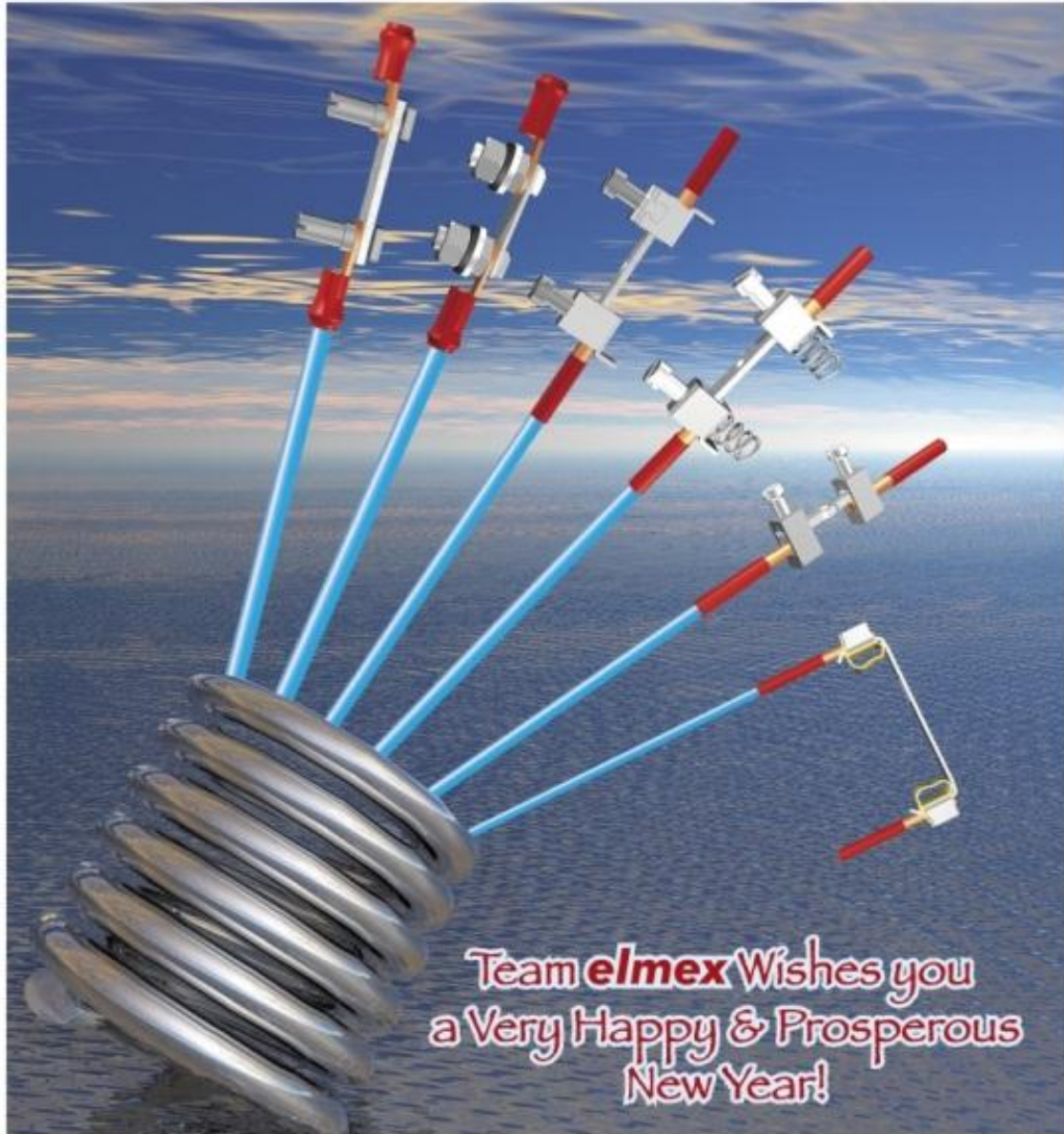




cross currents

JANUARY, 2010

FOR PRIVATE CIRCULATION ONLY



elmex TERMINATION TECHNOLOGY

Screw Clamp (Steel)



Screw Clamp consists of a U-Shaped steel part, called Yoke or Contact Clamp and a screw for clamping the conductor. Loosening of screws during service is prevented by elastic deformation of yoke while tightening of screws, which in turn grips screw threads firmly.

Outstanding feature of **elmex** screw-clamp technology is the provision of double interlock. The vertical arms of the Contact Clamp are folded at the top end into lips, overlapping each other. The lip from each arm locks into recess provided on the other arm, thus providing double interlocking. In the event of inadvertent overtightening, this design prevents damage to the threads and deformation of Contact Clamp.

elmex contact clamps are subjected to a special heat treatment process, so that the rolled inner threads of the clamp achieve a uniform and strong wear resistance. The rolled threads provide higher mechanical strength.

elmex uses cold forged rolled threaded washer base, or cheese head, screws. **elmex** contact-clamps and the screws are protected by zinc plating and passivation, under controlled plating process, for achieving better corrosion resistance.

