

Experimenters General Purpose Boards
Use these boards to quickly assemble prototype, school, and hobby projects. Available in different sizes to accommodate different project needs. Boards also feature number markings for easy positioning. \#21-4570 is a dual project board.

| Fig. | Order \# | \# of holes | Dimensions | (1-9) | (10-up) |
| :---: | :---: | :---: | :---: | :---: | :---: |
| A | 21-4570 | 220 | $1 \%^{\prime \prime} \times 1 \%^{\prime \prime} \times 3 / 3^{\prime \prime}$ | \$1.08 | \$0.87 |
| B | 21-4600 | 375 |  | 1.08 | 0.87 |
| C | 21-4605 | 2200 | $41 / 2^{\prime \prime} \times 614^{1 / 2} \times 3 / 2^{\prime \prime}$ | 1.60 | 1.39 |

Small IC
Prototype Board
Board was designed for ICs to straddle center of board. There are 26 rows designated for IC pin connections
with 2 additional
connections for IC with added connections toward outer edges of board. Board measures $1^{15 / 66^{\prime \prime}} \times 11^{11 / 6^{\prime \prime}} \mathbf{x} 3 / 32^{\prime \prime}$.

| Order \# | $(1-9)$ | $(10-$ up $)$ |
| :---: | :---: | :---: |
| $21-4575$ | $\$ 1.07$ | $\$ 0.86$ |

Large PC Board
Large PC board has 2,036 holes for multiple connections and
connected traces
Board measures $51 / 2^{\prime \prime} \mathrm{x}$
$45 / 6^{\prime \prime} \mathrm{x} 3 / 32^{\prime \prime}$
Order \# (1-9) (10-up)
21-4585 \$1.64 \$1.42

## Small PC

Prototype Board
This prototype board features 25 rows of connections. The center two rows are one connection the length of the board.
The outside 2 holes are common connection on both sides of the board and all rows. Each row also features 2 separate holes, 3 separate holes with 2 sets of 3 holes with common connections. Board measures $2^{13 / 36^{\prime \prime}} \times 1^{13 / 16^{\prime \prime}} \mathrm{x} \frac{3}{3} 2^{\prime \prime}$.

| Order \# | $(1-9)$ | (10-up) |
| :---: | :---: | :---: |
| $21-4590$ | $\$ 1.07$ | $\$ 0.86$ |

## Medium Size

## Prototype Board

This board was designed for medium sized circuits with
room for several
ICs and lots of
components. The outside traces are all connected while the center was designed to accept multiple ICs with 45 traces available for multiple connections. with 45 traces available for multiple

| Order \# | $(1-9)$ | $(10-$ up $)$ |
| :--- | :--- | :--- |
| $21-4580$ | $\$ 1.40$ | $\$ 1.07$ |

IC Experimenters
Board
Both boards are small boards which can be separated.
Both board are
capable of holding a 4 pin to 10 pin DIP IC. Excellent boards for prototyping, schools and hobbyist.

| Fig. | Order \# | Dimensions | (1-9) | (10-up) |
| :---: | :---: | :---: | :---: | :---: |
| A | 21-4595 | $13 / 4^{\prime \prime} \times 14^{3 / 1} \times 3 / 2^{\prime \prime}$ | \$1.08 | \$0.87 |
|  | 21-4610 | $13 / 16^{19} \times 13$ |  | 0.87 |


(-) GLOBAL
Proto-Board Bench-Top Work Station LIFETIME
-Ideal for analog, digital and microprocessor circuits - Eight channel logic monitor $\bullet$ Function generator with continuously variable sine, square and triangle wave-forms and TTL pulses $\bullet$ Triple output power supply offers fixed 5VDC plus two variable outputs -Two digital pulsers •Audio experimentation speaker $\bullet$ Multiple features in one complete test instrument Specifications: Power: $\bullet$ Input: 3 wire AC line input $117 \mathrm{~V}, 60 \mathrm{~Hz} \bullet$ Fixed DC output: $+5 \mathrm{~V}, 1.0 \mathrm{~A},<5 \mathrm{mV}$ ripple $\bullet$ Variable DC output: $\pm 1.3 \mathrm{~V} \sim \pm 15 \mathrm{~V}, 0.5 \mathrm{~A},<5 \mathrm{mV}$ ripple Function generator: $\bullet$ Frequency range: $0.1 \mathrm{~Hz} \sim 100 \mathrm{KHz}$ in six ranges $\bullet$ Output voltage: $0 \pm 10 \mathrm{~V}(20 \mathrm{~V} p-\mathrm{p}) \bullet$ Output impedance: 600 ohm (except TTL) $\bullet$ Output current 10 mA maximum General: $\bullet$ Dimensions: $16 "(\mathrm{~W}) \mathrm{x}$ $161 / 2$ " $(\mathrm{H}) \times 11 / 2^{\prime \prime}(\mathrm{D}) \bullet$ Weight: 7 lbs. $\bullet$ Lifetime warranty on all bread boarding sockets and three years on all parts and workmanship
Order \#
Mfr. \#
(ea.)
21-4480 PB-5
-The perfect breadboards for circuit designing, testing electronic devices and educational uses •Great for high frequency, high speed and low noise circuits $\bullet$ Red and black binding posts - 1260 terminal strip tie points - 100 distribution strip tie points •Dimensions: $4^{\prime \prime}(\mathrm{W}) \mathrm{x}$ $81 / 21$ (L) x 3/4" (D)

| Order \# | $(1-9)$ | (10-up) |
| :---: | :---: | :---: |
| $72-340$ | $\$ 20.35$ | $\$ 18.32$ |



Solderless Breadboards
-Red, yellow, green and black binding posts $\bullet 1890$ terminal strip tie points and 500 distribution strip tie points $\cdot$ Dimensions: $67 / /^{\prime \prime}(\mathrm{W}) \times 9^{\prime \prime}(\mathrm{L}) \times 3 / 41$ (D)
Order \# (1-9) (10-up) 72-345 \$29.95 \$27.50

(3) GLOBAL Jumper Wire Kit -Contains pre-cut/ pre-stripped/pre-formed 22AWG insulated solid hook-up wire -25 pieces each of 14 color-coded lengths $-0.1^{\prime \prime} \sim 5.0^{\prime \prime}$ for a $-0.1 \sim 5.0$ for a
total of 350 wires total of 350 wires
-Compartmental plastic case $\bullet$ Each group of wires are individually wrapped to prevent mix-up.

each of 14 lengths
$\bullet$ Tin-plated $\bullet$ Solid 22AWG •Color-coded PVC insulation •Mfr. \#923351
Order \#
108-550

## Project Accessories

## Project Accessories

| Audio Amplifier | Fans . . . . . . . . . . . . 412 |
| :---: | :---: |
| Modules . . . . . . .417, 419 | Harware . . . . . . .413~415 |
| Breadboards . . . .409, 410 | Knobs . . . . . . . . . . . 411 |
| Circuit Modules | Panel Meters . . . . . . 415 |
| (Pre-Assembled) . . . 416, | Project Boxes . . .410, 411 |
| 417 | Prototype |
| Copper Clad Boards . . 413 | Boards . . . . . . . .409, 410 |

## NEWI NEWI NEHI, <br> ELENCO

## Jumper

Wire Kit
Contains 140

lengths of
pre-stripped, pre-formed \#22 solid wire in various colors. Contains 14 different lengths of ten pieces each. Includes a plastic case. Dimensions:
$2^{\prime \prime}(\mathrm{H}) \times 6 \frac{1}{2} "(\mathrm{~W}) \times 1 / 2 "$ (D).


14 different lengths of 25 pieces each.
Contained in a large 14 compartment plastic case.
Dimensions: $5^{\prime \prime}(\mathrm{H}) \times 10^{1 ⁄ 2} 2^{\prime \prime}(\mathrm{W}) \times 1 \frac{114 " ~(D)}{}$

| Order \# | $(1-4$ kits $)$ | (5 kits-up) |
| :---: | :---: | :---: |
| $102-155$ | $\$ 12.95$ | $\$ 10.95$ |

## Power Transformers

These high-quality power transformers can be used in new equipment or as replacements. Popular high-current outputs.
 Heavy-duty casing has
holes for chassis mounting. Standard solder lugs on the input and output. Primary: $117 \mathrm{VAC}, 60 \mathrm{~Hz}$

## Order \# Dimensions

Description (W) $\times(H) \times(D) \quad$ Primary Secondary (ea.)


