

# Cross currents

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## econix - SWITCHING MODE POWER SUPPLY

All modern electronic control systems demand reliable and stable power supply, with constant supply voltage, regardless of changing load conditions. Linear and Switching Regulators are the two basic types of regulators available for this purpose. The latest Switching Mode Power Supply (SMPS) Regulators supplied by **econix** are manufactured with state-of-the-art technology to ensure high sensitivity, accuracy and reliability. They also offer a number of outstanding features not found in many SMPS Regulators currently available in the market.

**econix** is the exclusive marketing agency in India for SMPS Regulators from **M/s Reign Power Co. Ltd., Taiwan**. These SMPS Regulators comply with international standards, are fully tested and approved by international authorities. Their several unique features easily make them the first choice in modern Automation, Instrumentation and Electronic Controls Industries, particularly for critical applications. In India, they have received the stamp of approval from organizations like the NDDB.

### UNIQUE FEATURES

✓ **Control of harmonics:** Switching elements in SMPS operate at high frequencies (65 to 70 kHz) causing undesirable harmonics on the AC line. This results in mal-operation of valves, transducers etc. **econix** SMPS, with its inbuilt harmonic attenuator (complying with international standard **EN 60000-3-2**), solves this problem easily. **econix** SMPS can be used in all environments because they also comply with **EMC-EN55022** and therefore effectively control undesirable effects of electric and magnetic fields on electronic circuits.

✓ **Interlockable with other automation systems:** **econix** SMPS can be interlocked with other automation systems, as they provide remote monitoring by use of Rdy contact. The Rdy of SMPS can be high (+ve) or low (-ve) as selected, and provides the signal "DC output OK".

✓ **Compatible with parallel operation (redundancy - mode):** In modern process control systems two SMPS are operated in parallel, although one is sufficient to take the full load. This redundant-mode ensures that in the event of failure of one SMPS, the other takes over without causing any kind of system disturbance. Whereas generally decoupling diodes are used for this purpose, the **econix** SMPS is inherently compatible in redundancy mode.

✓ **Very low Ripple DC:** The output voltage of **econix** SMPS is filtered to ensure very low ripple (less than 250 mV), so that the voltage seen by load is perfectly DC.

✓ **Standard protections with a difference:** **econix** SMPS also protects the system against over voltage, overloads and short circuits. However, there is an in-built current limiting feature, which limits the overload current to rated value by regulating the voltage, as soon as overload occurs. This reduces considerably the stresses caused by high overload currents.

✓ **Unique power factor correction (PFC) circuit:** Due to switching characteristics of SMPS the input current wave is generally highly distorted by harmonics and the resulting power factor can be as low as 0.6 lag. **econix** SMPS has resolved this problem through a unique PFC circuit which improves the

power factor to even better than 0.97 lag.

✓ **Unique zero voltage circuit for in-rush currents:** When the AC supply trips, followed by its switching-on, there can be high in-rush currents. During field testing of different makes of SMPS, these in-rush currents resulted in second tripping in all cases except **econix** SMPS, because of its special zero voltage circuit. This limits in-rush current drastically and the system readily recovers stability.

✓ **Unique current sharing feature:** SMPS are operated in parallel, as means of raising current ratings. However, the paralleled SMPS may not share the currents equally unless so designed. **econix** SMPS has a built-in current sharing feature due to which individual SMPS share the currents equally during parallel operation. **econix** recommends use of decoupling diodes only if the loads are expected to cause large surge currents.

✓ **International approvals:** **econix** SMPS have international approvals such as **UL, RU and CE**. They are tested to international specifications for the following tests:

- Burn-in Test (100% full load current)
- Line regulation test
- Load regulation test
- Ripple measurement on 20 MHz CRO
- Efficiency test
- Drift test

**Input Voltage :** 90-264 Volts AC, 47 - 63 Hz  
**Output Voltage :** 5,12,24,48 Volts DC

**Output Power :** 35, 60, 72, 120, 200, 240 Watts

**Ambient :** 0 °C - 50 °C, 95% RH

**Mounting :** DIN Rail TS 35 or Panel mounting

**econix** SMPS Regulators thus offer a sturdy, maintenance-free power supply system with in-built stability, reliability and accuracy. They are compact and economical and are backed by 2-year warranty.

For further queries please contact us at [ask@elmex.net](mailto:ask@elmex.net) or [bhairavjoshi@elmex.net](mailto:bhairavjoshi@elmex.net)



## elmex POLYAMIDE 66 FEED THROUGH TERMINALS : (K-Series)



Introduced in the 70s **elmex K-Series** terminals are the **most popular and widely used terminals** in a range of applications in almost all industries. K-Series terminals are **Universal DIN-rail mounted (TS32 & TS35)**, in **polyamide 66** insulation housing and with **well proven screw-clamp** design. The K-Series Terminals are available for conductor sizes from **0.5 sq mm to 95 sq mm**, covering rated currents from **24 A to 232 A** with rated insulation level of **800/1000 V (IEC 60947-1-1)**.