Screw Clamp - Spring Loaded



Spring-loaded terminals are a special offering from **elmex** for high vibration applications, although **elmex** standard screw-clamp design is already resistant to vibrations.

Compression springs are assembled under the contact clamps in pre-stressed condition. When the screws are fully tightened upto specified torque, the springs under the contact clamps provide additional pressure between current bar and conductor, making the terminals especially suitable for high vibration applications.

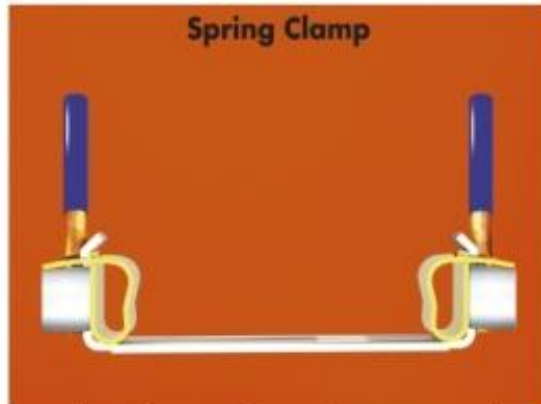
Screw Clamp (Copper - Alloy)



In copper alloy screw clamp design, also popularly called "All Brass Terminals", the clamping part is made of brass, and brass screws are used for clamping the conductor. The brass screw clamps are also designed to prevent loosening of screws during service.

By appropriate selection of materials and processes in the **elmex** copper-alloy screw clamp design, the phenomena of stress corrosion cracking is taken care of. Protection against atmospheric corrosion in **elmex** design is achieved by tin plating in a controlled plating process, with an undercoat of nickel plating to prevent zinc migration.

Spring Clamp



Spring clamp (also named "tension-clamp" or "cage clamp") provides screwless clamping and consists of stainless steel clamp, which functions as a spring for developing necessary contact pressure between current bar and conductor. Current bar is the current carrying part in the terminal block.

The spring clamp is brought under tension by inserting a screwdriver in the space provided. This creates necessary opening in the clamp for inserting conductor. After stripping the insulation at the conductor end, the conductor is fully inserted and the screwdriver is withdrawn. The clamp arm thereby presses the conductor firmly against current bar, by spring action of the clamp. **elmex** current bars have serrated face for better grip on conductor, giving lower contact resistance.

elmex TERMINATION TECHNOLOGY

Ring/Fork (Nut Driver)



This conductor-clamping design is especially developed for receiving Ring-type or Fork-type cable lugs. The terminal block consists of Housing, Studs and Nuts and the Current Bar.

In *elmex* design the lugged cables are clamped to the current bar by tightening the nuts, in case of "Nut-Driver" type of Stud Terminals. For Screwdriver operated stud terminals, the stud is provided with a

Ring/Fork (Screw Driver)



special long-nut with a slot at the top for applying screwdriver. These are used where assembly space is a constraint.

The metal parts in these types of *elmex* terminals are made of Copper alloy and tin plated, with nickel undercoat, for protection against atmospheric corrosion.

TESTS FOR CONDUCTOR CLAMPING AS PER IEC-60947-1 & IEC-60947-7-1

IEC 60947-1 specifies General Rules for low voltage switchgear and control gear including rules for their terminals. IEC-60947-7-1 is the specification for terminal blocks for Copper conductors.

A section in IEC-60947-7-1 on mechanical properties of clamping units specifies tests to verify these properties. These tests are briefly explained below:

✓ **Test for Mechanical strength of clamping units :**

This test consists of connection and disconnection of conductor a number of times, under specified test conditions. After the test contact voltage-drop must not change beyond specified limit and no damage should occur to the clamping system.

✓ **Test for damage to and accidental loosening of conductors :**

This test consists of rotating the conductor with its fulcrum at the point of connection to the terminal block, in a specified manner, using specified device for testing and under specified test conditions. During the test the conductor must not slip out nor break near clamping area.

✓ **Pull out test :**

The test is to be carried out immediately after the above test for damage and accidental loosening of conductors and it consists of pulling the conductor with a specified force for one minute, under specified test conditions. During the test the conductor must not slip out nor break near clamping area.

One of the important test conditions in the above tests (as well as in temperature rise test) is that the conductor has to be tightened with specified torque. The performance of terminal block in service, as much as in tests, depends on "proper" tightening of screws, defined by tightening torque and use of "proper" conductors, defined by rated connection capacity. Both these values are specified by manufacturers in their catalogues.