## ( splosal <br> Pro-S Lab Station

- Perfect for
beginners and students Includes: - Solderless breadboard •DC power pack power supply rated +5 VDC @ 1A, +12VDC @ 250m, -12VDC @ $250 \mathrm{~mA} \cdot$ Power connector to connect power supply to

ard $\bullet$ Jumper
wires, 25 precut pieces of color-coded, 22AWG, insulated solid hook-up wire.

| Order \# | Mfr. \# | (ea.) |
| :---: | :---: | :---: |
| $72-7840$ | Pro-S | $\$ 75.00$ |



## MCM <br> an in one company <br> Section 19



BII
NEMA-4 Rated
Die-Cast Aluminum Boxes
Provides all of the same benefits as the standard die-cast aluminum boxes, plus they meet IP65 of IEC 529 NEMA-4 specifications. These water-proof aluminum alloy enclosures are ideal for mounting sensitive electronic assemblies in harsh commercial and industrial environments. Separately available cable glands allow similarly rated cable to exit the enclosure, and maintain the NEMA-4 rating.
Order \# Dimensions (L) x (W) x (H) (1-2) (3-up)

| 28-8645 | $2.52^{\prime \prime} \times 2.28^{\prime \prime} \times 1.38^{\prime \prime}$ | \$5.70 | \$5.13 |
| :---: | :---: | :---: | :---: |
| 28-8646 | 4.53 " $\times 2.566^{\prime \prime} \times 1.18^{\prime \prime}$ | 8.27 | 7.44 |
| 28-8647 | $4.53^{\prime \prime} \times 2.56^{\prime \prime} \times 2.17^{\prime \prime}$ | 10.07 | 9.06 |
| 28-8648 | 4.53 " 3.54 " $2.17^{\prime \prime}$ | 11.78 | 10.60 |
| 28-8649 | $8.75{ }^{\prime \prime} \times 5.75^{\prime \prime} \times 2.17^{\prime \prime}$ | 22.61 | 20.35 |

Cable Glands (sold individually)

| Order \# | Mounting Hole (dia.) | Usable Cable (dia. | (1-2) | p) |
| :---: | :---: | :---: | :---: | :---: |
| 28-8650 | $0.5{ }^{\text {a }}$ | $0.12{ }^{1 \sim} \sim 0.26^{\prime \prime}$ | \$1.62 | \$1.46 |
| 28-8651 | 0.61" | $0.16{ }^{\prime \prime} \sim 0.31{ }^{\prime \prime}$ | 1.62 | 1.46 |
| 28-8652 | 0.73 " | $0.20 " \sim 0.39^{\prime \prime}$ | 1.72 | 1.55 |
| 28-8653 | 0.81" | 0.24"~0.47" | 2.15 | 1.94 |
| 28-8654 | 0.89" | $0.39 ⿱ \sim \sim 0.55 "$ | 2.34 | 2.11 |
| 28-8655 | $1.12{ }^{\prime \prime}$ | $0.51{ }^{\prime \prime} 0.71{ }^{\prime \prime}$ | 2.97 | 2.67 |
| 28-8656 | 1.47" | $0.71{ }^{1 \sim} \sim 0.98^{\prime \prime}$ | 6.43 | 5.78 |

## EII.

ABS Project Enclosures These highly popular black finish ABS boxes feature a textured finish, close fitting interlocking lids, and threaded screw inserts for lid attachment. Each meets flammability rating
UL94-5VA and have a

suggested service temperature of $-20^{\circ} \sim 70^{\circ} \mathrm{C}$ ( $-4 \sim 158^{\circ} \mathrm{F}$ ).

| Order \# | Dimensions (H x W x L) | $(1-2)$ | $(3-\mathrm{up})$ |
| :---: | :--- | ---: | ---: |
| $28-8675$ | $4.60^{\prime \prime} \times 3.10^{\prime \prime} \times 1.87^{\prime \prime}$ | $\$ 6.84$ | $\$ 6.16$ |
| $28-8676$ | $4.60^{\prime \prime} \times 4.60^{\prime \prime} \times 2.37^{\prime \prime}$ | 7.22 | 6.50 |
| 288677 | $6.00^{\prime \prime} \times 4.60^{\prime \prime} \times 2.37^{\prime \prime}$ | 8.74 | 7.87 |
| $28-8678$ | $7.60^{\prime \prime} \times 4.60^{\prime \prime} \times 2.37^{\prime \prime}$ | 10.07 | 9.06 |
| $28-8679$ | $8.25^{\prime \prime} \times 5.15^{\prime \prime} \times 3.12^{\prime \prime}$ | 16.35 | 14.72 |

BIDABS Project Enclosures with Aluminum Lid
These highly popular black finish ABS boxes include a $0.05^{\prime \prime}$ thick anodized aluminum lid Internal card guides are spaced at $0.53^{\prime \prime}$ centers, and accept $0.06^{\prime \prime}$ thick cards. Each meets flammability rating UL94-HB.

| Order \# | Dimensions (H x W x L) | (1-2) | (3-up) |
| :--- | :--- | ---: | :---: |
| $28-8682$ | $6.10^{\prime \prime} \times 3.54^{\prime \prime} \times 1.97^{\prime \prime}$ | $\$ 10.74$ | $\$ 9.67$ |
| $28-8683$ | $8.66^{\prime \prime} \times 5.32^{\prime \prime} \times 2.95^{\prime \prime}$ | 20.62 | 18.55 |

 audio audio and RF applications. The lid is attached via six included machine screws. Natural gray color.

| Order \# | Dimensions (L) $\mathrm{x}(\mathrm{W}) \times(\mathrm{H})$ | (1-2) | (3-up) |
| :---: | :---: | :---: | :---: |
| 28-8641 | $4.37^{\prime \prime} \times 2.37^{\prime \prime} \times 1.21^{\prime \prime}$ | \$6.84 | \$5.90 |
| 28-8642 | 4.68 " $\times 3.68$ " $\times 2.21^{\prime \prime}$ | 11.02 | 9.92 |
| 28-8643 | $7.39^{\prime \prime} \times 4.70^{\prime \prime} \times 2.21^{\prime \prime}$ | 18.62 | 16.76 |
| 28-8644 | 7.39 " 4.70 " $\times 3.21^{\prime \prime}$ | 21.85 | 19.67 |

## 710

ABS Project Enclosures
Standard low-cost enclosures are ideal for most typical project applications. Flush mounted black colored screws match the black textured ABS surface for improved looks. Internal PCB mounting bosses allow easy insertion of custom PC boards. Each meets flammability rating UL94-5VA.

| Order \# | Dimensions ( $\mathrm{H} \times \mathrm{W} \times \mathrm{L}$ ) | (1-2) | (3-up) |
| :---: | :---: | :---: | :---: |
| 28-8685 | $3.33^{\prime \prime} \times 2.48^{\prime \prime} \times 1.10^{\prime \prime}$ | \$4.94 | \$4.45 |
| 28-8686 | 2.54 " $\times 2.54$ " $\times 1.00$ " | 4.66 | 4.19 |
| 28-8687 | $3.35{ }^{\prime \prime} \times 3.35^{\prime \prime} \times 1.35^{\prime \prime}$ | 5.61 | 5.04 |
| 28-8688 | $4.21^{\prime \prime} \times 2.85 " \times 1.10^{\prime \prime}$ | 5.42 | 4.87 |
| 28-8689 | $4.60^{\prime \prime} \times 3.35^{\prime \prime} \times 1.35^{\prime \prime}$ | 6.46 | 5.81 |
| 28-8690 | 5.60 " 3.85 " $\times 1.35{ }^{\prime \prime}$ | 7.51 | 6.75 |



- Aluminum Chassis

These chassis are perfect for top mounted external components, where easy access underneath is required. 0.04" (minimum) welded aluminum construction provides outstanding durability. Natural finish. Note: Bottom cover plate is not included.

| Order \# | Dimensions (L x W x H) | (1-2) | (3-up) |
| :---: | :---: | :---: | :---: |
| 28-8605 | $4^{\prime \prime} \times 6$ " $\times 2$ " | \$8.65 | \$7.78 |
| 28-8607 | $5^{\prime \prime} \times 9.5$ " $\times 2$ | 11.40 | 10.26 |
| 28-8609 | $7{ }^{\prime \prime} \times 7^{\prime \prime} \times 2$ | 9.88 | 8.89 |
| 28-8610 | 7" x 9" x 2" | 11.88 | 10.69 |
| 28-8611 | $7^{\prime \prime} \times 11^{\prime \prime} \times 2$ | 14.50 | 13.00 |
| 28-8612 | 7" $\times 13$ " $\times 2$ " | 15.80 | 14.20 |
| 28-8613 | 7"×17" $\times 2$ " | 23.95 | 21.56 |
| 28-8615 | $5 " \times 7$ x $3^{\prime \prime}$ | 12.07 | 10.86 |
| 28-8616 | $5^{\prime \prime} \times 9.5^{\prime \prime} \times 3^{\prime \prime}$ | 14.35 | 12.91 |
| 28-8619 | $7{ }^{\prime \prime} \times 12^{\prime \prime} \times 3^{\prime \prime}$ | 19.25 | 17.29 |
| 28-8621 | $7{ }^{\prime \prime} \times 17^{\prime \prime} \times 3$ " | 25.69 | 23.00 |