Types **KUT 50** (1000 V-150 A) and **KUT 95** (1000 V-232 A) are **completely shrouded** terminal blocks and have a **special foot-lock** which secures the terminal blocks to the mounting channel, preventing its pull out due to movement of heavy conductors. **KUT 35** (800 V-125 A) is a completely shrouded design.

The basic K-Series is further developed for special **high vibration applications**, using **spring loaded screw clamps**: **Type KST4UWS**, (4 sq mm), **KST 6WS** (6 sq mm), **KULT1** (10 sq mm) **KULT4** (4 sq mm) and **KULT6** (6 sq mm). The KULT range employs more robust insulation housing especially developed for **critical applications** and also has specially designed current bar for using hook bladed lug,

which arrests the lug in the screw clamp, preventing slip out by vibrations.

K-Series terminals are available in standard colours of **grey, khaki, red, yellow, blue, black** and **green**. They can be supplied with the **complete elmex range of accessories**: end plates, barrier plates, permanent shorting links, cross connection link assembly, removable shorting links, fixed bridge bars, end clamps, marking labels, group markers, warning labels etc.

These terminals have international **approvals/recognitions**: **UL**(USA), **C-UL**(Canada), **D** (Denmark), **S** (Sweden), **FI** (Finland), **N** (Norway) **CE & IEC** (Conformance to IEC 609471 - 1 and - 2), **EX** (explosion proof approvals as per **ATEX** directive)

Starting with K-Series terminals, **elmex** has recently **introduced international packaging system for inland supplies**, which protects against transport damages more effectively. The packaging also carries entire specification data according to international practice. This system is already in use with the K-Series terminals.

## econix LOW CONSUMPTION RELAY MODULES

**econix** has added yet another innovative DIN-rail mounted Relay-module to its versatile range of interface Modules, **specially designed for modern Automation and Control applications**. The LCRM (Low Consumption Relay Module) requires very low actuating current for the relay coil, and is provided with **opto-isolation** between the actuator signal and the relay coil.

**econix LCRM** comes with **multiple advantages** - its **low actuating current** considerably reduces the switching-current burden for the actuator signal, from 15-20 mA as in case of normal relay to less than 2mA in LCRM; its **opto-isolation** prevents erratic relay operation that often occurs due to extraneous signals, such as leakage currents in control circuits: and, **total current** required by the relays **from control supply** is reduced from about 120-160 mA as in case of a normal 8-channel module, to 16 mA as in case of 8 channel **econix** LCRM.

The LCRM relay modules are available in **1, 2, 3, 6, & 8**

**channels** with coil voltage of **12, 24, 48 V DC**. The actuating current for each relay is 1.8 mA, but can be set to desired values from **1.5 to 10 mA**. The opto-isolation can withstand **1 KV** between actuating source and the relay coil.

**econix** LCRM is set ready to meet the growing requirements of low consumption relay modules in modern automation & controls applications. For your specific requirements contact us at [ask@elmex.net](mailto:ask@elmex.net) or [bhairavjoshi@elmex.net](mailto:bhairavjoshi@elmex.net).



## CORROSION CRACKING TEST ON BRASS PARTS

Brass parts used in Terminal Blocks and containing **less than 80% copper** are required to withstand the **Corrosion Cracking Test**, according to Canadian Standard **CSA : C22.2 No. 158**.

A phenomenon called "Stress - corrosion cracking" or "Season - Cracking" occurs in brass parts, due to combined action of residual stresses in the brass parts and the effect of certain chemical pollutants in working atmosphere. The residual stresses can be due to cold working, or even due to assembly stresses. The problem of stress-corrosion-cracking is solved by proper selection of the composition of the Copper alloy with addition of certain elements, which prevent cracking and by proper annealing to remove stresses due to cold working.

The test according to the above CSA standard consists of immersion of Brass Parts for **30 minutes** in an aqueous solution of **mercurous nitrate** and **10 ml of nitric acid**, as specified in the CSA standard. After the test the Brass part is checked for cracking visually/after magnification.

Since IEC does not specify Corrosion Cracking Test, elmex follows the CSA standard, and has carried out the above test successfully on the brass parts used in terminal blocks.

## econix PCB CONNECTORS FOR SPECIFIC APPLICATIONS



ECDTL



ECDF

econix PCB connectors type **ECDTL** and **ECDF** are especially designed for **automation & controls applications**.