WIRING OF TERMINAL BLOCKS WITH ALUMINIUM CONDUCTORS

Introduction

Switchgear and control panel manufacturers and panel-builders are generally aware that the terminal blocks conforming to IEC 60947-7-1 are meant for copper wiring only. This awareness however may not exist with site staff, who may sometimes connect aluminium wires to these terminal blocks, resulting in conditions harmful for installations.

The fact is that the terminal blocks as per above IEC Standard can also be used for wiring aluminium conductors, if technical differences in use of copper and aluminium wires are properly understood, and certain procedure is followed for connecting aluminium wires.

Ignoring these technical differences in wiring up aluminium conductors to terminal blocks can lead to harmful consequences. The present article discusses these technicalities and recommends ratings of **elmex** terminal blocks for connecting aluminium wires.

Considerations in using aluminium wires

Over the years, copper bus bars, jumpers, cables and wires have been stage wise replaced by aluminium by the switchgear and control panel manufacturers and site engineers, after careful technical considerations as regards selecting proper size of aluminium conductors. In addition, procedure for using aluminium conductors is also followed. If both of these technicalities are taken into account while wiring up terminal blocks, then the installation with aluminium wiring can give trouble free service.

However sometimes unforeseen situations come up at site, as summarised below, resulting into harmful consequences.

1. For site-wiring, aluminium-wires of required current rating are naturally used. The sq mm size of such aluminium wires is considerably higher than of that copper - wire of same current rating, simply because aluminium has a considerably lower conductivity which is 60% of copper conductivity.

As a result the site wireman will find that AL-wire does not go into conductor clamping space meant for copper wire. If the AL-wire is stranded, some strands are therefore cut-off in order to accommodate it in the terminal block.

Aluminium-wire with less number of strands as above can carry less than its own rated current. Therefore joint with terminal block overheats when carrying load current.

2. AL-conductors have to be applied conducting grease, immediately after cleaning to prevent oxidation, every time they are connected. This is true for bus bar, jumper and cabling applications as well as for wiring applications. If this is not done, the joint fails slowly but steadily, as the aluminium gets coated with non-conducting oxide over a period of time, and as a result, the terminal block starts getting over heated.

3. Aluminium as a metal exhibits cold-flow characteristics. It means that under clamping pressure, aluminium flows outward from under the joint, resulting in reduction of contact pressure. The joint fails steadily as above, unless aluminium wires are provided with proper cable lugs, and treated with oxidation-preventive conducting grease.

The accompanying graphic displays failure of terminals, due to reasons such as above, even through the terminal blocks conform to the IEC specifications and are accorded various international approvals.

In all investigated complaints, it was found that the Cu-wire side of the terminal was intact, while the Al-wire side damaged the terminal due to the above reasons.

Procedure for using aluminium wires:

Using aluminium conductors at site is a natural consequence of replacing copper with aluminium in various applications.

The procedure for using aluminium wires, as described below, should be followed for trouble free operation.

1. It is advisable to use crimping lugs with Al-conductor before connecting it to terminal block for the sake of better and more uniform contact pressure. Following should be observed:

- a. Use proper size lug for crimping.



Contact becomes red hot



Contact charres



Insulation burns

WIRING OF TERMINAL BLOCKS WITH ALUMINIUM CONDUCTORS

- b. Use ring type, Al-lugs, for stud type terminals and pin type tubular lugs for screw-clamp type terminals.
 - c. Clean the wire / conductor (stripped portion) and then apply conducting anti-corrosion compound before crimping as per the procedure in Step - 2 below.
 - d. Insert all the strands fully into lug-tube, without any insulation entering the tube. Only then crimping should be done. (see the box : "Crimping Workmanship")
 - e. The crimped cable as above should be clamped in terminal by using torque screw drivers / torque wrenches, upto recommended torque values for tightening screws / nuts.
 - f. Ensure that proper crimping tool is used as recommended by lug-manufacturer.
2. To overcome oxidation problem of Al-conductors, remove oxide film from

the stripped conductor strands using fine emery paper, and wipe off the dust from the strands thoroughly and immediately apply conducting anti-corrosion compound on all the strands, fixing the crimping lug immediately. The anti-corrosion compound should also be applied to the lug after crimping, followed by clamping the cable in the terminal block.

- 3. Every time cable is disconnected and reconnected to the terminal block, anti-oxidation conducting grease must be applied as above.
- 4. Termination should be periodically attended for physical check-up and tightening of screws.

The selection of terminal blocks for desired rating needs careful consideration, since for the same current rating, aluminium-wire size is considerably larger than the copper wire size. To accommodate aluminium wire of such larger size, a higher connection-capacity terminal block has to be used. Alternatively the terminal block selected for copper wiring has to be derated.