Aluminum
"Converta"
Project

## Boxes

$0.05 "$ welded
aluminum base, and two sided cover allow greater flexibility when mounting controls and components. Natural finish.

| Order \# | Dimensions $(\mathrm{L} \times \mathrm{W} \times \mathrm{H})$ | $(1-5)$ | (6-up) |
| :--- | :--- | ---: | ---: |
| $28-8595$ | $1.5^{\prime \prime} \times 4.0^{\prime \prime} \times 3.0^{\prime \prime}$ | $\$ 11.12$ | $\$ 10.00$ |
| $28-8596$ | $2.0^{\prime \prime} \times 5.0^{\prime \prime} \times 4.0^{\prime \prime}$ | 12.07 | 10.86 |
| $28-8597$ | $2.0^{\prime \prime} \times 8.0^{\prime \prime} \times 4.0^{\prime \prime}$ | 13.68 | 12.31 |
| $28-8598$ | $2.5^{\prime \prime} \times 9.5^{\prime \prime} \times 5.0^{\prime \prime}$ | 15.01 | 13.51 |
| $28-8599$ | $2.5^{\prime \prime} \times 12.0^{\prime \prime} \times 6.0^{\prime \prime}$ | 19.76 | 17.78 |
| $28-8600$ | $2.5^{\prime \prime} \times 15.0^{\prime \prime} \times 7.0^{\prime \prime}$ | 27.17 | 24.45 |

RII
Mini Project "Bud" Boxes

Standard two-piece enclosures are popular for all types of hobbyist and prototype and prototype projects, as well as -enclosures in larger assemblies. Flanged sections assure proper shielding and may be either snapped or screwed together. Constructed from $0.04^{\prime \prime}$ aluminum alloy, natural finish.

| Order \# | Dimensions (L x W x H) | (1-5) | (6-up) |
| :---: | :---: | :---: | :---: |
| 28-8570 | $2.75^{\prime \prime} \times 2.12^{\prime \prime} \times 1.62^{\prime \prime}$ | \$3.33 | \$3.00 |
| 28-8571 | 3.25 " $\times 2.12$ " $\times 1.62$ " | 3.23 | 2.91 |
| 28-8572 | $4.00^{\prime \prime} \times 2.12^{\prime \prime} \times 1.62^{\prime \prime}$ | 4.09 | 3.67 |
| 28-8573 | 4.00 " $\times 2.25$ " $\times 2.25{ }^{\prime \prime}$ | 3.80 | 3.51 |
| 28-8574 | $5.00^{\prime \prime} \times 2.25^{\prime \prime} \times 2.25^{\prime \prime}$ | 4.56 | 4.10 |
| 28-8575 | $5.001 \times 4.00$ " $3.00 "$ | 5.80 | 5.22 |
| 28-8576 | $5.25^{\prime \prime} \times 3.00^{\prime \prime} \times 2.12^{\prime \prime}$ | 4.66 | 4.19 |
| 28-8577 | $6.001 \times 5.00^{\prime \prime} \times 4.00 "$ | 9.50 | 8.55 |
| 28-8578 | $7.00{ }^{\prime \prime} \times 5.00^{\prime \prime} \times 3.00^{\prime \prime}$ | 7.41 | 6.67 |
| 28-8579 | $8.00 " \times 6.00 " \times 3.50 "$ | 13.49 | 12.09 |
| 28-8580 | $10.00^{\prime \prime} \times 6.00^{\prime \prime} \times 3.50^{\prime \prime}$ | 15.11 | 13.59 |
| 28-8581 | 12.00 " $\times 7.00$ " $\times 4.00{ }^{\prime \prime}$ | 21.40 | 19.20 |

Steel Wall Mount Box
All steel construction features a hinged front door, and slotted rear surface, allowing easy mounting to wall, panel or post. Equipment mounting panels and panel mounting brackets are available as optional accessories. All have
 ories. All have


| Order \# | Dimensions ( $\mathrm{L} \times \mathrm{W} \times \mathrm{H}$ ) | (1-2) | (3-up) |
| :---: | :---: | :---: | :---: |
| 28-8626 | $8^{\prime \prime} \times 10^{\prime \prime} \times 4^{\prime \prime}$ | \$47.80 | \$43.00 |
| 28-8627 | $10^{\prime \prime} \times 12^{\prime \prime} \times 4$ " | 58.00 | 52.00 |
| 28-8629 | $12^{\prime \prime} \times 12^{\prime \prime} \times 6^{\prime \prime}$ | 89.00 | 80.00 |
| Panel Mounting Accessories |  |  |  |
| Order \# | Description | (1-2) | (3-up) |
| 28-8632 | 11.0" mounting bracket pair | \$5.35 | \$4.80 |

HAMMOND
MANUFACTURING ${ }_{\text {}}$


## Purpose Cases

ABS General

- Molded in smooth, black styrene plastic
 which is ideal for
labels, silk screens, and decals ${ }^{\bullet}$ Cases come with interlocking flange lid, $0.062^{\prime \prime}$ molded PC card guides, and self tapping screws • Average wall thickness is $0.079^{\prime \prime}$
Order \#

| Mfr.\# (H) x (W) x (D) | (1-9) | (10-24) | (25-up) |
| :---: | :---: | :---: | :---: |
| $\begin{aligned} & 21-48003.34^{\prime \prime} \times 2.20^{\prime \prime} \times 1.38^{\prime \prime} \\ & \text { 1591LSBK } \end{aligned}$ | \$3.38 | \$3.07 | \$2.75 |
| $\begin{aligned} & 21-48023.93 " \times 1.97 " \times 0.82^{\prime \prime} \\ & \text { 1591ASBK } \end{aligned}$ | 3.11 | 2.78 | 2.47 |
| $\begin{aligned} & 21-48064.72^{\prime \prime} \times 2.55^{\prime \prime} \times 1.41^{\prime \prime} \\ & 1591 \text { CSBK } \end{aligned}$ | 3.64 | 3.33 | 3.00 |
| $\begin{aligned} & 21-48085.90 " \times 3.14^{\prime \prime} \times 1.80^{\prime \prime} \\ & \text { 1591DSBK } \end{aligned}$ | 4.50 | 4.19 | 3.86 |
| $\begin{aligned} & 21-48107.47^{\prime \prime} \times 4.33^{\prime \prime} \times 2.24^{\prime \prime} \\ & \text { 1591ESBK } \end{aligned}$ | 6.25 | 5.61 | 5.29 |
| 21-4818 $4.72^{\prime \prime} \times 4.72$ " $2.17{ }^{\prime \prime}$ | 5.91 | 5.59 | 5.37 |

1591USBK

## Breadboard

## Module

-Snap
together
design lets
you make

any size breadboard by combining segments $\bullet 630$ plug-in tie points and four distribution strips, each with 50 plug-in tie points $\bullet$ Dimensions: $214^{\prime \prime}(\mathrm{W}) \mathrm{x}$ $61 / 22^{\prime \prime}(\mathrm{L}) \mathrm{x} 1 / 22^{\prime \prime}(\mathrm{D})$

| Order \# | $(1-9)$ | (10-up) |
| :--- | :---: | :---: |
| $72-337$ | $\$ 10.25$ | $\$ 9.23$ |

HAMMOND
$\square$
Diecast
Aluminum Boxes

- Aluminum alloy boxes with countersunk lid and tumbled surface have RF shielding capabilities, making them ideal for RF connectors $\cdot$ Aluminum alloy allows for easy drilling and punching with the durability of metal $\bullet$ All units include four 6-32 x Phillips screws •Part \#'s 21-4832 to 21-4848 are natural finish •\#21-4878 is black
Order \#

| Mifr.\# | (H) $\times(\mathrm{W}) \times(\mathrm{D})$ | (1-9) | (10-24) | (25-up) |
| :--- | :--- | :--- | :--- | :--- |
| 21.4832 |  |  |  |  | 21-4832 $3.62^{\prime \prime} \times 1.50^{\prime \prime} \times 1.07^{\prime \prime} \quad \$ 7.31 \quad \$ 6.55 \quad \$ 6.34$ 1590 A

21-4834 $4.37^{\prime \prime} \times 2.47^{\prime \prime} \times 1.07$ " $7.83 \quad 7.20 \quad 6.77$ 1590B
$\begin{array}{lllll}21-4836 & 4.68^{\prime \prime} \times 3.69^{\prime \prime} \times 1.18^{\prime \prime} & 9.43 & 8.89 & 8.58\end{array}$
$\begin{array}{lllll}21-4838 & 4.68 " \times 3.69 " \times 2.06 " & 10.38 & 9.95 & 9.53\end{array}$ 1590 C
$\begin{array}{lllll}21-4840 \\ 15900\end{array} 7^{\prime \prime} \times 4.70^{\prime \prime} \times 2.06^{\prime \prime} \quad 17.54 \quad 16.45 \quad 15.92$ $21-48484.33^{\prime \prime} \times 3.23^{\prime \prime} \times 1.58^{\prime \prime} \quad 10.43 \quad 10.10 \quad 9.67$ 1590S
$\begin{array}{lllll}21-4878 & 4.72^{\prime \prime} \times 4.72^{\prime \prime} \times 3.54^{\prime \prime} & 25.78 & 24.70 & 23.63\end{array}$
1590V


