggable terminal options
- In-Rail Bus System
- Custom imprints, markings and cut outs available

Push Buttons - 22&30mm

Altech 22 and 30 mm Push Buttons offer ideal cost-effective solutions for control circuits utilizing both direct and remote management applications. Ease of assembly has been engineered into the design; the only tool necessary for installation is a screwdriver.

- Metallic Push Buttons, Selector Switches and LED Pilot Lights
- Designs include Operators, Pilot Lights, Modular Contact Blocks and Bulb Holders
- Push Button Stations
- Wide range of accessories
- Plastic models available
- LED Indicating Devices
- Pilot Lights
- Push Button Enclosures



NEW Black Color



E-Stops

E-STOPS • LOCKOUTS • STOP SWITCHES



Custom Push Button Assemblies



Enclosures Polycarbonate • Aluminum



- Solutions for your applications
- Safety and Reliability
- High Performance
- Extensive Range
- Save Time

Fuse Holders

- Broad selection and many features
- Crossable with many brands
- Complete line of accessories



200A SCR Rating



1 - Space for finger to open fuse carrier



2 - Complete protection against touch according to IP20.



3 - All contact surfaces are silver plated



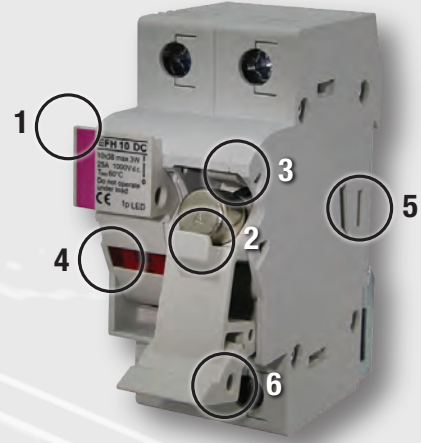
4 - LED indicator is available for all sizes. The LED blinks after the fuse-link opens.



5 - Modular Design. It is easy to assemble multi-pole versions.



6 - Possibility of sealing in ON or OFF positions. (Security sealer not included)



CC & J Type



- Rejection member to allow only Class CC fuses
- Rated voltage: 600V AC/DC
- Rated current: 30A
- 1, 1N, 2, 3, 3N pole versions
- 200 kA SCR rating

IEC Type



- Rated voltage: 600V AC/DC
- Rated current: up to 100A
- 1, 1N, 2, 3, 3N pole versions
- 200 kA SCR rating
- Optional blown fuse indication

Midget Type



- Rated voltage: 600V AC/DC
- Rated current: 30A
- 1, 1N, 2, 3, 3N pole versions
- 200 kA SCR rating
- Optional blown fuse indication

European Fuses & Photovoltaic Fuses



- Extensive line of in-stock European Fuses minimizes downtime
- Diazed, Neozed, Cylinder, NH Knife Blade and Semiconductor fuses
- Slow Blow, Fast Blow and Superfast Blow operating classes

1000V DC



Diazed



Miniature



Neozed



Cylinder



NH Knife Blade



Square Body



High Voltage



Accessories

Power Supplies

3-year
Warranty

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 reliability
- NEC Class 2 compliant
- UL 508 (Industrial control equipment) listed



Ratings: 10, 20, 40, 60 & 96W
Outputs: 5, 12, 15, 24, 48V DC



Ultra-Compact

- Ultra Slim size
- Conformal coated PCB
- Parallel option available
- Universal input
- 150% peak load capacity
- High efficiency up to 91%
- Built-in current sharing function
- Built-in current limiting circuit



Ratings: 75, 120, 240, or 480W
Outputs: 12, 24 & 48 V DC



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




Class II Isolation



Ratings: 15, 30, 60, or 100W
Outputs: 5V-48V DC

FLEX Power Supplies

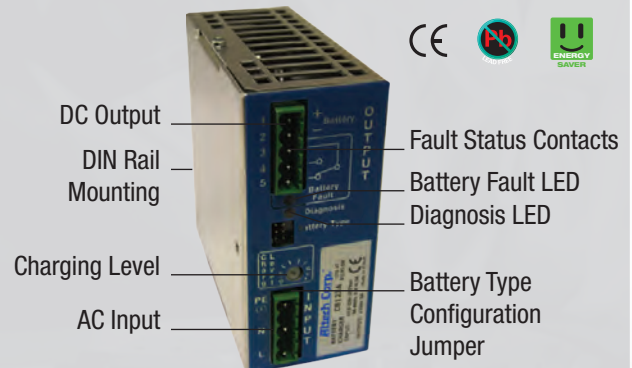
*Up to 150% Power Boost for 3 Minutes
— the longest time in the industry*



- Up to 25A / 600W
- Available in 1, 2, and 3-phase
- Three overload / short circuit protection modes
- Compact Housing
- High efficiency up to 92%
- Over temperature protection
- 3 year warranty



Battery Chargers



- Fully automated charging
- Three charging modes
- Available in 12VDC and 24VDC
- Suitable for most common battery types
- Adjustable charging current

