

# Bourns® Product Profile



*Reliable Electronic Solutions*

# Bourns® Product Profile

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# Trimpot® Trimming Potentiometers

## Types Available:

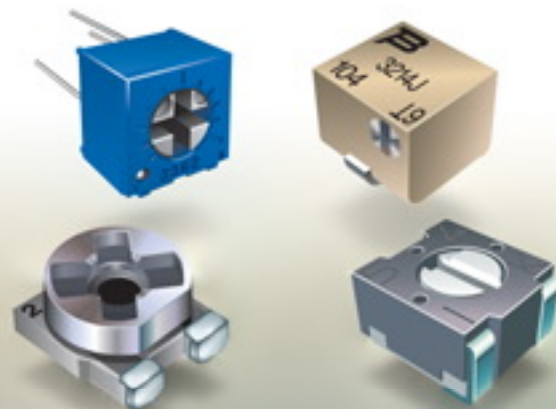
- Surface mount
- Through-hole
- Single-turn
- Multiturn
- Sealed
- Open frame

## Features:

- Top, bottom, side, front, and back adjust
- 2 mm – 12.7 mm sizes
- Tube, bulk, embossed tape, ammo pack, “radial” tape and reel
- Compatible with pick and place equipment

## Applications:

- Brightness/contrast controls
- Micro controllers
- Phone head sets
- Power supplies
- Credit card readers
- CATV decoders
- Plasma televisions
- LCD controllers
- Lighting controls
- Smoke detectors
- Speakers
- Industrial PCs
- Temperature sensors
- Torque sensors
- Base stations
- Stereo equipment
- Voltage meters
- Magnetic card readers
- RF meters
- Controller daughter boards
- Printers
- Two-way radios
- Security systems
- Disk drives
- Satellite receivers
- A/D converters
- Missiles



# Linear Motion Potentiometers

## Types Available:

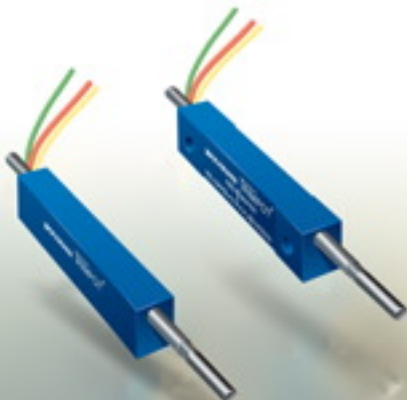
- Rectangular body
- Flexible lead
- Conductive plastic element

## Features:

- 0.12 to 0.25 watt power ratings
- 3.81 mm to 12.7 mm stroke lengths
- 500,000 cycles actuation life
- 1k ohm to 50k ohm standard resistance values

## Applications:

- Position sensing
- Copy machine cassette paper size selector
- Infusion pumps
- Rear view mirror position feedback



# Fuel Cards

## Types Available:

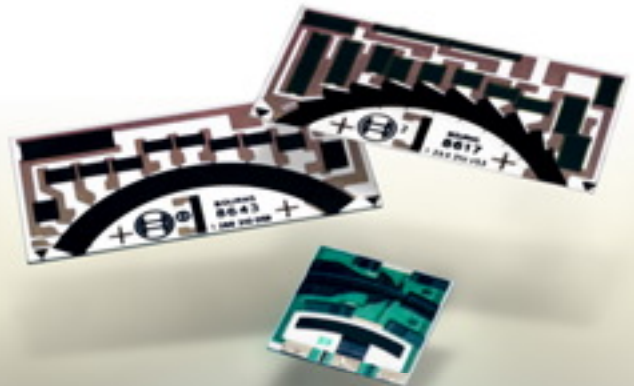
- Rectangular ceramic substrates
- Custom shape ceramic substrates
- Various ink systems:
  - Resistor
  - Terminations/wiper tracks
  - Protective glazes/polymers
- Wires attached
- Tinned solder pads
- Single or double side printing