SAFE PRACTICES FOR CONDUCTOR CLAMPING

UNSAFE WORKING	TECHNICALITY	SAFE PRACTICES
1. Inserting wires without stripping the insulation to required length.	Along with conductor, the insulation also gets clamped, reducing contact area and causing overheating.	Always strip the conductor to required length so that only the conductor and its full contact area is clamped.
2. Using Aluminium wires instead of Copper wires.	For same cross-section Aluminium wires have lower current rating. Bare Aluminium builds up non conducting film in normal atmosphere. Both these factors cause overheating.	a) Use only Copper wires as per rated connection capacity of terminal block. b) If Aluminium wires are to be used consult manufacturer. The terminal for copper wire has to be de-rated and Aluminium wires need to be prepared first to prevent oxide film.
3. Cutting off strands from stranded / flexible wires for making connections.	At the clamping face of conductor, number of strands are reduced, hence joint cannot carry rated current, causing overheating. The strands are cut off usually by ignorance, neglect or by using aluminium stranded conductor of same current rating, which cannot be accommodated in terminal block without cutting off strands.	Connect up all the strands of stranded & flexible wires, to the terminal block.
4. "Connector" type small screw drivers OR over size screwdrivers are used for all sizes of terminals.	Connector type screw drivers cannot provide required torque as terminal size increases, causing overheating. Oversize screw drivers can damage threads.	It is best to use torque measuring screw drivers. Atleast select proper size of screwdriver to match slot size of terminal screw for tightening fully.
5. Connecting very small size wires in large size terminals.	Smaller wire sizes cannot be clamped properly in larger size terminal blocks, causing overheating.	For each terminal size, minimum and maximum conductor sizes are specified, which are permitted for connection to the terminal in manufacturers' catalogues.

CRIMPING WORKMANSHIP



CORRECT CRIMPING



FAULTY CRIMPING
All strands not inserted in lug



FAULTY CRIMPING
Strands protruding and obstructing out fitting.



FAULTY CRIMPING
Insulation inserted in lug

DIRECTIVES AND COMPLIANCE

ATEX DIRECTIVE



The ATEX directive 94/9/EC applies to the equipment for use in potentially explosive atmosphere (AT-EX is from French: "atmospheres explosibles").

The directive requires that equipment and its components have to be approved for use in potentially explosive environments.

The *elmex* terminal blocks, offered for verification as per respective standards EN 60079-0 and EN 60079-7, have been verified, tested and approved by Det Norske Veritas (DNV) - Norway. Further, the ATEX-Directive also requires Quality System to comply with EN13980 - Application of Quality System to Potentially Explosive Atmospheres. *elmex* quality system complies with EN13980. *elmex* Terminal Blocks with ATEX approval are marked with "ex" logo in the detailed catalogue.

The test requirements as per EN 60079-0 and EN 60079-7 are more severe particularly, Creepage Distances, Dielectric Test Values and Range of Service Temperatures.

The max surface temperature of 85 °C controls Temperature Rise limits. Performance at sub Zero temperatures (-20 °C) have also to be verified, as per EN 60079-0/EN 60079-7.

In Petroleum Industry, Oil and Gas Industry, Chemical Industry and such other Industries the probability of explosive materials in atmosphere is high and can also be present in some areas. The ATEX directive essentially aims at preventing mishaps in such industrial applications.

elmex terminal blocks have been approved for application in potentially explosive atmospheres, and are classified as follows:-

- for surface installation ○ Group II ○ Category II ○ Zones 1 and 2
- Increased safety "e", type of protection "n".



RoHS DIRECTIVE



The RoHS Directive No 2002/95/EC, issued by European Parliament and Council, is implemented by RoHS Regulations 2004 for restricting the use of certain hazardous substances in electrical and electronic equipment. The Directive is enforced by the Secretary of State for Trade and Industry in European Union with effect from July 1, 2006, and will apply to Electrical and Electronic Equipment (EEE) placed on European Union Market thereafter.

The Directive covers eight EEE upto 1000V AC (1500 VDC) as at present, and restricts the use of following materials in manufacture of EEE or parts thereof : Lead, Mercury, Cadmium, Hexavalent Chromium, Polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE). The last two materials are usually employed for flame-retardant property. The Regulations restrict the percentage content of these materials, specify certain exemptions in applying the Regulations, and give guidelines on demonstrating compliance. The enforcement authority, namely, secretary of State for Trade and Industry, is empowered to conduct market surveillance to detect non-compliance with the RoHS Regulations, and may even carry out tests for this purpose. The Regulations provide for a specified fine, if the products fail to comply when checked by the enforcement authority.

For details on the Directive and the Regulations, as also how to comply with them, it is best to log on to website : www.rohs.gov.uk and www.dti.gov.uk.