**Compact & rugged
metal case**



DC-UPS Backup

UL Recognized 12 or 24 or 48 V DC



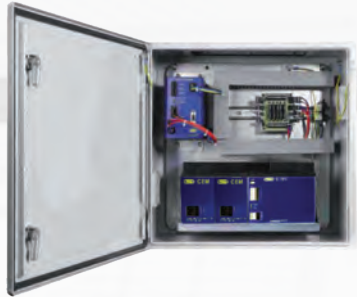
The 4 in 1 ... All-In-One DC-UPS

- Power supply, battery charger, battery care module and backup module in one device
- Three charging modes
- Available in 12VDC, 24VDC and 48VDC
- Adjustable charging current up to 35A
- Easy battery diagnosis and fault identification either by LED or external devices connected to fault
- High efficiency up to 91% via switching technology



Ultra Capacitor DC-UPS

- Environmentally safe
- No toxic chemicals
- Virtually maintenance free
- Operating temperature range -40°C to +65°C
- Higher energy vs. electrolytic capacitors
- Up to 10,000 Ws energy plus extension mods
- 12 or 24V system design
- Customized systems up to 600A
- Higher power vs. batteries
- Resists shock and vibration



Environmentally safe
No toxic chemicals
Virtually maintenance free

AKKUTEC Series

- Battery monitoring and testing
- Works primarily in an online parallel configuration
- Controlled shut down functions
- Micro-controller battery management
- Several operating modes
- Protection against wrong battery polarization
- Deep discharge protection

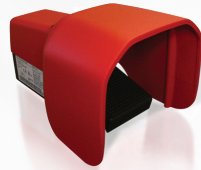


Foot Switches

Industrial

Industrial

- Rugged construction
- Various pedal configurations
- Covers available for certain models
- Internationally approved
- Sturdy design of die cast aluminum housing
- Exceptional value for harsh environments
- Customized with nameplates, imprints, cord sets, connectors and strain reliefs.

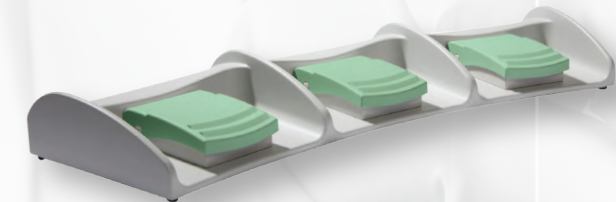


Many models and options are available



Medical

- Available in 1, 2 and 3 pedal designs
- Robust and slip resistant
- High quality materials, such as Aluminum cast alloy and reinforced polyamide
- Environmental protection level up to IPX8 per IEC/EN 60529
- IEC 60601-1 certified and UL 2601-1 recognized
- IEC 60601-1 general requirement for safety
- IEC 60601-6 usability
- IEC 60601-2-2 HF surgical equipment
- IEC 60601-2-22 laser equipment (surgical, cosmetic, therapeutic and diagnostic)
- IEC 60601-2-43 x-ray equipment
- Easily cleaned and hygienic
- Ergonomic design with intuitive actuation
- Custom colors and markings are available



Customization & Colors



Pin & Sleeve Devices / Receptacles



- IEC 60309 certified power plugs and connectors.
- Electrical rating up to 30A/600V AC
- IEC styles up to 125A/690V AC
- Designs include plugs, receptacles, inlets and connectors
- Splash proof and watertight versions
- Exceptional anti-tracking properties
- Designed for industrial use