## Features:

- Customer specific patterns
- Up to 100 discrete resistance steps
- Typical resistance ranges 95 ohms to 1.7K ohms
- Rated current 100 mA
- In line, 100% dynamic electrical current test
- Life cycles:
  - Up to 1 million dry
  - Up to 3 million wet

## Applications:

- Fuel level sending in fuel delivery systems:
  - Scooters/Motorcycles
  - Passenger cars
  - Light duty trucks
  - SUVs
  - Off-road equipment



# Resistor & RC Networks

## Types Available:

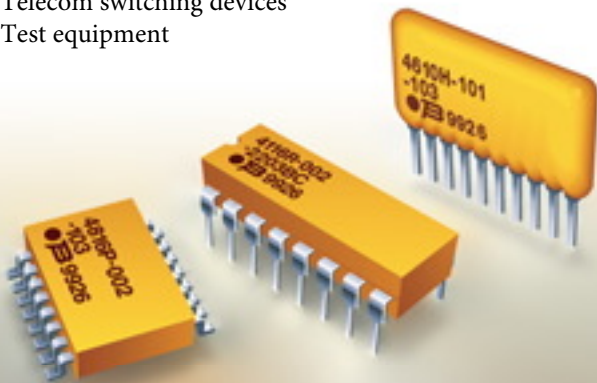
- Thick-film resistor networks
- Thin-film resistor networks
- Resistor/capacitor (RC) networks
- Capacitor networks

## Features:

- Surface mount and through-hole mounting
- SIP and DIP packages
- Molded and conformal-coat packages
- Standard resistance values from 10 ohms to 10 megohms
- Custom networks for non-standard circuits and values
- SIP package height as low as 0.195 inch
- Operating temperature range of  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$

## Applications:

- Access equipment
- Bar code scanners
- Cable boxes
- Computer peripherals
- Consumer electronics
- Data communication
- Fax equipment
- Modems
- Monitoring equipment
- Portable power generators
- Satellite systems
- Telecom switching devices
- Test equipment



# Switches

## Types Available:

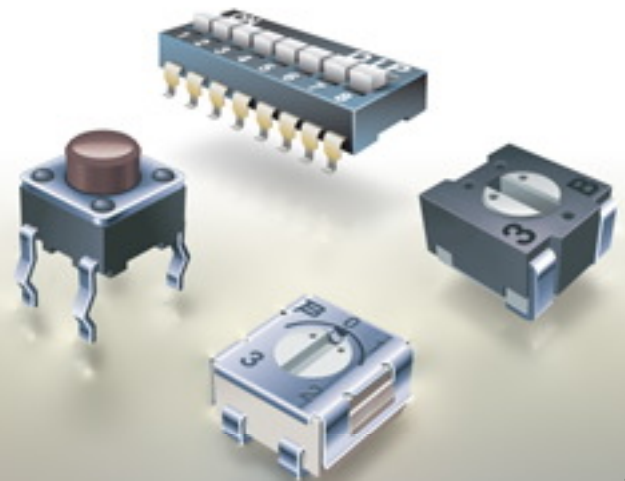
- Rotary
- Tactile
- DIP

## Features:

- Surface mount and through-hole mounting
- PC pins, gull wing, and J-hook terminal styles
- Sealed and board-washable types
- 3, 4, 6, 7 mm and DIP sizes
- Tube, bulk, embossed tape, and ammo pack packaging

## Applications:

- Instrumentation
- Industrial controls
- Communications equipment
- Computers
- Security systems
- Appliances
- Automotive
- Audio/visual
- Pagers



# Chip Resistors & Chip Arrays

## Types Available:

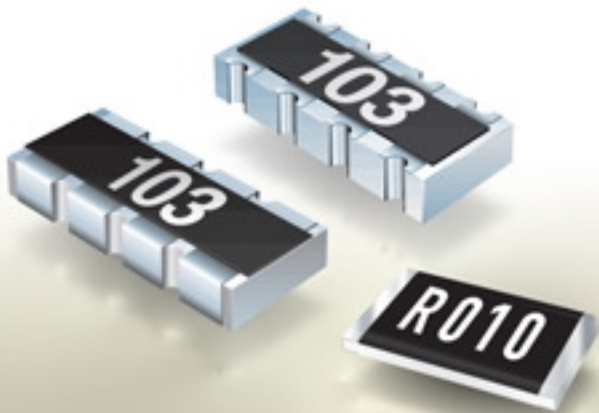
- Thick-film chip arrays
- Thick-film chip resistors