When the concentration of the above referred substances exceeds the specified limits, their burning (in service, or for waste disposal), and recycling, create products which are hazardous to human health and environment. Strictly speaking, Terminals Blocks as a class of products do not fall under any of the groups of products specified in the RoHS regulations. However, as a responsible Corporate Citizen, *elmex* has introduced RoHS compliant terminal blocks, in line with other global manufacturers. As such, *elmex* terminal blocks are free of hazardous substances, as required by the Regulations.



PRODUCT TESTING AT *elmex*

elmex Terminal Blocks comply with International Specifications IEC-60947-7-1: Low voltage switchgear and controlgear, Part 7 - ancillary equipment, section 1 - Terminal Blocks for Copper conductors.

For the purpose of product approvals, as required by *elmex* customers, various types of terminal-blocks have further undergone comprehensive testing and verification for compliance with other International standards:-

UL1059 : Terminal Blocks (US Standard)
 CSA C22-2 No. 158-1987 (Canadian Standard)
 ATEX : 94/9/EC Directive
 EN60947-7-1

In addition, *elmex* carries out other special tests also, such as, Salt Mist Test, Environmental Cycle Test, Insulation Resistance Test, Capacitance Measurement and so on.

Testing and Evaluation is the backbone of product development and continuous quality improvement. *elmex*'s major strength derives from the top priority it has always given to establishing testing facilities on the shop floor and in the laboratory.

Two kinds of testing are done here - one is where product testing is conducted as part of the manufacturing process to ensure quality, and the second is at R&D where new products undergo extensive in-house testing before they are cleared for regular manufacture.

The following tests are conducted on standard products during manufacturing:

- ✓ Flammability Test
- ✓ Insulation Resistance & HV Test
- ✓ Torque Test and Pull-out Test

- ✓ Voltage Drop (mV) Tests
- ✓ Plating Thickness Test
- ✓ Solderability Test

The tests conducted at the R&D level are much more rigorous than type tests. Our Test Laboratory set-up conforms to Testing and Calibration Standards and all tests are conducted by technically qualified and experienced staff.

Type tests are conducted as per IEC, VDE, UL and Canadian standards (CSA). These include:

- ✓ Temperature Rise Test
- ✓ Flexion and Pull Out Test
- ✓ Mechanical Strength Test (Clamping Units)
- ✓ Voltage Drop Test
- ✓ Mechanical Endurance Test (for custom-made switches as Reliability Test)
- ✓ Dielectric Test (power frequency)
- ✓ Verification of thermal characteristics
- ✓ Thermal Aging Test

We also get tests conducted at Nationally Accredited Laboratories. The main ones include:

- ✓ Impulse Voltage Withstand Test
- ✓ Short-time Current Withstand Test
- ✓ Salt Mist Spray Test
- ✓ Environmental Tests
- ✓ Vibration Test

Passion for testing and evaluation have made *elmex* most reliable products in India, and has earned us an equally good reputation abroad.

APPROVALS

	UL Recognition for USA		CSA Recognition for Canada & USA
	c-UL Recognition for Canada		CE Mark Conforming to IEC Specification
	D mark Certification for Denmark		CE Mark for explosion-proof Approval as per ATEX directive
	S Mark Certification for Sweden		For compliance of products with RoHS directive.
	FI mark Certification for Finland		Quality System ISO 9001-2008
	N Mark Certification for Norway		

elmex DISTRIBUTION BLOCKS

2.5 sq mm to 150 sq mm

For Control Signal to High Power Distribution

elmex Distribution Blocks type FDBK and DBK have been already popular for many years. These types enable distribution of controls from 4 sq mm (32 A) up to medium power distribution with 35 sq mm (114 A) cables.

elmex has now extended this range both ways to enable distribution of control signals with 0.5-2.5 sq mm wires up to high power distribution with 150 sq mm (309 A) cables.

These distribution blocks are available in DIN rail mounted version (TS 15, 35) and one type in panel mounted version. They are in Polyamide 6.6 housing and available in grey, khaki, red, yellow, blue, black and green colours.

Until recently elmex distribution blocks in type - group DBK, FDBK, and DFBK mainly served the needs of power distribution from 32 A/4 sq mm up to 114 A/35 sq mm. elmex has now extended the range considerably so that it is now possible to use elmex distribution blocks for very low power such as control signals (2.5 sq mm) up to high power such as large loads (150 sq mm, 309 A).

The principle of construction essentially remains same for all the types of elmex distribution blocks. The outgoing terminals are standard design of terminals, having a specially designed current bar, which holds all terminals together and provides electrically continuous, fully insulated, "bus bar" for all terminals. To allow use of fork/ring type lugs for outgoing connections, elmex now offers fully insulated finger safe terminals in stud and nut clamping version (35 sq mm up to 125 A). All other types have well proven screw clamp outgoing terminals. As for incoming, both stud and nut

clamping, as well as screw clamping, are now available.