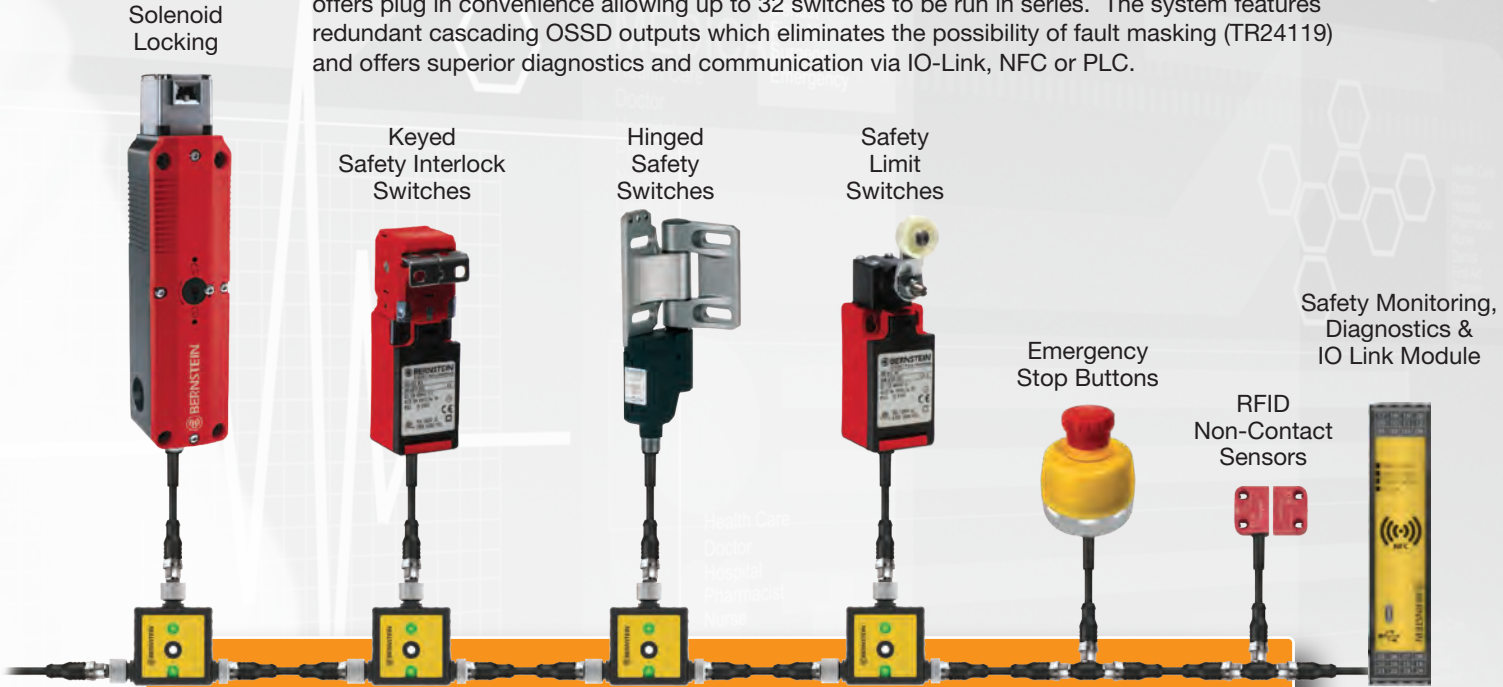
Safety Switches

- Keyed Safety Switches
- Solenoid Locking Safety Switches
- New RFID Non Contact Safety Switches
- Hinged Door Safety Switches
- Safety Limit Switches
- Safety Rope Pull Switches



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.



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

The SMART Non-contact Safety Sensor SRF

With an innovative diagnostic system



Daisy Chain Diagnostic System

Diagnostics on computer or smartphone



- Very compact: small in size, flexible in use
- Very Smart: suitable for Industry 4.0 with its intelligent diagnostic system
- Cost Saving: four-wire unshielded standard connection cable from sensor to sensor
- Very Safe: up to PL e – even in series connection with high defeat protection

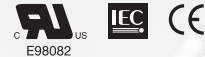
Power Distribution Blocks

1 & 3 Phase (80-310A)

- For use with copper and aluminum cable (solid / stranded)
- 600V AC/DC
- 80A – 310A current ratings
- 6 – 11 outputs
- DIN Rail or Panel Mount
- Accessories increase the number of outputs with only one input (for specific models)
- No caps to open or remove



**IP20
Finger Safe
Quick mounting
and wiring**



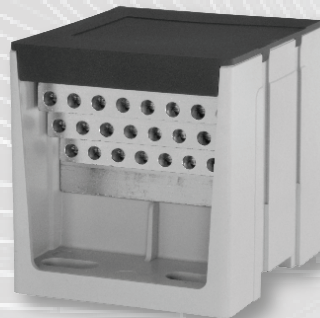
UL 1953 Power Distribution Blocks (85-380A)

- 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 for multi-pole applications



Power Distribution Block for Solar Systems

- A perfect solution for Solar Combiner Box Applications
- 38690 has Solar Industry ratings
- 1500 V UL approval and a maximum current of 800 A for aluminum and copper wires
- 24 Inputs
- Easy and quick mounting



**UL Approved
1500V AC/DC**



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



**Hybrid
Terminal
Block**



**Miniature Circuit Breaker
Distribution Example**

APPLICATIONS

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

Motor Contactors, Overload Relays & Manual Motor Starters

MC Series Contactors

- 8 Frame Sizes
- 1/2HP up to 600HP @ 600V AC
- Reversing Wiring Sets and Interlocks
- Direct Wiring Adapters for MMS
- Coil Surge Suppressors



AC-3 Amperage Rating	9A to 150A
AC-1 Amperage Rating	25A to 210A
Coil Voltage	24VAC, 24VDC, 120VAC, 208VAC, 230VAC & 480VAC
Horsepower (@3x230VAC)	3 to 50hp



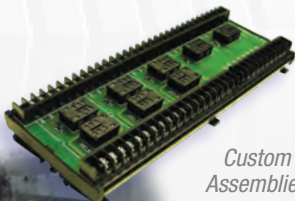
Type R

Manual Motor Starters

- DIN Rail and Screw Mounting
- Lockable Handle in OFF position
- Finger safe terminals
- Class 10 thermal Overload protection
- Trip test feature
- Phase failure protection
- Adjustable thermal release
- Type F combination Manual Motor Controller (with MC-Series Contactor)
- Wide range of common accessories