The connector **ECDTL** is **Test-disconnect type**, with knife-edge lever, while the connector **ECDF** is a **fuse-terminal**, and a **feed through terminal, in one housing**. Pitch for ECDF is **10.16 mm** and it accommodates two circuits : the fuse circuit (or phase) and the feed through circuit (or neutral). The **5 x 20 mm** or **5 x 25 mm** fuse is housed in disconnecting lever. The fuse can be removed or inserted as easily as in case of domestic fuses.

Both the connectors have well proven screw-clamp design. However, the screw is in the form of a threaded sleeve, with recess to engage screwdriver for clamping the control wire. Owing to the "Sleeve" feature a 2.3 mm dia male test plug can be readily inserted (snap-fit). **This design makes the connectors very useful for site testing of control circuits.**

**ECDF** and **ECDTL** are rated 250 V and suitable for conductor sizes **0.5 to 2.5 sq mm**. Both are available in standard **grey, orange** and **green colours**.

# FAQ

## Frequently Asked Questions

**Q : You have specialised in Melamine housing for terminal Blocks. Why don't you offer Polyamide insulation?**

**A :** That is a **MYTH**. The truth is that **elmex** has been offering a wide variety of terminal blocks in polyamide-66 insulation since the early 1970s. We also offer terminal blocks in FRPP insulation (Fire Retardant Polypropylene), depending on the application. The impression about **elmex** as a melamine specialist appears to date back in 60's and 70's decades when "**elmex**" was used synonymously for "**Terminal Blocks**"

**Q : elmex uses MS screw clamps for conductor clamping. Can you offer any other arrangement, which is often specified by some consultants or end-users?**

**A :** Yes, indeed we offer terminal blocks in all-brass (instead of MS clamp), spring-clamps, stud-terminals, Bolted connections, spring-loaded clamping arrangement for heavy vibration applications. In addition, we offer terminal blocks with screw clamp-at one end and solderable connection at other end (PCB connectors, panel-mounted terminals), Bolted connections at one end and screw clamp at the other end (Power terminals) and a host of other varieties for advanced applications such as fuse terminals, CT-application terminals, sensor application terminals, component housing terminals, distribution blocks, lighting pole terminals etc. You are welcome to our web site [URL:www.elmex.net](http://URL:www.elmex.net) for knowing **elmex** and its entire range of products. Bird-eye-view of our products can be seen on the last page of all our **Cross Current** issues.

UBT SERIES  
ALL BRASSSPRING LOADED  
FOR SCADA APPLNSPRING CLAMP  
TERMINALS

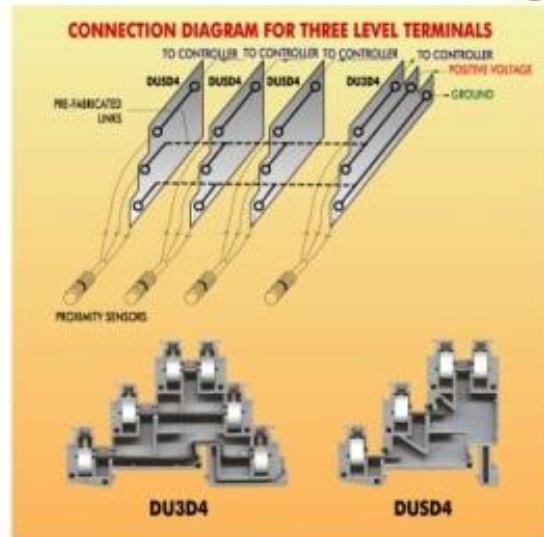
### THINKING CHANGES LIFE...

When we change our **thinking** our **beliefs** get changed.  
When we change our **beliefs** our **expectations** get changed.  
When we change our **expectations** our **attitude** gets changed.  
When we change our **attitude** our **behaviour** gets changed.  
When we change our **behaviour** our **performance** gets changed.  
When we change our **performance** our **life** gets changed.

## A Unique Solution for Multiple Sensor Control

elmex's 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**.



## OUR PRODUCT RANGE

≡ **Insulation Housings in Melamine, Polyamide (Nylon) 6.6, FRPP** ≡ **Conductor Clamping with Screw Clamps (MS & Brass), Spring Clamps, Bolted Connection, Anti-Vibration Spring-loaded Clamps** ≡ **Mounting on Standard DIN-rails TS 35, TS 32 and TS 15**

Feed-through Terminals	Power Terminals	Distribution Blocks	Earth Terminals	Micro Terminals
Double Deck Terminals	Triple Deck Terminals	Disconnecting Type Terminals	Fuse Disconnection Terminal	Lighting Pole Terminals
PCB Connectors	Special Application Terminals	Component Housing	Twin Terminals	Plug & Socket type Terminals
Passive Interface Modules	Relay Boards	Special Application Modules	Switching Mode Power Supplies (SMPS)	Custom-made Special Application Switches

We welcome your suggestions and queries regarding our products and feedback about CROSS CURRENTS. Write to us at [ask@elmex.net](mailto:ask@elmex.net)



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