## Features:

- Standard resistance values from 0.01 ohms to 10 megohms
- Chip resistors from 0402- to 2512-size
- Chip arrays from 0402 x 2-size to 0603 x 8-size
- Operating temperature range of  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$

## Applications:

- Current sense
- Cellular and cordless phones
- Communications interface
- Flashlights
- Intercom systems
- Internet telephony
- Local area networks
- Measurement equipment
- Portable digital assistants
- Portable tools
- Remote controllers
- Telecom switching devices
- Test equipment



# Modular Contacts

## Types Available:

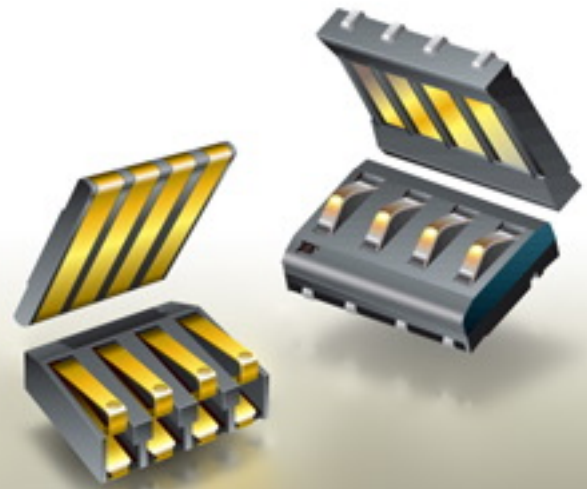
- Male
- Female

## Features:

- Precious metal
- 2-6 contacts
- 2.54 mm, 4.0 mm pitch and height
- Through-hole and surface mount
- Normal force – 80 grams minimum
- Contact resistance –  $< 0.030$  ohms
- Tube, embossed tape, 13" reel packaging

## Applications:

- Cellular phones
- PDAs
- Laptop computers
- Rechargeable battery packs





# Inductors & Transformers

## Types Available:

### Chip Inductors

- Laser-spiraled
- Molded wirewound
- Multilayer ceramic
- Multilayer ferrite
- Open wirewound

### Power Chokes

- Non-shielded
- Shielded

## Features:

- Standard inductance values from 1.0 nH to 15 mH.
- 20 models of chip inductors
- More than 50 models of power chokes
- Available in a wide range of sizes
- Operating temperature as high as 125 °C
- Sealed and open construction
- Surface mount and through-hole models

## Applications:

- Battery chargers
- CD players
- Data communication
- Global positioning systems
- Internet equipment
- Local area networks
- Monitoring equipment
- Portable radios
- Portable tools
- Test equipment
- Televisions
- Video conferencing equipment
- Automotive
- Telecommunications



### Chip Beads

- Low impedance
- High current
- High impedance

### Transformers

- Line-matching
- Wideband
- ISDN
- xDSL
- LAN

# Thin Film on Silicon Networks

## Types Available:

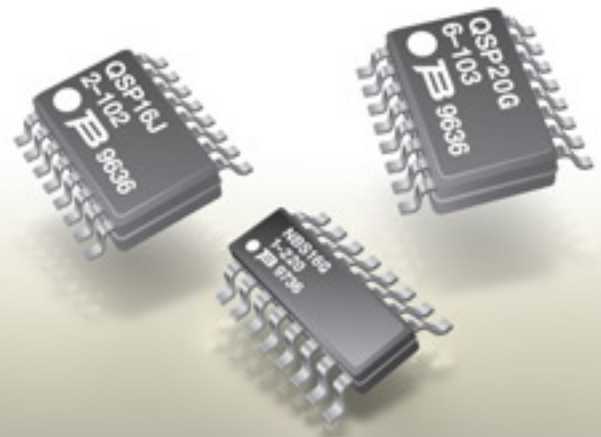
- Thin Film On Silicon Networks: 1 %, 2 %, 5 % Standard, 0.8 %, 0.5 % Precision