Nylon PC Board Spacers

- Provides board to board or chassis to board connection •Arrow-type locking head snaps into 0.187 " diameter hole $\bullet$ No tools required •Single and dual sided mounting $\bullet 25$ per bag

Price Per Bag Order\# Mount type Space Height (1-4) $\quad$ (5-up)

| $83-2235$ | Dual sided | $1 / 4$ | $\$ 1.83$ | $\$ 1.32$ |
| :--- | :--- | :--- | ---: | ---: |
| $83-2220$ | Dual sided | $3 / 1 /$ | 1.83 | 1.32 |
| $83-2250$ | One sided | $1 / 4$ | 1.83 | 1.32 |
| $83-2255$ | One sided | $3 / 8$ | 1.83 | 1.32 |

83-2260 One sidedslid

## APEM ${ }^{\circ}$

Machined Aluminum Control Knobs


- Anodized natural or
black finish •Anti-static plastic insert in shelled aluminum knobs $\cdot$ Straight knurl with line indicator on top and side $\bullet$ Two \#6-32 set screws
-Height: .638"
Order \# Finish Shaft Size Diameter (1-9) (10-49) (50-up) Solid aluminum knobs

26-1530 Natural 1 1/" $\quad .5^{\prime \prime} \quad \$ 2.55 \$ 2.31 \quad \$ 2.04$ | $26-1535$ | Black | $1 /{ }^{\prime \prime}$ | $.5{ }^{\prime \prime}$ | 2.55 | 2.31 | 2.04 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $26-1540$ | Black | $1 /{ }^{\prime \prime}$ | $5^{\prime \prime}$ | 2.55 | 2.31 | 2.0 | $\begin{array}{llllll}\text { 26-1540 } & \text { Black } & 1 / 4 " & .5 " & 2.55 & 2.31 \\ \text { Shelled aluminum } & 2.04\end{array}$

 $\begin{array}{lllllll}26-1555 & \text { Black } & 1 / 4 " & .75^{\prime \prime} & 2.86 & 2.65 & 2.35 \\ 26-1560 & \text { Black } & 1 / 4 & .94^{\prime \prime} & 3.06 & 2.65 & 2.35\end{array}$

## APEM

Control Knobs

- Molded phenolic
with black gloss finish
-Ribbed with white line indicator on side
- Anti-static plastic •Spun aluminum inlay
-\#6-32 set screw •Approximately $1 /$ " heigh

| Order \# | Shaft Size | Diameter | (1-9) | (10-49) | (50-up) |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 26-1490 | $1 /{ }^{1 /}$ | .410" | \$1.22 | \$1.01 | \$0.91 |
| 26-1495 | 1/8" | .550" | 1.22 | 1.01 | 0.91 |
| 26-1500 | $1 / 4 /$ | .550" | 1.22 | 1.01 | 0.91 |
| 26-1505 | $1 / 4 /$ | .660" | 1.22 | 1.01 | 0.91 |
| 26-1510 | $1 / 4 /$ | .740" | 1.22 | 1.01 | 0.91 |
| 26-1520 | $1 / 4$ | 1.050 " | 1.42 | 1.28 | 1.12 |


| HAMMOND |
| :--- |
| MANUFACTURING |
| M |

## Project Accessories

Plastic Enclosures
Rugged enclosures ome with interlocking langed lid and self tapping screws $\bullet$ Ideal for mounting printed wall thickness 0.124 " $\bullet$ Gray color
Order \#

| Mffr.\# | (H) $\times(\mathrm{W}) \times(\mathrm{D})$ | $(1-9)$ | (10-24) | (25-up) |
| :--- | :--- | :--- | :--- | :--- |
| 21.4822 | $2.17^{\prime \prime} \times 2.17 " \times 1.10 "$ | $\$ 4.62$ | $\$ 4.19$ | $\$ 3.86$ | 1594ASGY

1594DSGY
21-4830 $6.50 " \times 4.13^{\prime \prime} \times 2.099^{\prime \prime} \quad 7.31 \quad 6.55 \quad 6.34$

## Project Boxes

- Gray plastic boxes with slots inside to hold PC boards •Lid with hardware included - Measurements are inside dimensions


| Order \# | Dimensions (W) x (L) x (D) | (ea.) |
| :---: | :---: | :---: |
| 28-960 | $2^{\prime \prime} \times 4^{\prime \prime} \times 15{ }^{\text {/ }}$ | \$2.99 |
| 28-965 |  | 3.49 |
| 28-970 | $35166^{\prime \prime} \times 51 / 16^{\prime \prime} \times 2{ }^{\prime \prime}$ | 3.99 |
| 28-975 | $4516{ }^{\prime \prime} \times 7 / 166^{\prime \prime} \times 23 /{ }^{\prime \prime}$ | 4.99 |

## Piezo

Electronic Buzzers
-Operating voltage
3~28VDC • Rated
maximum current:

| 20 mA | -Sound output level: Minimum 85 dB at 10 cm <br>  <br> Resonant <br> Order \# <br> Freq. (KHz) | (dia) | (1-9) | (10-up) |
| :---: | :---: | :---: | :---: | :---: |
| $28-735$ | $6.6 \sim 0.6$ | 28 mm | $\$ 1.99$ | $\$ 1.45$ |
| $28-740$ | $4.7 \sim 0.5$ | 35 mm | 1.99 | 1.45 |
| $28-745$ | $2.8 \sim 0.5$ | 50 mm | 1.99 | 1.45 |

Piezo Electric
Element (Transducer)
 Commonly used in alarn
lass breakage detectors
Works as microphone or buzzer $\bullet$ Generates voltage when flexed by sound or pressure $\bullet$ Ten per package
Order \# (1-3 pkgs.) (4-9 pkgs.) (10 pkgs.-up)

Control Knobs
High impact black
plastic knobs have metal
bushings and set screws. Fits $1 / 4$ "
 diameter shaft. Ideal for projects,
prototype or replacement use. Two per package
Note: Height and diameter are approximate.

| Fig. | Order \# | Description <br> (H) $x$ (D) | $\begin{aligned} & \text { Price } \\ & (1-9) \end{aligned}$ | Per Pac (10-49) | kage (50-up) |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B | 50-1935 | Line pointer $5 / 8^{\prime \prime} X^{3 / 4} 4^{1 \prime}$ | \$1.99 | \$1.79 | \$1.49 |
| C | 50-1955 | Bar pointer $1 / 2^{\prime \prime} \times 1 / 1 /{ }^{11}$ | 1.99 | 1.79 | 1.49 |



Rubber Grommets
-100 per bag •Black


| Order \# | (I.D.) | (0. D.) | (1-9 pkgs.) | (10 pkgs.-up) |
| :---: | :---: | :---: | :---: | :---: |
| 28-1075 | 1/8" | 5/18 ${ }^{6}$ | \$5.11 | \$4.70 |
| 28-1080 | 3/6" | $3 / 8$ | 5.63 | 5.11 |
| 28-1085 | $5 / 16$ | $96{ }^{6 \prime}$ | 5.93 | 5.42 |
| 28-1090 | 1/4" | 1/2" | 6.14 | 5.73 |
| 28-1095 | $3 / 8$ | 5/8" | 6.55 | 6.14 |

Cord Strain Relief Bushings

- Accommodates standard 18 gauge zip cord $\bullet 1 / 2$ " hole required for installation $\bullet 100$ per package
Order \# (1-9 pkgs.) (10 pkgs.-up) $\begin{array}{lll}28-680 & \$ 5.42 & \$ 4.29\end{array}$



## Solid State Electronic Buzzers

- All purpose buzzers ideal for burglar alarms, fire alarms, car back-up alarms and much mor -High reliability •Thin and lightweight • 4.5 mA


|  | Voltage <br> Order \# <br> (VDC) | Type | $(1-9)$ | (10-up) |
| :---: | :---: | :---: | :---: | :---: |
| $28-1650$ | 12 | Lead wire | $\$ 1.66$ | $\$ 1.45$ |
| $28-1675$ | 12 | Lead wire | 1.56 | 1.35 |
| $28-1645$ | 6 | Lead wire | 1.66 | 1.45 |
| $28-1680$ | 6 | Lead wire | 1.53 | 1.33 |