Custom Assemblies



Custom Assemblies Shown

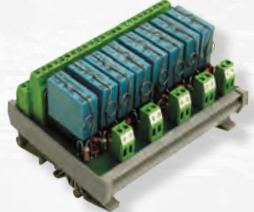


Application Assistance

- Modify a standard product
- Help define a new product

Engineering Capability

- Use of latest CAD system
- PCB layouts completed promptly
- Prototypes available two weeks after PCB layout approval

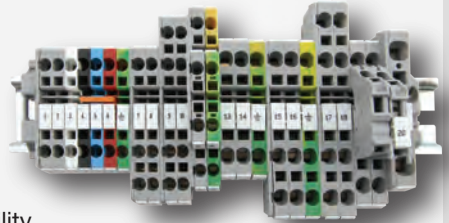


Minimum Quantities

- 25 piece minimum for custom quotes
- Quotation provided at no cost

Altech Benefits

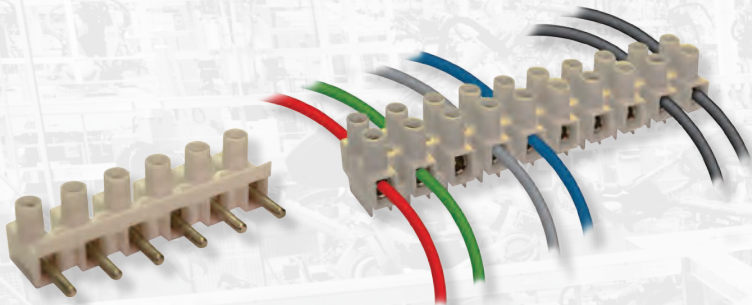
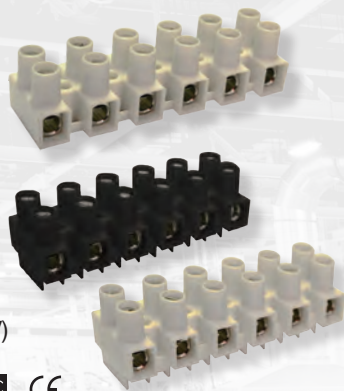
- Fast turnaround due to in-house capability
- Highly competitive in-house manufacturing
- Use of Altech components (blocks, extrusions, connectors)



Terminal Strips & Ferrules

Terminal Strips Eurostrip® Style

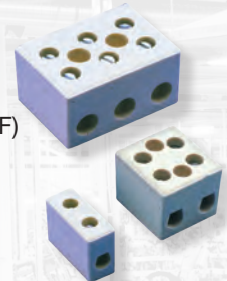
- Up to 63A
- Easy Mounting and Connection
- Reliable Connection Every Time
- Feed-through Flat Base (300V)
- Feed Through Standoff Feet (600V)
- Pluggable Version
- Various Accessories



Ceramic Blocks Euroblock™ Style



- Compact, space saving
- Tubular screw clamp
- Free float or panel mount
- Temperature range: -40°C (-40°F) to 600°C (1112°F)
- Standard color: white
- Material:
Housing: Steatite
Clamp: Brass
Screws: Zinc plated steel



UL Recognized Ferrules

- UL Single Insulated Wire Ferrules
- UL Twin Insulated Wire Ferrules
- UL Insulated Wire Ferrules on Reel or Belt
- Insulated Industry Standard Wire Ferrules
- Insulated DIN Standard Wire Ferrules
- Uninsulated Industry Standard Wire Ferrules
- Insulated Dual Wire Ferrules
- Insulated Ferrules Assortment Box
- Crimpers



CRIMPIT F MULTI Multi Function Wire Prep & Ferrule Crimper

- Automatically Loads Ferrule
- Crimps Ferrules from 20 AWG to 14AWG
- Built in Lead Wire Stripper / Cutter

DIN Rail

- Space saving
- Reduces labor
- Altech DIN Rails comply with DIN EN60715, EN50022, EN50035, EN50045 standards
- 35mm, 32mm and 15mm versions
- 1m and 2m standard length
- Perforated, unperforated
- **CUSTOM LENGTHS AVAILABLE**

Easy mounting of terminal blocks, power supplies and other control components and devices.