## Features:

- Isolated resistor, bussed resistor & termination networks
- RC & T filtering networks
- Diodes for ESD protection
- Low TCR & TTCR precision values
- SMD packaging with 8 to 28 pins depending on circuit

## Applications:

- Computers
- Automotive
- Telecommunications
- Industrial controls
- Consumer products
- Medical products
- Instrumentation



# Integrated Passive & Active Devices using CSP

# Multifuse® Resettable Fuses

## Types Available:

- Devices with resistors
- Capacitors
- Inductors
- Diodes (Schottky, Zener and Varactor)
- Bipolar transistors

## Features:

- Active & passive elements in a single package
- Excellent high frequency response
- EMI filtering networks
- ESD Protection to industry specifications
- 6 – 25 bumps depending on package

## Applications:

- Low pass filters with ESD protection:
  - *Dataport Interface*
  - *LCD Screen Interface*
  - *Headset Speaker*
  - *Headset Microphone*
- Line termination
- Application specific circuits in:
  - *Cell phones*
  - *PDA's*
  - *MP3 players*
  - *Digital cameras*
  - *Portable electronic devices*

## Types Available:

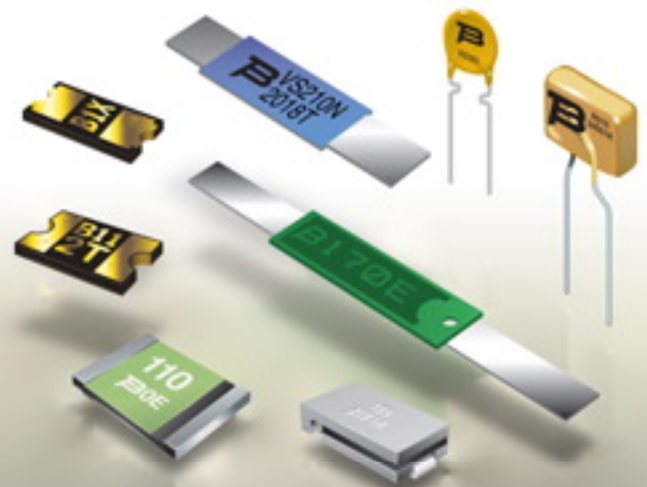
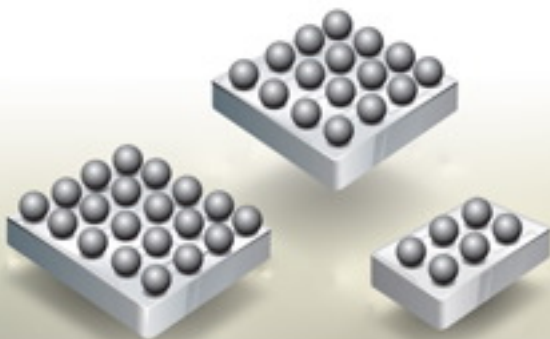
- Radial leaded through-hole
- Surface mount (1206, 1210, 1812, 2018, 2920 and 3425)
- Axial leaded battery strap
- Unencapsulated disk

## Features:

- 6 – 120 volt operating voltages
- Hold currents from 50 milliamps to 11.0 amps
- Low resistance battery protectors as low as 10 milliohms and as thin as 0.5 mm
- Interrupt voltages of 250 V and 600 V with surge capabilities for assisting in meeting US and international telecom requirements
- Custom designs available upon request
- Bulk, embossed tape, and ammo pack packaging
- Lead free

## Applications:

- Computers
- Battery
- Automotive
- Telecommunications
- Industrial controls
- Consumer products