Piezo Electronic Buzzers
-Ideal for use in computers,
telephones and door bells

- For 3~20VAC •PC pin type

2 mA resonant current
$\bullet$ Frequency: $6.5 \pm 0.5 \mathrm{KHz}$
Diameter: 24 mm

| Order \# | $(1-9)$ | $(10-$ up $)$ |
| :--- | :--- | :--- |
| $28-1610$ | $\$ 1.03$ | $\$ 0.83$ |

Adhesive Rubber Feet Perfect for finishing off the latest project or prototype. Also great for replacing lost or damaged feet on existing equipment. Non-skid rubber material helps stabilize enclosure while protecting shelf finish. Peel and stick adhesive allows easy application. Black color, four per package.


| Order \# | Dimensions | (1-4) | (5-9) | (10-up) |
| :---: | :---: | :---: | :---: | :---: |
| 28-940 | 0.82 " $\times 0.82$ " $\times 0.31^{\prime \prime}$ | \$0.99 | \$0.87 | \$0.74 |
| 28-941 | 0.51 " $\times 0.51$ " $\times 0.25$ " | 0.99 | 0.87 | 0.74 |
| 28-942 | 0.49 " $\times 0.49^{\prime \prime} \times 0.24{ }^{\prime \prime}$ | 0.99 | 0.87 | 0.74 |
| 28-9 | 0.51 " 0.51 " $\times$ | 0.99 | 0.8 | 0.74 |

-CORNM
Vinyl Grommet
Assortment Pack

-Includes a total of 28 pieces •Assorted sizes:
$1 / 2 ", 7 / 16^{\prime \prime}$ and $5 / 8$ " ${ }^{\prime \prime}$ Black
Order \# (1-9 pkgs.)
95-575 \$3.06
(10 pkgs.-up)
ICORN14
Vinyl Grommet
Variety Pack


- Includes a total of 26 pieces •Assorted sizes: $1 / 4$ ",

Order \#
(1-9 pkgs.)
(10 pkgs.-up)
95-580
\$3.02
$\$ 2.51$

VISA
1-800-543-4330


AC/DC Brushless Cooling Fans
MCM's line of square cooling fans will help you prolong the life and reliability of your computer, office machine, power supply and much more. Available in ball or sleeve bearing design.
AC Fans
$\cdot 115 \mathrm{VAC}$
Order \# (A) (CFM) Size Bearing (1-4) (5-up)
 $\begin{array}{llllll}28-1725 & .24 & 105 & 45 /{ }^{5} \times 11 / 21 & \text { Ball } \quad 22.95 & 21.50\end{array}$ DC Fans
-12VDC


## NEWI NEW! NELI!

## ELENCO

Basic Parts Kit
Contains: Resistors:
$1 / 4 \mathrm{~W}$, five each, $10 \Omega$,
$100 \Omega, 470 \Omega, 1 \mathrm{~K} \Omega$,
$2.2 \mathrm{~K} \Omega, 4.7 \mathrm{~K} \Omega, 8.2 \mathrm{~K} \Omega$,
$10 \mathrm{~K} \Omega, 18 \mathrm{~K} \Omega, 27 \mathrm{~K} \Omega$,
$47 \mathrm{~K} \Omega, 82 \mathrm{~K} \Omega, 100 \mathrm{~K} \Omega$,
$220 \mathrm{~K} \Omega, 330 \mathrm{~K} \Omega$,
$470 \mathrm{~K} \Omega, 1 \mathrm{M} \Omega$. Electrolytic Capacitors: 50 V radial, two each, $1 \mu \mathrm{~F}, 4.7 \mu \mathrm{~F}, 10 \mu \mathrm{~F}, 47 \mu \mathrm{~F}, 100 \mu \mathrm{~F}, 470 \mu \mathrm{~F}$, $1000 \mu \mathrm{~F}$. Mylar Capacitors: 100 V Radial DIP, two each, $.001 \mathrm{mF}, .0047 \mathrm{mF}, .01 \mathrm{mF}, .047 \mathrm{mF}, .1 \mathrm{mF}, .33 \mathrm{mF}$. Ceramic Disc Capacitors: 500V, two each, 2.2 pF , $4.7 \mathrm{pF}, 10 \mathrm{pF}, 1 \mathrm{pF}, 22 \mathrm{pF}, 47 \mathrm{pF}, 100 \mathrm{pF}, 220 \mathrm{pF}, 470 \mathrm{pF}$, 680 pF . Inductors: One each, $4.7 \mu \mathrm{H}, 10 \mu \mathrm{H}, 47 \mu \mathrm{H}$, $100 \mu \mathrm{H}, 470 \mu \mathrm{H}, 1 \mu \mathrm{H}, 10 \mu \mathrm{H}, 33 \mu \mathrm{H}$. Trimpots: Single turn, one each, $500 \Omega, 1 \mathrm{~K} \Omega, 5 \mathrm{~K} \Omega, 50 \mathrm{~K} \Omega, 100 \mathrm{~K} \Omega$, $500 \mathrm{~K} \Omega, 1 \mathrm{M} \Omega$. Switches: Two each, push-button, SPDT slide, DPDT slide, 8-position DIP. LEDs: Standard T $13 / 4$ size, 5 each, red, green, yellow. Displays: Two each, 7 -segment common cathode, 7 -segment common anode. Integrated Circuits: Two each, 7805, 7812 regulators, LM386 audio amp, 555 timer, 741 Op-amp, 74LS00, 74LS02, 74LS08, 74LS10, 74LS47, 74LS74, 74LS86, CD4013, CD4017 Transistors: Two each, PN2222, PN2907, 2N3055, 2N3904, 2N3906, 2N5457. Diodes: Two each, 1N4148, 1N4001, 1N34, 1N4728, 1N4733, 1N4739, 1N4743, 1N4747. Miscellaneous: 25 ' 22AWG hook-up wire, alligator lead sets (red and black), 5 V DIP relay, photo cell, microphone, speaker, buzzer, 9 V battery snap, 1.5 A 100 V bridge, 4A 200 V SCR. All housed in a plastic parts container, dimensions: $11^{\prime \prime} \times 7$ " x $1 / 1 /{ }^{\prime \prime}$

| Order \# | (1-4 kits) | (5 kits-up) |
| :---: | :---: | :---: |
| $102-150$ | $\$ 69.95$ | $\$ 65.95$ |

## SPC TECHNOLOGY AC Tubeaxial Fans

Black die-cast aluminum housing and thermoplastic impeller, rated UL94V-0. Life-lubricated ball bearing system or oil-impregnated sintered sleeve bearing system. Reliable shaded-pole motor. Connect by two 24AWG lead wires or two $0.120 \mathrm{~W} \times 0.020$ " thick ( $3.0 \times 0.5$ ) terminals. All models are $50 / 60 \mathrm{~Hz}$. UL recognized.

| Order \# | Type | Connect | Bearing | VAC | Watts | rpm | cfm | dBA | (1-9) | (10-24) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 4.76" Square x 1.50" Deep (120 SQ. x 38) High-speed version |  |  |  |  |  |  |  |  |  |  |
| N-84N1519 | MC1123HST | T | S | 115 | 18 | 2900 | 105 | 48 | \$9.45 | \$8.50 |
| N-84N1520 | MC1123HBT | T | B | 115 | 18 | 3050 | 107 | 50 | 14.85 | 14.02 |
| N-92N4751 | MC1123HSL | L | S | 115 | 18 | 2900 | 105 | 48 | 12.36 | 11.66 |
| N-84N1521 | MC2123HST | T | S | 220/240 | 19 | 2900 | 105 | 48 | 12.36 | 11.66 |
| N-84N1522 | MC2123HBT | T | B | 220/240 | 19 | 3050 | 107 | 50 | 14.85 | 14.02 |
| N-92N4752 | MC2123HSL | L | S | 220/240 | 19 | 2900 | 105 | 48 | 12.36 | 11.66 |
| 4.76" Square x 1.50" Deep (120 SQ. x 38) Low-speed version |  |  |  |  |  |  |  |  |  |  |
| N-84N1517 | MC1123LST | T | S | 115 | 11 | 2200 | 76 | 38 | 12.36 | 11.66 |
| N-92N4753 | MC1123LSL | L | S | 115 | 11 | 2200 | 76 | 38 | 12.36 | 11.66 |
| N-84N1518 | MC2123LST | T | S | 220/240 | 10 | 2200 | 76 | 38 | 12.36 | 11.66 |
| N-92N4754 | MC2123LSL | L | S | 220/240 | 10 | 2200 | 76 | 38 | 12.36 | 11.66 |
| 4.76" Square x 1.00" Deep (120 SQ. x 25) High-speed version |  |  |  |  |  |  |  |  |  |  |
| N-84N1515 | MC1122HBT | T | B | 115 | 18 | 2300 | 78 | 46 | 14.85 | 14.02 |
| N-92N4755 | MC1122HBL | L | B | 115 | 18 | 2300 | 78 | 46 | 14.85 | 14.02 |
| N-84N1516 | MC2122HBT | T | B | 220/240 | 18 | 2300 | 78 | 46 | 14.85 | 14.02 |
| N-92N4756 | MC2122HBL | L | B | 220/240 | 18 | 2300 | 78 | 46 | 14.85 | 14.02 |
| 3.62" Square x 1.00" Deep (92 SQ. x 25) |  |  |  |  |  |  |  |  |  |  |
| N-84N1511 | MC1092HST | T | S | 115 | 12 | 2750 | 36 | 39 | 12.36 | 11.66 |
| N-84N1513 | MC1092HSL | L | S | 115 | 12 | 2750 | 36 | 39 | 12.36 | 11.66 |
| N-84N1512 | MC2092HST | T | S | 220/240 | 14 | 2750 | 36 | 39 | 12.36 | 11.66 |
| N-84N1514 | MC2092HSL | L | S | 220/240 | 14 | 2750 | 36 | 39 | 12.36 | 11.66 |
| 3.18" Square x 1.50 " Deep (80 SQ. x 38) |  |  |  |  |  |  |  |  |  |  |
| N-92N4757 | MC1083HSL | L | S | 115 | 12 | 2750 | 30 | 35 | 12.36 | 11.66 |
| 3.18" Square x 1.00" Deep (80 SQ. x 25) |  |  |  |  |  |  |  |  |  |  |
| N-92N4758 | MC1082HBL | L | B | 115 | 11 | 2900 | 22 | 34.5 | 14.85 | 14.02 |
| N-92N4759 | MC2082HBL | L | B | 220/240 | 13.5 | 2900 | 22 | 34.5 | 14.85 | 14.02 |