CUSTOM LENGTHS AVAILABLE

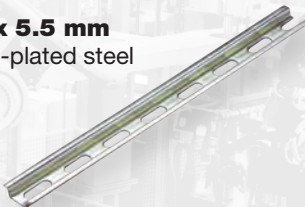
35 x 15 mm

Zinc-plated steel



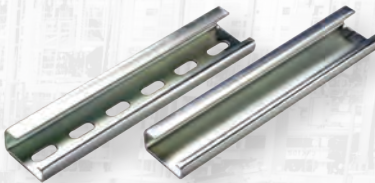
15 x 5.5 mm

Zinc-plated steel



32 x 15 mm

Zinc-plated steel



End Clamps

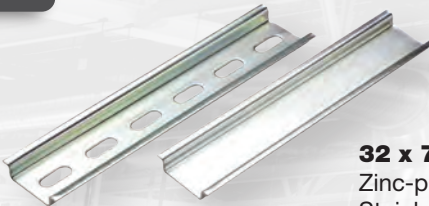


Universal DIN Clips

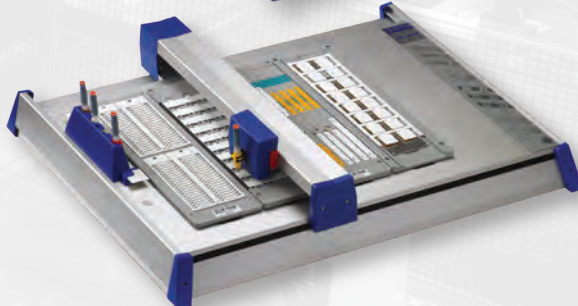
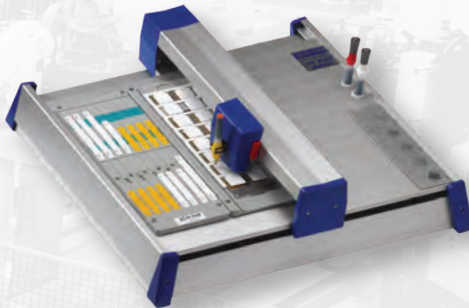
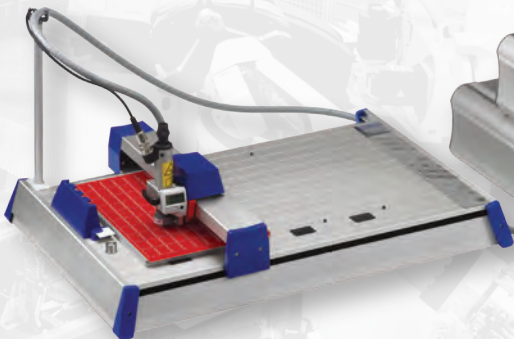


32 x 7.5 mm

Zinc-plated steel,
Stainless or
Aluminum

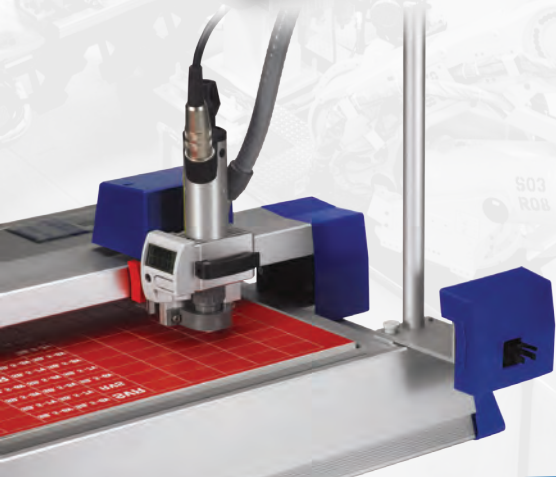


Support Brackets



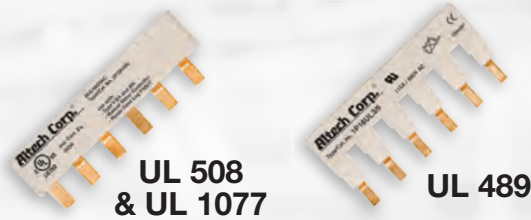
Marking Systems

- Compatible for terminal block markers and wire markers such as Altech Corp, Allen Bradley, Connectwell, Conta Clip, Entrelec, Weidmueller, Phoenix Contact, PTR, Wieland, Wago, Murrplastik, Partex, SES, Sterling, etc.
- Engravers for plastic signs, legend plates, inlays, etc.
- Plotter pens (0.25 and 0.35mm)
- Ink for plastic material and general use
- Pen cleaners, Fixtures, Software
- Service and repair available from Altech



UL Busbars

- Better and cleaner than wiring
- UL 508/ UL 1077 Busbars is rated up to 200A
- UL 489 Busbars with ratings up to 115A
- Cuttable models
- Universal - fits most miniature molded case circuit breakers, manual motor controllers and supplementary protectors



UL 489 Cuttable



Save Space, Time & Money



50% Assembly Time Saved!

youtu.be/OppmdmTzkOU

Watch this video to see the proof



UL 1077 Recognized Supplementary Protector/ Circuit Breaker for Equipment

- Electrical Ratings: 0.5-16.0A / 240V AC, 50/60Hz, 32V DC / 24V DC (VDE)
- 3 different sizes
- Various actuators
- Applications: Protection of Control Transformers, UPS, Power strips, Solenoids etc., against damage due to overload conditions.