# TSP Thyristor Surge Protectors

## Types Available:

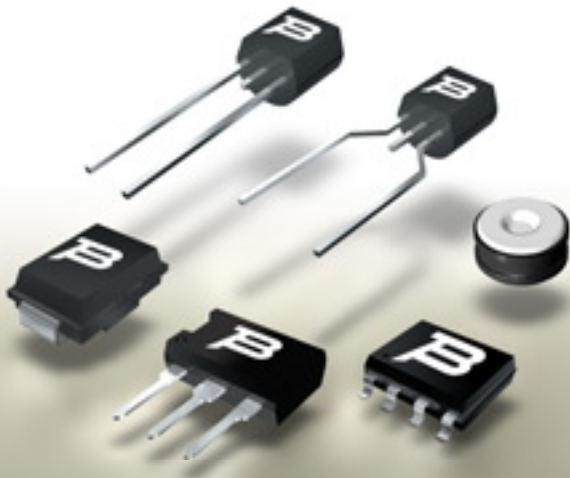
- Unidirectional
- Bidirectional
- Programmable

## Features:

- Protection voltages from 15 V to 700 V
- Dedicated SLIC protection
- UL recognized
- Enables Telcordia GR-1089, UL 60950, FCC (TIA), ITU-T, IEC, YD/T compliance

## Applications:

- Central office POTS
- Access equipment POTS
- xDSL and integrated linecards
- PABX protection
- VOIP protection
- Pairgain
- ISDN linecards and NT equipment
- 56k V.90 and V.92 modems
- Cordless DECT and analog phones
- Set top boxes



# Line Protection Modules

## Types Available:

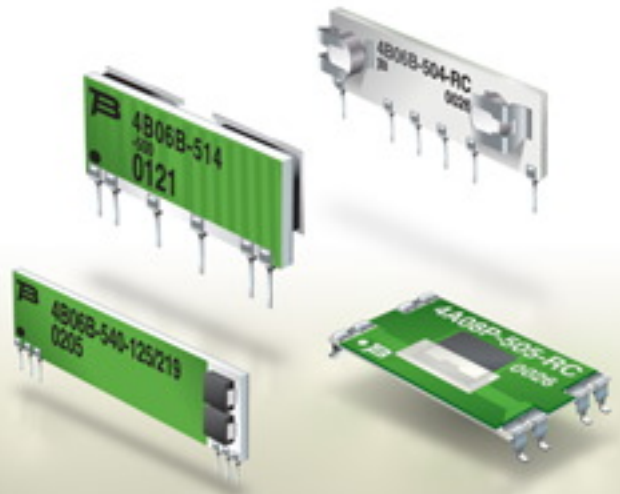
- Through-hole
- Surface mount
- Multifunction modules

## Features:

- Precision tolerance overcurrent protection
- Resistance values from 5.6 ohms to 100 ohms
- Withstands lightning surge and ac power cross
- Assists in meeting Telcordia GR-1089 and ITU-T K.20/K.21/K.45 specifications
- Operates safely under fault conditions
- Non-flammable
- UL 497A recognized
- One shot fuse options
- Resettable fuse options
- Custom designs available

## Applications:

- Telecom circuit protection





# GDT - Gas Discharge Tubes

## Types Available:

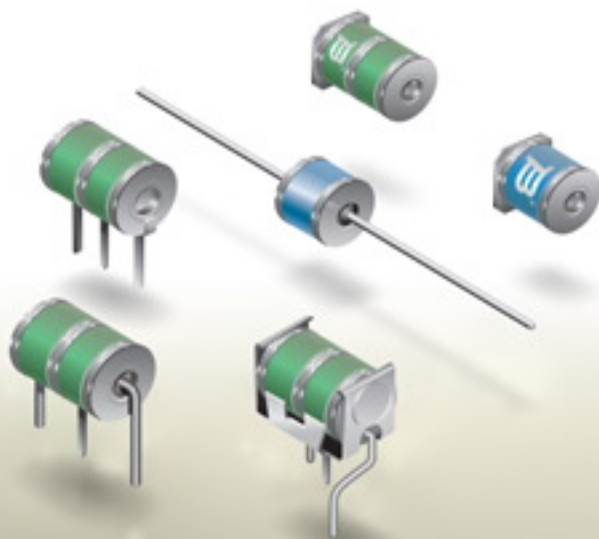
- TRIGARD® - 3 electrode balanced GDTs
- Mini-TRIGARD™
- MSP® protectors
- 2 electrode GDTs