## Plastic Assemblies

Assemblies consist of guard, polyurethane foam filter media and media retainer for tube-axial fans. Easy to install, secure the guard portion with mounting screws, (not included) then snap-on the retainer and filter media with no extra hardware or brackets. When the filter requires maintenance, the guard and fan do not need to be removed. Just remove retainer and clean or replace the media.
Order \#

| Description | Mfr. \# | Center Hole | (ea.) |
| :--- | :---: | :---: | :---: |
| 31/8" Fan Size |  |  |  |
| 28-4413 <br> Guard, retainer, media | 09325-F/30 | $2.81 "$ | $\mathbf{\$ 3 . 0 6}$ |
| $\mathbf{2 8 - 4 4 1 4}$ | 09325-F/45 | $281^{\prime \prime}$ | $\mathbf{3 . 0 6}$ |


| 28-4414 09325-F/45 <br> Guard, retainer, media | $2.81^{\prime \prime}$ | $\mathbf{3 . 0 6}$ |
| :--- | :--- | :--- |
| 35/" Fan Size |  |  |
| 28-4416 <br> Guard, retainer, media | $3.25^{\text {" }}$ | $\mathbf{3 . 3 7}$ |
| G/45 |  |  |

Guard, retainer, media
4.5" Fan Siz

28-4418 09450-F/45 4.13" 4.09
Guard, retainer, media


## Qualtek

Wire Form
Fan Guards
For use with tube-axial fans,

\#28-4408 $.25^{\prime \prime}$ maximum
\#28-4409

ring spacing for compliance with domestic and international safety requirements.

| Order \# | Mfr. \# | Fan Size | Hole Center | (ea.) |
| :--- | :---: | :---: | :---: | :---: |
| $\mathbf{2 8 - 4 4 0 5}$ | 08149 | $1.5^{\prime \prime}$ | $1.26^{\prime \prime}$ | \$1.63 |
| $\mathbf{2 8 - 4 4 0 7}$ | 08147 | $2.5^{\prime \prime}$ | $1.97^{\prime \prime}$ | $\mathbf{1 . 7 3}$ |
| $\mathbf{2 8 - 4 4 0 8}$ | 08172 | $3.125^{\prime \prime}$ | $2.81^{\prime \prime}$ | $\mathbf{1 . 6 3}$ |
| $\mathbf{2 8 - 4 4 0 9}$ | 08174 | $3.625^{\prime \prime}$ | $3.25^{\prime \prime}$ | $\mathbf{1 . 7 3}$ |
| $\mathbf{2 8 - 4 4 1 0}$ | 08170 | $4.5^{\prime \prime}$ | $4.13^{\prime \prime}$ | $\mathbf{2 . 0 1}$ |



Fan Power Cords
Tube-axial fan power cords with strain relief. UL listed 10A/125VAC and CSA certified 7A/125VAC 24" SPT-1, two-conductor cord.

| Order \# | Mifr. \# | Description | (ea.) |
| :--- | :--- | :--- | ---: |
| $28-4437$ | $07100-24$ | Straight style | $\$ 1.73$ |
| $28-4438$ | $07145-24$ | 45 Style | 1.73 |
| $28-4439$ | $07190-24$ | 90 Style | 1.73 |

Snap Bushings

- Black $\bullet 50$ per bag

| Order \# | (I.D.) | (0. D.) | (1-9 pkgs.) | (10 pkgs.-up) |
| :---: | :---: | :---: | :---: | :---: |
| 28-2000 | 3/161 | 5/161 | \$2.18 | \$1.98 |
| 28-2005 | $1 / 4 /$ | $3 / 8$ | 2.18 | 1.98 |
| 28-2006 | 5/161 | 7/16 ${ }^{11}$ | 2.88 | 2.55 |
| 28-2010 | $3 / 8$ | $1 / 2$ | 2.18 | 1.98 |
| 28-2015 | 1/2" | 5/81 | 2.82 | 2.50 |
| 28-2020 | 9/10 | $3 / 4$ | 2.82 | 2.50 |
| 28-2025 | 11/16" | 7/8' | 3.34 | 2.82 |
| 28-2030 | $3 / 4$ | $1{ }^{17}$ | 3.96 | 3.65 |
| 28-2035 | 15/16" | $11 / 4{ }^{\prime \prime}$ | 4.38 | 3.96 |

Continuous Grommets

- Protects wires, cables and cords against damage from sharp panel edges - Simply cut to fit any size or shape opening -Clear •100' length

| Order \# | Size | Gauge | (ea.) |
| :--- | :---: | :---: | :--- |
| $21-3695$ | Up to .036" | 20 | $\$ 8.68$ |
| $21-3696$ | $.037^{\prime \prime} \sim .105^{\prime \prime}$ | $18 \sim 12$ | $\mathbf{9 . 8 5}$ |


(-Cectroncs Developing and Etching Trays Set of three for developing and etching PC boards. Plastic tray for positive method developing and for etching. Aluminum trays for negative method developing. Kit includes two $5^{1 / 4}$ x $7^{1 / 1 / 4}$ plastic trays and one $4^{1 / 4} \times 66^{3 / 4}$ aluminum tray (inside dimensions).


Pure Copper Circuit Tape
6 ' roll of self-adhesive pure copper tape for quick repairs or circuit modification. Adheres readily to PC boards and similar surfaces; solders readily. Flexible enough to be used around corners, between PC boards, between board and chassis, etc. Extremely low resistance board and chassis, etc. Extremely low
(. $020^{\prime \prime}$ thick). Supplied on 1" I.D. core.

| Order \# | Width | $(1-4)$ | $(5-\mathrm{up})$ |
| :---: | :---: | :---: | :---: |
| $21-3840$ | $1 /$ /l" $^{\prime \prime}$ | $\$ 3.00$ | $\$ 2.78$ |
| $21-3841$ | $1 / 87$ | 3.43 | 3.11 |
|  |  |  |  |

SPC TECHNOLOGY

## Combo Pan

Head Sheet
Metal Screw Kits
Combo pan head sheet metal screws are steel with zinc plating. Combo head allows for installation and removal with either
 flat or Phillips screw
drivers. Kit contains a total of 16 items and 330 pieces including: 25 each of \#6 x ½", \#6 x 1", \#8 x ½", \#8 x 3/4", \#8 x $1^{\prime \prime}$, \#10 x 1/2"; 20 each of \#10 x 3 3/4", \#10 x $1 ", \# 10 \times 1 \frac{1}{2} ", \# 12 \times 1 / 22^{\prime \prime}, \# 12 \times 3 / 4 ", \# 12 \times 1^{\prime \prime}, \# 14 \times 1 / 2^{\prime \prime}$, \#14 x $1^{\prime \prime} ; 10$ each of \#12 x $1 \frac{1}{2} \prime \prime$, \#14 x $1 \frac{1}{2} "^{\prime \prime}$. Includes 18 compartment storage case.
Order \#
28-6510