TR11



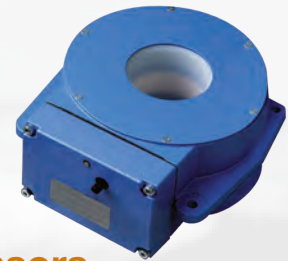
TR20



TR30

Inductive Proximity Sensors

- Cylindrical, Limit, Block and Ring Sensors
- Standard and analog models
- Standard and extended sensing distance
- Sensitivity as low as 0.15mm steel ball
- Mini, Normal, Analog, High and Ultra High sensitivity ring models
- Modular flat packs for conveyor belt sensing
- Unique metal separation systems available



Ring Sensors

- Various Sizes
- Various Diameters
- High Sensitivity
- Ultra High Sensitivity



Flat Pack Sensors

- High Sensitivity
- Metal Detection & Localization
- Custom Dimensions and Solutions



Tunnel Sensors

- High Sensitivity
- Custom Sizes
- Various Control Options

Sensor & Actuator Cables and Connectors

- Female Connector to Flying Lead
- Female and Male versions
- Straight and Angled Connectors
- PVC & PUR Cable
- 1, 2, 5, 10m standard cable length
- Front/ Rear Mount connectors
- Screw & Solder Connection
- A Coding

M8 & M12
Custom Cable
Lengths Available

Molded Sensor & Actuator Cable Assemblies



Straight Connector



Angled Connector

Field-Wired Connectors



Angled Connector

Straight Connector

Front/ Rear Panel-Mount Connectors



Relays

Voltage Monitoring Relays

- Undervoltage Monitoring 3-Phase
- Phase Sequence and Phase Failure
- Supply Voltage = Measuring Voltage
- 22.5mm Wide Industrial Design

NEW



AMR-EP1M230V1

- Undervoltage Monitoring 1-Phase
- Window Monitoring
- Supply Voltage = Measuring Voltage
- 1 NO/NC contact
- Compact 17.5mm DIN Rail Design



AMR-AP3U690V2D

- Undervoltage Monitoring 3-Phase
- Phase Sequence and Phase Failure
- Supply Voltage = Measuring Voltage
- 22.5mm Wide Industrial Design



AMR-EP1F480277V1D

- Undervoltage Monitoring 3-Phase
- Phase Sequence, Phase Failure and Asymmetry
- Supply Voltage = Measuring Voltage
- 1 NO/NC contact
- Compact 17.5mm DIN Rail Design

NEW Bistable Switching

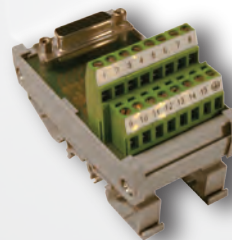
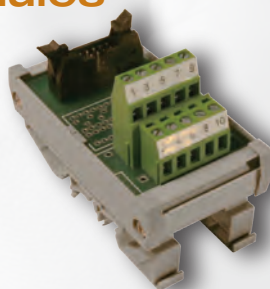
Safety Relays

- Feature forced-guided contacts
- Broadest line of Safety Relays that meet the ASME requirements
- Relays meet 2006/42/EC requirements
- IEC / EN 60204, IEC/EN 62061 and DIN/VDE 0113
- Available from 2-8 contacts, 6-10A, 5-220V DC coils



Interface Relay Modules

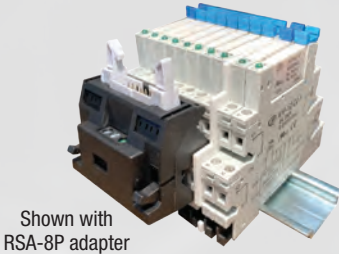
- Electronic modules and carriers
- DIN rail mountable module
- Connector to terminal blocks
- Relay & Safety Relay Modules
- Diode Modules
- Component Carrier Modules
- I/O opto Carriers
- Custom Designed Modules for any size order



Relays

Industrial Relays

- Industrial Electromagnetic Relays
- Miniature Electromagnetic Relays
- Slimline Interface Relays
- Sub-miniature Electromagnetic and Solid State Modules
- Relays for Photovoltaic
- Relay Socket Combination
- Accessories



Shown with RSA-8P adapter

Slimline Solid State Relay Modules

- Screw clamp terminals
- Spring clamp terminals
- 5V DC - 240 VAC/DC input circuit
- Multicolor jumpers available
- Slim Socket width is 6.2mm
- LED indication
- Din Rail mounting
- UL recognized



Slimline Relays

- Only 6.2mm thick
- Slim DIN Rail mountable interface solution
- Modules have a plug in construction
- Modules available with solid state or mechanical relay
- Built in LED indicates the relay energizing state
- The relay features a SPDT configuration and a maximum switching current of 6A
- Coil voltages from 5VAC/DC up to 230V AC/DC
- Pluggable jumpers available



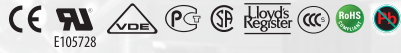
Miniature Solid State Relays (SSR)