## Features:

- 75 V to 600 V operating voltages
- Multiple lead configurations
- Surface mount
- Tape and reel packaging
- Switch-grade failsafe
- UL, Telcordia, REA, IEEE, ITU-T and IEC recognition

## Applications:

- Telecommunications
- CATV/Broadband
- Automotive
- Industrial and process control
- Transportation signaling
- Consumer electronics



# Telefuse™ - Telecom Fuses

## Types Available:

- Surface mount

## Features:

- Telecom overcurrent protection
- Withstands lightning surge and ac power cross
- Assists in meeting Telcordia GR-1089 and UL 60950 specifications
- Operates safely under fault conditions
- Lead free

## Applications:

- Telecom circuit protection



# ChipGuard® ESD Protection Solutions

## Types Available:

### MLA Series

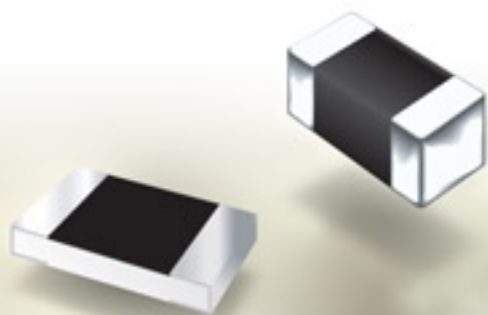
- Multilayer varistor
- 0402 and 0603 SMT packages
- 5 V to 18 V voltage options
- 8 kV contact and 15 kV air discharge ESD withstand

## Features:

- MLA: 8/20  $\mu$ s and 10/1000  $\mu$ s specified impulse capabilities
- MLC: Ultra-low capacitance of 0.5 pF max
- MLD: Low capacitance of 5 pF max
- MLE: 8/20  $\mu$ s specification with bias voltage vs. leakage current specifications with the capacitance 9 pF for the CG0402MLE-18G.

## Applications:

- MLA: General purpose ESD protection
- MLC: High speed communication ports such as USB 2.0, IEEE1394, 1Gb Ethernet
- MLD: Fast communication ports such as USB1.1, 10/100b Ethernet ports
- MLE: RC filter networks, RS232, RS422 & RS485 type applications



# Chip Diodes

## Types Available:

- Switching diodes
- Schottky barrier diodes
- Schottky rectifier diodes 1 A, 2 A, 3 A
- Transient voltage suppressor diodes 400 W, 600 W, 1500 W

## Features:

- Surface mount devices
- Leadless - 0603 to 1206 package
- Leadfree - 0603 to 1206 package
- SMA, SMB, SMC packages available
- Tape & reel packaging

## Applications:

- Cellular phones
- PDAs
- Desktop PCs & notebooks
- Digital cameras
- MP3 players
- Base stations



# Microelectronic Modules

## Types Available:

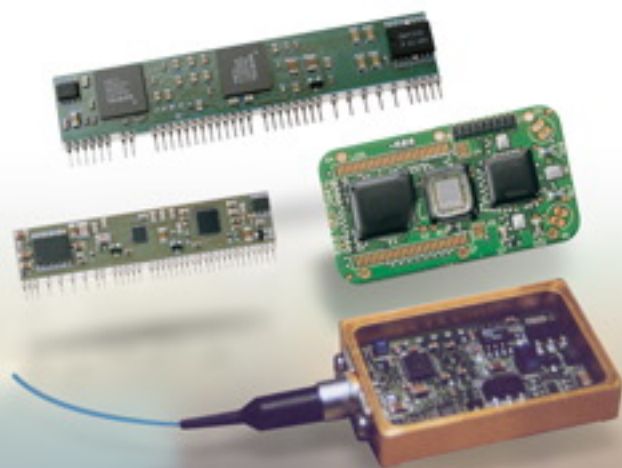
- Single in line package
- Dual in line package
- SMT
- BGA