## SPC TECHNOLOGY

Hex Head
"Tek" Screw Kit
Screws are steel with zinc plating and self-drilling points. Kit contains 18 items and 215 pieces including: -15 each: \#6 x ½", \#6 x 3/4", \#6 x $1^{\prime \prime}, ~ \# 8 \times 1 / 2{ }^{\prime \prime}$, \#8
 x $3 / 4 ", \# 8 \times 11^{\prime \prime}, \# 8 \times 1 \frac{114 ", ~}{\text { " }}$
$\# 10 \times 3 / 4 ", \# 10 \times 1^{\prime \prime}, \# 10 \times 1 \frac{114}{\prime \prime} \bullet 10$ each: \#10 x $1 \frac{1}{2} "$, $\# 12 \times 3 / 4 \prime$, \#12 x $1^{\prime \prime}$, \#12 x 1114", \#14 x $1^{\prime \prime} \bullet 5$ each: \# $12 \times$
 storage case.
Order \#
(kit)
28-6520
$\$ 22.50$

## $\longrightarrow$ Printed Circuit äectronces Boards

One ounce copper on base of either FR-4 (G-10) fiberglass or CEM-1 type epoxy reinforced board. Copper on one side.

| Order \# | Size | $(1-4)$ | (5-up) |
| :---: | :---: | ---: | ---: |
| $21-3851$ | $3^{\prime \prime} \times 5^{\prime \prime}$ | $\$ 2.14$ | $\$ 1.92$ |
| $21-3582$ | $4^{\prime \prime} 6^{\prime \prime}$ | 3.00 | 2.68 |
| $21-3853$ | $6^{\prime} \times 6^{\prime \prime}$ | 3.76 | 3.43 |
| $21-3854$ | $6^{\prime \prime} \times 9^{\prime \prime}$ | 5.37 | 4.83 |
| $21-3855$ | $8^{\prime \prime} \times 10^{\prime \prime}$ | 8.27 | 7.63 |
| $21-3856$ | $1^{\prime \prime} \times 14^{\prime \prime}$ | 15.88 | 15.02 |

## - Pectroncs Positive

Pre-Sensitized PC Boards
Made of $1 / 16$ " thick glass epoxy base with one ounce copper. Coated with positive etch resist photo sensitizer. Base
is FR-4 (G-10) fiberglass.
Dielectric constant at $1 \mathrm{MHz}=5.3$

| Order \# | Size | (1-4) | (5-up) |
| :---: | :---: | :---: | :---: |
| Copper One Side |  |  |  |
| 21-3871 | 3" $\times 4$ " | \$5.91 | \$5.37 |
| 21-3872 | $3^{\prime \prime} \times 6^{\prime \prime}$ | 6.45 | 5.91 |
| 21-3873 | $4{ }^{\prime \prime} \times 6$ | 7.41 | 6.77 |
| 21-3875 | $6^{\prime \prime} \times 9$ | 12.38 | 11.30 |
| 21-3876 | $7{ }^{\text {" }} \times 10$ | 15.02 | 13.72 |
| 21-3877 | $12^{\prime \prime} \times 12^{\prime \prime}$ | 30.08 | 27.71 |
| Copper Both Sides |  |  |  |
| 21-3862 | $6^{\prime \prime} \times 9^{\prime \prime}$ | 15.60 | 14.26 |
| 21-3863 | 12 " 12 " | 32.61 | 29.96 |

Project Accessories

MCM
an inone company
Section 19

## EC Small Printed Circuit Repair Kit

 For repair and servicing of printed circuits. Kit contains: Solder aid tool, low-melt solder, PC repair foil, fiberglass eraser, tweezers, 2 oz. Print-Kote, 2 oz. Print-Kote solvent and assorted fluxed solder washers.Order \# (kit)



- Nickel-plated steel binder head screws
- 100 per package

| Order \# | Thread | Length | Price Per Package <br> $(1-9)$ |  |
| :--- | :--- | :---: | :---: | :---: |
| $28-6660$ | $\# 4-40$ | $1 / 40$ up) |  |  |

SPC TECHNOLOGY
Hex Machine Screw Nuts

| Order \# | Thread | Width | Price Per Package$\text { (1-9) } \quad(10-u p)$ |  |
| :---: | :---: | :---: | :---: | :---: |
| 28-6885 | \#2-56 | $3 / 66^{\prime \prime}$ | \$1.99 | \$1.59 |
| 28-6895 | \#4-40 | $1 / 4 /$ | 1.29 | 0.99 |
| 28-6900 | \#6-32 | $1 / 4 /$ | 0.99 | 0.79 |
| 28-6905 | \#6-32 | \%/6" | 1.39 | 1.09 |
| 28-6925 | \#10-32 | 3/1 | 1.39 | 1.09 |

## KEYSTONE

Round Nylon Spacers

- Unthreaded round nylon spacers - Available in different lengths
with two different clearance hole
sizes: \#4 and \#6 • 100 pieces per package

| Length | \#4 clearance hole Order \# | \#6 clearance hole Order \# | (pkg.) |
| :---: | :---: | :---: | :---: |
| $0.250{ }^{\prime \prime}$ | 28-5743 | 28-5751 | \$11.22 |
| $0.375{ }^{\prime \prime}$ | - | 28-5752 | 13.27 |
| $1.000{ }^{\prime \prime}$ | 28-574 | 28-5757 | 20. |

## KEYETONE

Threaded
Nylon Spacers
-Threaded hex nylon
spacers •Available in
different lengths with two different thread sizes: $4-40$ and $6-32 \bullet 100$ pieces per package

| Length | 4-40 thread size <br> Order \# | 6-32 thread size <br> Order \# | (pkg.) |
| :--- | :--- | :--- | ---: |
| $0.250^{\prime \prime}$ | - | $28-5715$ | $\$ 30.70$ |
| $0.375^{\prime \prime}$ | $28-5709$ | - | 32.75 |
| $0.500^{\prime \prime}$ | $28-5710$ | $28-5717$ | 32.75 |
| $0.750^{\prime \prime}$ | - | $28-5719$ | 43.00 |
| $0.875^{\prime \prime}$ | - | $28-5720$ | 44.02 |
| $1.000^{\prime \prime}$ | $28-5714$ | - | 40.95 |

1001 Piece Hardware Assortment -Wide
assortment of machine screws, cotter pins, split, flat and tooth washers, hex nuts, sheet
 wood screws, wire, common and finish nails $\bullet$ Heavy-duty 25 drawer cabinet $\bullet 25$ identification $\bullet$ Heavy-duty 25 drawer cabinet ${ }^{\bullet} 25$ identifict
labels $\bullet$ Safety stop trays prevent spillage
Order \#
(ea.)
28-1180
$\$ 19.52$


## (4) Project <br> MCM Accessories <br> Seation 19

## Philips Pan <br> Head Screws

-Popular for use in
all aspects of equipment assembly and
repair •Black oxide finish $\bullet 100$ per box

| Order \# | Size | (1-9) | Price Per Box (10-19) | (20-up) |
| :---: | :---: | :---: | :---: | :---: |
| 28-18295 | \#8 $\times 1 / 4 / 4$ | \$0.83 | \$0.67 | \$0.54 |
| 28-18300 | \#8×1/2" | 1.03 | 0.78 | 0.55 |
| 28-18305 | \#8x ${ }^{3 / 4}$ | 1.21 | 1.02 | 0.82 |
| 28-18310 | \#8×1" | 1.37 | 1.17 | 0.97 |
| 28-18315 | \#8 $\times 1 / 1 /{ }^{1 / 2}$ | 1.91 | 1.58 | 1.24 |
| 28-18320 | \#8×2" | 2.34 | 2.01 | 1.59 |
| 28-18325 | \#8×3" | 3.41 | 2.87 | 2.33 |
| 28-18330 | $\# 10 \times 1$ " | 1.70 | 1.42 | 1.15 |
| 28-18335 | $\# 10 \times 2$ " | 2.84 | 2.41 | 1.93 |

Speed Clips

- Commonly used in many
applications including autosound speaker installation $\bullet$ For use with \#8 screws •Packaged in bags of 100


Order \# Description (1-9 bags) (10-24 bags) ( 25 bags-up)

| $28-8390$ Short | $\$ 5.59$ | $\$ 4.99$ | $\$ 4.49$ |
| :--- | :--- | :--- | :--- |

## Philips Oval

 Head Screws- Popular for use in all aspects of equipment assembly and repair -Common for use in countersunk holes $\bullet$ Black oxide finish $\bullet 100$ per box

|  |  | 3 |  |  |
| :--- | :--- | :---: | :---: | :---: |
| Order \# | Size Per Box | $(1-9)$ | $(10-19)$ | $(20-$ up $)$ |
| $28-18340$ | $\# 8 \times 1 / 2^{11}$ | $\$ 0.99$ | $\$ 0.85$ | $\$ 0.65$ |
| $28-18345$ | $\# 8 \times 1^{\prime \prime}$ | 1.37 | 1.16 | 0.94 |
| $28-18350$ | $\# 8 \times 2^{\prime \prime}$ | 2.35 | 2.06 | 1.55 |