• elmex screw clamps can accept flexible/stranded/solid conductors, including cables with pin-type lugs. The stud and nut clamping can accept fork type or ring type cable lugs.

• Each outgoing terminal of elmex distribution block has two termination points (just as in feed through terminals). Therefore 2/3/4/6/8 terminals can be used to connect twice the number of conductors (or loads) i.e. 4/6/8/12/16 nos.

• The space occupied by elmex distribution blocks on DIN rails for supply distribution to 4/6/8/12/16 loads is incredibly small compared to corresponding bus / jumper / cable distribution.

• For 3-phase distribution, or 3-phase/4 wire distribution, one elmex distribution block is used for each phase / wire.

• Total 3-phase power, which can be distributed using elmex distribution blocks with incoming of 10, 25, 35, 150 sq mm with rated currents of 57A, 64A, 114A, 309 A respectively, is about 33kW, 37kW, 66kW and 178 kW.

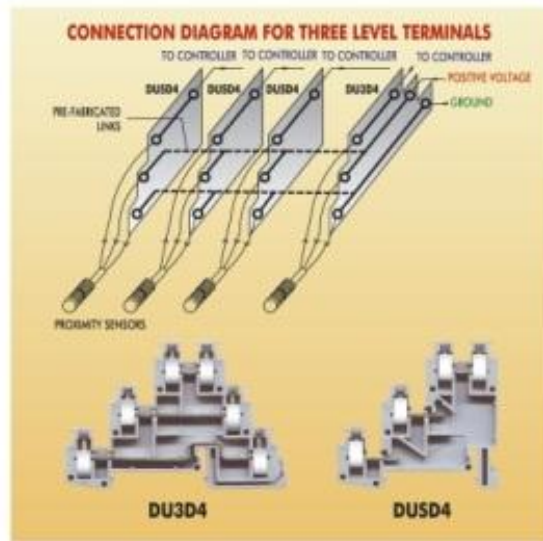
For Control/Field signal distribution, for lighting application and for junction boxes, wires are connected to terminals of distribution blocks. Due to specially designed current bar, working as a "bus bar", these connections are internally shorted, without need of shorting links or looping.



A Unique Solution for Multiple Sensor Control

elmex Triple Deck Terminals – **DU3D 4** and **DUSD 4** – are special products for **Control and Automation Applications**, for handling multiple sensor controls.

In designing control circuit for large number of proximity sensors and such other control elements, the controls take place through 3 wires - a positive, a negative and a sensor signal wire. **DU3D 4** and **DUSD 4** are **employed in combination** to fulfill this function. They are designed such that their lower and middle decks can be directly connected to lower and middle decks of adjacent terminals by means of **pre-fabricated shorting links**. The positive and negative supply for controls are connected to the decks, forming a "control supply bus". The top levels of **DU3D 4** and **DUSD 4** are all feed-through type, so that sensor signals can be connected to top levels for onward connection to the controller. These Terminals offer an economic, effective and space-saving solution for handling a **large number of sensor signals in control wiring**.



elmex PLUG AND SOCKET TERMINALS

elmex offers a wide range of terminals with disconnecting features for application in power and control circuits for temporary disconnection (for testing/maintenance purposes) at zero potential/at no load.

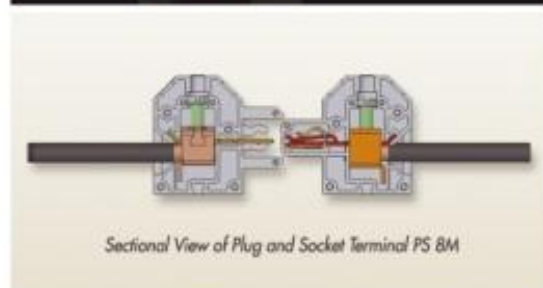
elmex has now developed Plug & Socket type terminal PS 8M, in polyamide housing, particularly for applications in semi-draw out type motor control circuits/feeders. The terminal is suitable for termination of conductor size 0.5 to 6 sq mm. The connection between plug and socket parts of the terminal is established by contact mechanism which employs spring action that provides permanent high contact pressure with very low resistance to securely connect the plug pin with the socket. Current carrying parts of the terminals are silver plated to provide optimum conductivity. Conductor termination is by screw-clamp mechanism.

Terminal PS 8M is stackable to facilitate termination with disconnecting facility, for multiple cables, depending on the application. This feature allows use of only required number of terminals for stacking.