- Optically isolated relays
- AC or DC load output up to 4A
- 5-24 VDC input circuit
- Low on-state resistance
- Low input power consumption
- TTL and CMOS compatible
- RC networks (V AC)
- MOSFET output thyristor (V DC)
- PCB or Socket mounting



Enclosed Relay Modules

- Compact and secure mounting
- Assures no-shock, IP20
- Custom configurations up to 32 channels
- True 10A performance
- Highly ergonomic wire entry



Digital Panel Meters

Digital Panel Meters

- Multi Function Meters
- Ampere Meters
- Voltage Meters
- Frequency Meter
- Power Factor Meter
- Disconnect and Test Terminal Block



Process Controllers

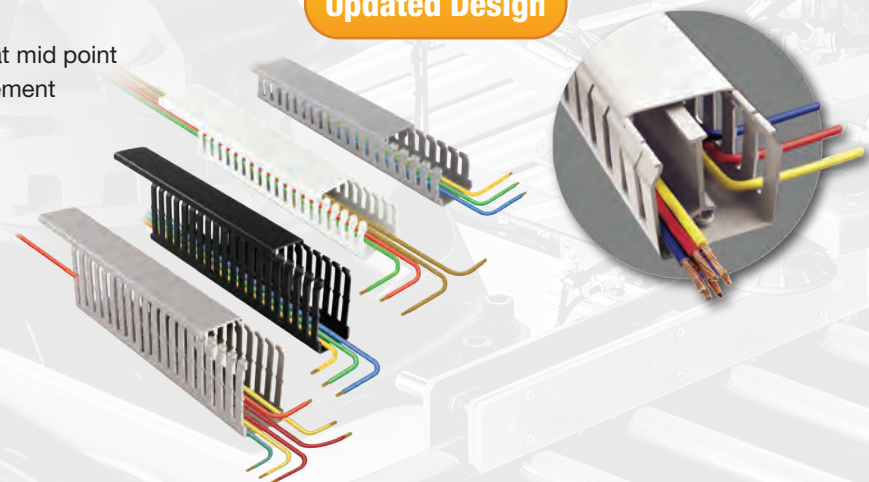
- Temperature Controllers
- Earth Leakage Relays
- Voltage Protection Relays
- Current Protection Relays
- Process Indicators
- Timers



Wire Duct

- Smaller footprint for better fit in panels
- Breakaway sidewall feature added
- Taller ducts have wire separation points at mid point of sidewall fingers for better wire management
- Exceptional wire protection
- Non-slip interlocking covers
- High impact, rigid PVC construction
- Standard slotted or thin slotted models
- Sizes range from 1x1.5 in. to 6x4 in.
- Noryl material also available
- Grey, white and black available

Updated Design



Digital Timers

Universal Digital Multi-Timer

- Multifunctional Timer (8 or 18 Functions)
- Universal Voltage 24~265 VAC/ DC
- Wide Time Range: 0.1s ~ 999h
- 3 Digit LCD Display for Preset Time and Run Time
- DIN Rail Mounted
- 17.5mm Width



Digital Time Switch

- 25 ON/ OFF Programs
- LCD Display for Time and Program Information
- Various Supply voltages
- Settable Daylight Savings Time
- Keypad Lockable • Simple Manual Override
- 12/ 24h time format • DIN Rail Mount



Programmable Panel-Mount Digital Multi-Timer

- 33 Built-in Timing Functions
- Supply Voltage 110-240 VAC
- 7 Segment Digital LED Display
- 2 Separate Output Channels
- Wide Timing Range 0.1s - 999 days
- Compact Design
- Panel & DIN rail (11-pin socket) mount



Universal Multi-Timer

- Multifunctional Timer (10 Functions)
- Asymmetric Timer (2 Functions)
- Universal Voltage 12-265V AC/ DC
- Wide Time Range: 0.1s ~ 100h
- LED Indicator for Power and Relay Status
- DIN Rail Mounted
- 17.5mm Width



Smart Relays

- Supports up to 48 I/Os (32 digital inputs & 16 digital outputs)
- DST Feature Available
- Backlit LCD Screen for display & modification of preselected parameters of functional blocks, viewing I/O status and programming on the device
- PC software for programming, online & offline simulation, documentation & printing
- Designed for use in automation for commercial & Industrial sectors
- Modbus Communication



Programming Features

- 250 lines of ladder programming
- 16 soft text messages, Time Switches, Compare Counters, Timers, Counters & 12 analog functions



Starter Kits



Clamp-Type Test Probes

Measuring voltage quickly and easily



Alligator Clips

Large jaws that pack a punch



Test Probes

The right probe pressure for manual fieldwork and in electronics



Sockets

Wherever a safe plug-in connection is required



Plugs

Used everywhere in industrial research and development



Measuring Leads

Robust, flexible, long-lasting



Sets



Mechanical Thermostats

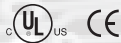
- Adjustable Temperature Control
- Wide Adjustment Range
- Color Coded Dial (Red: Heating, Blue: Cooling)
- DIN Rail Mountable