## Features:

- High density thickfilm
- Fine pitch SMT
- Chip & wire
- Flip chip
- Stud bump bonding

## Applications:

- Telecommunications
- Fiber optic assemblies
- Instrumentation
- Industrial controls
- Medical equipment



# DC/DC Converters

## Types Available:

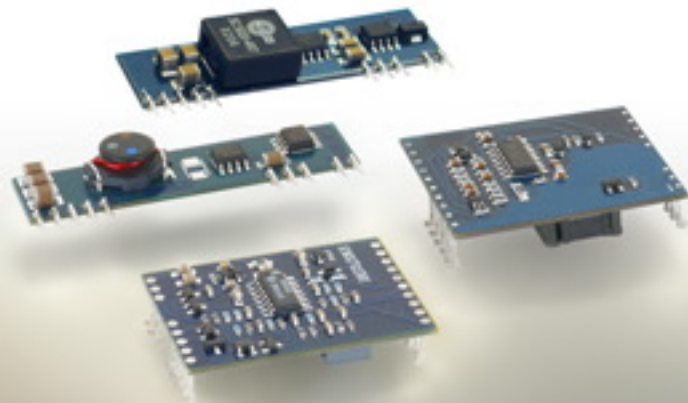
- Non isolated
- SLIC power
- Remote sense

## Features:

- Ultra fast transient response time
- Tight efficiency and load regulation

## Applications:

- Telecommunication
- Computer
- Industrial
- Instrumentation



# Commercial Panel Controls & Encoders

## Types Available:

### Panel Controls

- Rotary
- Slide (open frame & metal housing types)

## Features:

### Mounting Options

- Bushing
- Bushingless
- PC Mount

### Sizes (vary by model)

- 9 to 17 mm (rotary panel controls)
- 10 to 100 mm (slide panel controls)
- 12 and 16 mm square (encoders)

## Applications:

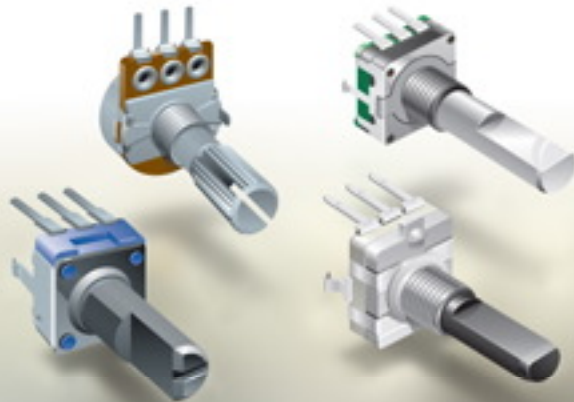
- Musical instrumentation
- Commercial audio equipment
- Consumer grade audio mixers
- DJ equipment
- Communications equipment
- Test and measurement instrumentation
- Consumer audio

### Encoders

- Incremental contacting

### Options

- Panel controls:
  - *Rotary switch option available on some models*
  - *Multi-cup option available on some models*
- Encoders:
  - *Detents available on some resolutions*
  - *Momentary push switch*



# Industrial Encoders

## Types Available:

- Incremental contacting
- Absolute contacting
- Incremental optical

## Features:

### Mounting options

- Bushing
- PC board
- Snap-in

### Resolution

- Contacting – 6 PPR to 36 PPR options
- Optical – 25 PPR to 256 PPR options

### Sizes (vary by model)

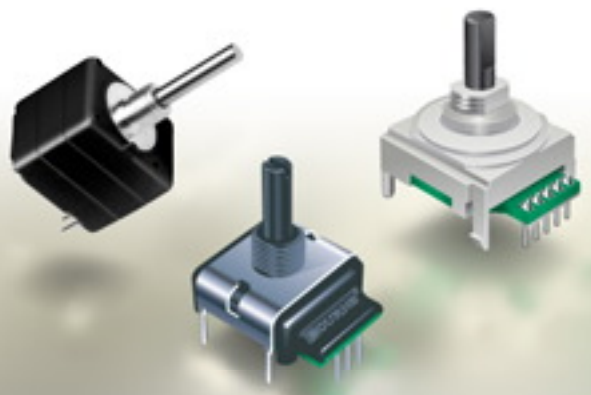
- 9, 16, 22 mm square, and 16 mm x 22 mm