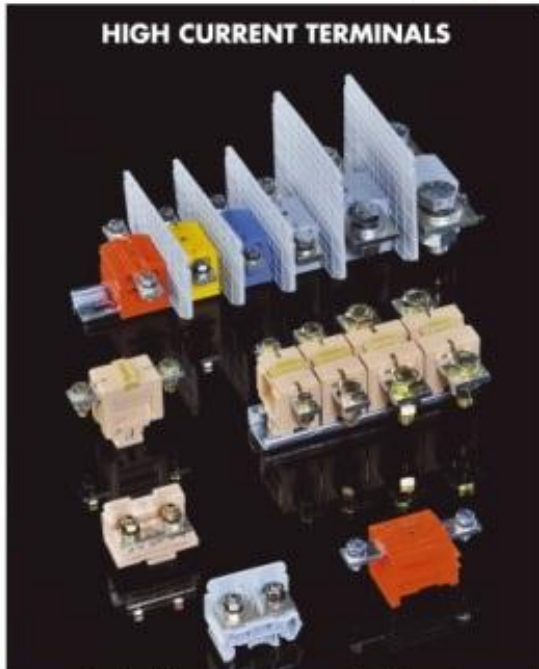
PS 8M terminals are available with options to mount on TS 35 DIN rails. The mounting feet can be attached to the terminals at the end of the stack, as shown in FIG 3. The feet can be attached either to the plug or the socket. For disconnecting, the plug and the socket can be pulled apart.

PS 8M are available in different colours also. Use of PS 8M in different colours is an added advantage for ready identification in the wiring.

The draw-out feature of PS 8M makes it a convenient choice to design panels with modular constructions wherein separately wired modules or panels can be connected with one another once they are completely wired internally. Such a modular design facilitates quick disconnection for test and maintenance work.

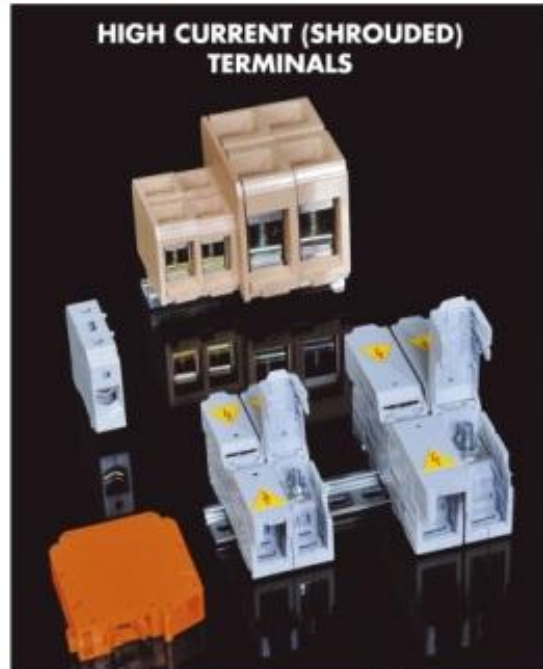


elmex HIGH CURRENT TERMINATION SOLUTIONS from 35 sq mm up to 240 sq mm



HIGH CURRENT TERMINALS

Terminal Type	Rated Current
KBT 100	100 Amp
DPBB 50	150 Amp
DPBB 70	192 Amp
DPBB 120	269 Amp
DPBB 185N	353 Amp
DPBB 240	415 Amp
CBT 100	100 Amp
CBT 110	110 Amp
CBT 170	170 Amp
CBT 250	250 Amp
CBT 300	300 Amp



HIGH CURRENT (SHROUDED) TERMINALS

Terminal Type	Rated Current
SFT 35	140 Amp
SFT 70	192 Amp
KUT 50	150 Amp
KUT 95	232 Amp
CST 70	192 Amp
CST 185	353 Amp

elmex SHROUDED STUD TYPE TERMINALS WITH CAPTIVE NUTS



As an innovative solution, **elmex** has developed stud terminals **OAT 2.5**, **OAT 6** and **OAT 6T (Test Disconnect Type)**. These terminals are provided with hinged covers within which the nuts remain captive. When the covers are opened up, carrying the captive nuts, the threaded bolts of the terminals are ready to receive the conductor prepared using ring/fork type lugs crimped with the conductor. When the covers are closed, the captive

nuts, the threaded bolts of the terminals are ready to receive the conductor prepared using ring/fork type lugs crimped with the conductor. When the covers are closed, the captive nut positions itself on the threaded bolt. The nuts are then tightened with a screw driver, to establish connections. The covers fully shroud the live metal parts and the insulated lug in the conductor clamping area, ensuring safety against electric shock hazard.

Since the nuts are captive in the hinged covers, (i.e. no need to open them up), this type of construction facilitates quick and convenient way of making connections.

elmex TERMITRONICS CONTROL ELEMENTS

elmex offers an innovative solution to Control and Automation Industry, enabling modular design of electronic controls. It is now possible to use add-on concept or modification or enhancements in control circuits, even during service. It helps the maintenance engineer to replace a control element merely by pulling out a terminal block from DIN Rails.