Tower Lights

Stackable Lights

- Sleek & Stackable Design
- SMD LED Technology
- Uniform & Bright Illumination
- Continuous, Flashing and Rotary Integrated LED Light Modules
- Flexibility to upgrade from Single LED Unit to multiple LED
- Optional features



PROTECTION
IP65

Signaling Devices

- Fireproof plastic body
- Polycarbonate lens
- Surface mount
- Water resistant
- Dust proof
- UV resistant
- LED design, no mechanical parts
- Long life
- 8 Different signal variations



Multi-Color LED Light

- Flashing and normal LED mode available in same module
- 90 dB Buzzer • Multi-function LED signal tower
- Continuous mode or flashing mode
- M22x1.5 mm mounting option
- UV stabilized plastic housing
- Direct mounting on the cabinet
- Pole mounted for better viability
- 1m cable included

PROTECTION
IP65

Indoor / Outdoor



Single Unit - 5 colors:

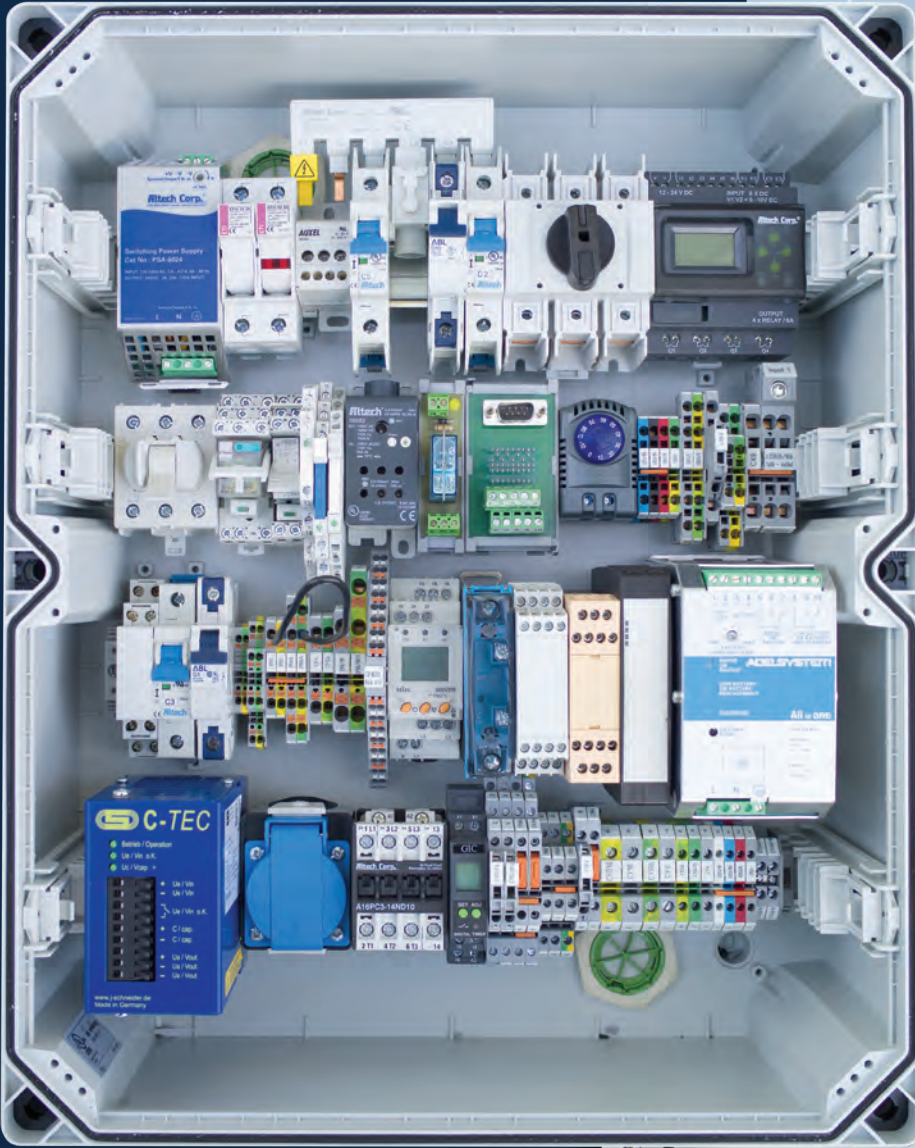
White | Red | Blue | Yellow | Green

One unit can light up in 5 different colors.
Or Single color unit is also available (24V only).



LED Panel Lights

- Long life
- Energy efficient LED technology
- Magnet or Screw mounting
- Daisy chaining (up to 10 lights)
- Maintenance-free
- On/off switch or motion sensor
- Side Voltage Range (AC or DC)
- Integrate power unit



The Altech Procace shows the large range of products offered.



Altech Corporation
35 Royal Road
Flemington, NJ 08822-6000
P 908.806.9400 • F 908.806.9490
www.altechcorp.com

Altech Corp.® PPLINE01-2024-7K
Printed January 2024