### Options

- Detents available on some models
- Momentary push switch available on some models

## Applications:

- Audio-visual equipment
- Household appliances
- Musical instrumentation
- Professional audio
- Communications equipment
- Industrial heavy equipment controls
- Medical equipment and instrumentation
- Test and measurement instrumentation
- Scanners and copiers



# Industrial Panel Controls

## Types Available:

- Rotary

## Features:

### Mounting options

- Bushing
- PC mount
- Snap-in

### Output

- Linear
- Audio taper
- Custom taper

### Sizes (vary by model)

- 9 to 23 mm

### Terminal Styles

- PC pins
- Solder lugs

### Options

- Flexible lead-wires
- Rotary switch option available on some models
- Multi-cup option available on some models
- Board wash seal option available on some models

## Applications:

- Communications equipment
- Test and measurement instrumentation
- Amplifiers
- Medical instrumentation and equipment (excluding critical life support applications)
- Irrigation controls
- Video conferencing equipment
- Industrial equipment controls
- Environmental test equipment
- Automotive front panel controls



# Precision Controls

## Types Available:

- Rotary
- Digital push-button

## Features:

### Mounting options

- Bushing
- PC mount
- Snap-in
- Servo mount

### Output

- Linear
- Audio taper
- Custom taper

### Sizes (vary by model)

- 13 to 51 mm diameter

### Terminal Styles

- PC pins
- Solder eyelets
- Turret terminals
- Insulated flexible wire leads

### Options

- Rotary switch option available on some models
- Single and multiturn models available
- Multi-cup option available on some models
- Board wash seal option available on some models

## Applications:

- Communications equipment
- Test and measurement instrumentation
- Amplifiers
- Medical instrumentation and equipment (excluding critical life support applications)
- Industrial equipment controls
- Environmental test equipment





# Turns-Counting Dials

## Types Available:

- Digital
- Concentric dial

## Features:

### Materials

- Metal (industrial)
- Plastic (commercial)

### Turns

- 0 to 10
- 0 to 15
- 0 to 20
- 0 to 30

### Sizes (vary by model)

- 22 to 46 mm

### Options

- Black face and silver face dials available
- Locking brake

## Applications:

- Power supplies
- Test and measurement instrumentation
- Medical instrumentation and equipment
- Industrial equipment controls
- Environmental test equipment
- Automation control panels



# Sensors & Controls Custom Solutions

## Types Available:

- Custom sensing solutions
- Custom integrated front panels:
  - *Multiple controls on PCB*
- Custom encoders and potentiometric devices with integrated electronics

## Features::

- Custom solutions designed to fit your application
- Encoder, potentiometric and hall-effect solutions:
  - *Contacting and non-contacting technologies*
- High volume, low cost production
- Engineering support capabilities

## Applications:

- Automotive:
  - *Brake wear sensing*
  - *Electronic throttle control sensing*
  - *Throttle position sensing*
  - *Steering sensors*
  - *HVAC controls*
- Test and measurement instrumentation
- Medical instrumentation (excluding critical life support)



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Germany:	+49 (0)69 800 78212	+49 (0)69 800 78299
India:	+91 484 302483	+91 484 302 287
Ireland:	+353 (0)1276 691087	+353 (0)1276 691088
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Malaysia (Penang Office):	+60 4 6581771	+60 4 6582771
Singapore:	+65 63461933	+65 63461911
Switzerland:	+41 (0)41 768 5555	+41 (0)41 768 5510
Taiwan:	+886 2 25624117	+886 2 25624116
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USA (after 7/17/04):	+1-951-781-5500	+1-951-781-5006

## Non-Listed European Countries

+41 (0)41 768 5555 +41 (0)41 768 5510

## Technical Assistance

Asia-Pacific:	+886 2 25624117	+886 2 25624116
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