This new solution is the universal DIN Rail mounted elmex Termitronix terminal blocks, which consist of :

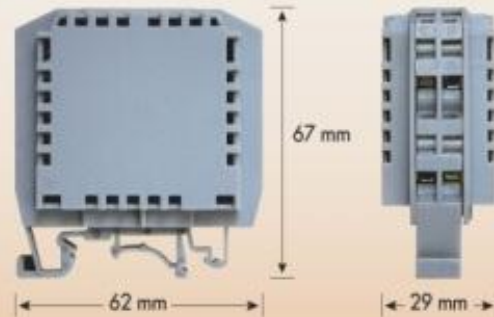
- 1 Basic Terminal Block Type KCH, with 8 independent terminals for external connections.
- 2 A mini PCB housed in the Terminal Block Type KCH, and
- 3 Electronics Control Element integral with PCB, which enables development of required type of control logic, or use of specific elements (such as Standard or Static Relays, and various other control elements).

Modular concept in Control and Automation already exists in the form of econix DIN Rail mounted Interface Modules. Termitronix terminals, highly compact in size, enable modular design of control circuits using various control logic. Several features of this breakthrough product from elmex are of interest to Designers and Users alike :

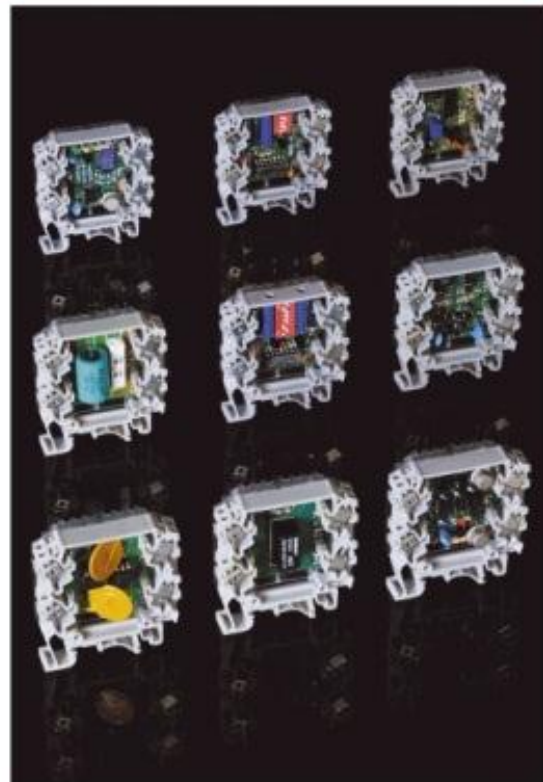
- ✓ Universal DIN Rail Mounted
- ✓ Both the controller and the field loads can be connected directly to Termitronix modules, without introducing set of feed through terminals (called Marshalling), which is a common practice even while using traditional interface modules with PCB connectors.
- ✓ Absence of marshalling, as above, results in space saving up to 30-50% depending on the control-logic/control element of the Termitronix range. The cost saving results from simplified external wiring, and absence of marshalling, which eliminates rows of feed-through terminals together with the costs of associated fabrication and wiring.
- ✓ The basic terminal block, the PCB and the electronic control elements, which are designed according to international practices, yield a desirable performance, durability and reliability for the Termitronix range of modules.
- ✓ Termitronix modules offer considerable ease in maintenance, investigation, repairs and replacements of the modular control element in service, because of DIN Rail mounting unlike in the case of traditional control circuit designs.
- ✓ Termitronix modules have specially designed 8 terminals, 4 on either side, with 45° angle for ease of control wire entry. The terminal has cable holding metal clamp as for properly locating the control wires. The well-proven elmex screw clamp design ensures reliable conductor clamping.
- ✓ Termitronix Modules are fully ventilated by the opening provided on both the faces and hence allow good cooling of the control elements and the PCB during service.

Essentials details of Termitronix Terminals, already developed and in use, are given here. elmex-econix can develop various other need based control elements in Termitronix Terminals in conjunction with modular concept in designing electronic controls.

BASIC TERMINAL BLOCK TYPE KCH



COMPACT SIZE OF TERMITRONIX





cross currents



**elmex WINS RECOGNITION IN
IEEMA SME QUALITY AWARD ISQA 2009!**

**CRITERIA FOR THE AWARD – Leadership Commitment, Customer Focus, Quality System,
Performance Results, Analysis and Learning, Focus on Future...**



We welcome your suggestions and queries regarding our products and feedback about CROSS CURRENTS. Write to us at ask@elmex.net



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TECHNICAL SPECIFICATIONS MAY CHANGE IN LINE WITH TECHNICAL ADVANCES AND INDUSTRY STANDARDS.