Philips Truss Head Screws

- Popular for use in cabinet and speaker enclosure assembly

-Truss head is especially useful
when attaching ABS and Plexiglas sheets to wood cabinets •Sharp "stinger type" point requires no
- Black oxide finish •100 per box

| Order \# | Size | $(1-9)$ | Price Per Box <br> $(10-19)$ | $(20-$ up $)$ |
| :--- | :--- | :---: | :---: | :---: |
| $28-18370$ | $\# 8 \times 1 / 2$ | $\$ 1.28$ | $\$ 1.08$ | $\$ 0.85$ |
| $28-18375$ | $\# 8 \times 1^{1 "}$ | 1.58 | 1.38 | 1.09 |

Philips Drywall
Screws

- Popular for use in
cabinet and speaker enclosure assembly •Sharp "stinger type" point requires no pilot hole $\bullet$ Black oxide finish $\bullet 100$ per box

|  |  | Price Per Box <br> Order \# |  |  |
| :--- | :--- | ---: | :---: | :---: |
| Size | $(1-9)$ | $(10-19)$ | $(20-$ up) |  |
| $28-18355$ | $\# 6 \times 1 "$ | $\$ 0.99$ | $\$ 0.85$ | $\$ 0.65$ |
| $28-18360$ | $\# 6 \times 11 / 2$ | 1.28 | 1.08 | 0.85 |
| $28-18365$ | $\# 6 \times 2 "$ | 1.58 | 1.38 | 1.09 |
| $28-18366$ | $\# 6 \times 3 "$ | 2.69 | 2.39 | 1.97 |


www.maminone.com
 and drop ceilings $\bullet 11 / 4$ diameter screws are 4 " length $\bullet$ Requires $3_{4}{ }^{\prime \prime}$ diameter hole $\bullet$ Toggle opens to $2 " \bullet 100$ per box
Order \# (1-9 boxes) $\quad$ ( $10-19$ boxes) $\quad$ ( 20 boxes -up) $\begin{array}{llll}28-18550 & \$ 21.19 & \$ 17.65 & \$ 14.63\end{array}$

## \#8 Trim Rings

-Commonly used to add finished look to \#8 wood screws -Ideal for use on carpeted enclosures and Plexiglas panels •Black oxide finish $\bullet 100$ per box

Order \#
(1-4 boxes)
( 5 boxes-up)
60-4375
\$4.19 $\$ 3.77$

## Philips Pan Head

Sheet Metal Screws
$\bullet$-8-18 stainless steel $\bullet$ Popular in all aspects of equipment repair and assembly $\bullet 100$ per box


|  | Price Per Box <br> Order \# <br> Size |  |  | $(1-9)$ |
| :--- | :--- | :---: | :---: | :---: |
| $(10-19)$ | (20-up) |  |  |  |
| $28-18510$ | $\# 10 \times 11^{11}$ | $\$ 5.47$ | $\$ 4.67$ | $\$ 3.70$ |
| $28-18515$ | $\# 10 \times 11 / z^{\prime \prime}$ | 7.29 | 6.38 | 5.10 |

Lag Bolts

- Commonly used for mounting outdoor antennas and small


satellite dishes $\bullet 1 / 4 "$ diameter x $3^{\prime \prime}$ length $\bullet 100$ per box | Order \# | (1-9 boxes) | (10-19 boxes) | (20 boxes-up) |
| :--- | :---: | :---: | :---: |
| $28-18420$ | $\$ 7.49$ | $\$ 6.33$ | $\$ 5.16$ |

## IT Buildex

## $1 \rightarrow 2$

Dynabolt ${ }^{\text {© }}$ Concrete Sleeve Anchors

- Designed for heavy loading capacity in concrete, masonry, grout filled and hollow block $\bullet$ Excellent for exterior walls $\bullet$ Perfect for antenna/dish supports, speaker brackets, wall mount racks and panels - Durable zinc plated carbon steel $\bullet$ Provides full $360^{\circ}$ hole contact over a large area $\bullet$ Reduces concrete stress $\bullet$ Pre-assembled for fast, easy installation
Order B Bolt Sleeve Box Price Per Box Order \# Diameter Diameter Length Oty. (1-3) (4-up) $\begin{array}{llllll}28-18570 & 1 / 4 & 1 / /^{\prime \prime} & 2^{1 / 4} & 50 & \$ 26.75\end{array}$


Fender Washers

- Black oxide finish -100 per box

Price Per Box

| Order \# | I.D | O.D. | $(1-9)$ | $(10-19)$ | (20-up) |
| :--- | :--- | :--- | ---: | :---: | :---: |
| $28-18425$ | $1 / 4$ | $1^{\prime \prime}$ | $\$ 2.46$ | $\$ 2.34$ | $\$ 2.09$ |
| $28-18430$ | $3 / 8^{\prime \prime}$ | $1^{\prime \prime}$ | 3.11 | 2.99 | 2.81 |

Washers
-Packaged in bags of 100


Order \# Description (1-9 bags) (10-24 bags) ( 25 bags-up)

| 28-8385 \#10 lock | $\$ 0.89$ | $\$ 0.79$ | $\$ 0.75$ |
| :--- | :--- | :--- | :--- |

28-8430 3/8" washer $2.49 \quad 2.19 \quad 1.99$

Fender Washers

- 1 " outside diameter $\bullet 3 / 16^{\prime \prime}$ inside diameter •Black oxide finish $\bullet 100$ per bag

| Order \# | $(1-9)$ | Price per bag <br> $(10-24)$ | (25-up) |
| :--- | :---: | :---: | :---: |
| $28-8400$ | $\$ 2.59$ | $\$ 2.29$ | $\$ 2.09$ |

E-Z Ancor ${ }^{\circledR}$ Drywall Anchors
Ideal for hanging pictures, shelves, speakers and other moderate weight items to standard sheetrock drywall.
Very easy to install, these
anchors require only a Philips
head screwdriver for installation. Available in light duty plastic or metal, 100 per box

| Order \# | Type | (box) |
| :--- | :--- | ---: |
| $28-8535$ | Plastic | $\$ 19.74$ |
| $28-8536$ | Metal | 27.25 |

Plastic Drywall Anchors
Ideal for hanging lightweight items such as pictures and small speakers to standard sheetrock drywall. Anchors require only a small pilot hole for use. 100 per box.

Price Per Box

| Order \# | Type | $(1-9)$ | $(10-19)$ | (20-up) |
| :--- | :--- | :---: | :---: | :---: |
| 28-18525 | For screw \#8~10 | $\$ 1.36$ | $\$ 1.11$ | $\$ 0.87$ |
| 28-18526 | For screw \#10~12 | 1.35 | 1.09 | 0.89 |
| 28-18530 | For screw \#6~8 | 1.29 | 1.09 | 0.80 |



## IT.) Ramset RedHead

Tapcon ${ }^{\otimes}$ Self-Tapping Concrete Anchors

- Designed for use with high powered drill and hammer drivers ${ }^{\bullet}$ Climaseal ${ }^{\mathrm{TM}}$ coated for excellent corrosion protection $\bullet$ Works on all masonry
materials, excellent for exterior walls •Self tapping design cuts their own threads $\bullet$ Fully removable -114" diameter • 100 per box

| Order \# | Length | (1-3 boxes) | (4 boxes-up) |
| :--- | :--- | :---: | :---: |
| $28-8850$ | $2.25^{\prime \prime}$ | $\$ 29.95$ | $\$ 26.96$ |
| $28-8851$ | $1.25^{\prime \prime}$ | 24.75 | 22.28 |




23/4" Swivel Caster Set

- Set of four •Two locking swivel caster •Two non-locking swivel casters $\bullet 16$ T-nuts and 1/4" x 1" Phillips head screws - Wheels have hard rubber cover •Mfr. \#HW960/995
$\frac{\text { Order \# }}{50-1905}$
(1-9 sets)
$\$ 30.70$



4" Swivel Caster

- Blue wheel with bearings
- Mfr. \#W0990

| Order \# | $(1-9)$ | $(10-49)$ |
| :---: | :---: | :---: |
| $50-1635$ | $\$ 15.10$ | $\$ 14.09$ |

Surface Mount Draw Latch

- Black •Mfr. \#L0566

| Order \# | $(1-9)$ | $(10-49)$ |
| :---: | :---: | :---: |
| $50-1555$ | $\$ 1.00$ | $\$ 0.90$ |

Square Recessed Dish with Butterfly Latch

- Mfr. \#L905/915

| Order \# | Type | $(1-9)$ | $(10-49)$ |
| :---: | :---: | :---: | :---: |
| $50-1555$ | Zin | $\$ 5.99$ | $\$ 5.79$ |

50-1545 Zinc $\quad \$ 5.99 \quad \$ 5.79$

Surface Mount Butterfly Latches
-Mfr. \#L925

| Order \# | Type | $(1-9)$ | $(10-49)$ |
| :--- | :--- | :--- | :--- |
| $50-1525$ | Zinc | $\$ 6.05$ | $\$ 5.85$ |
| $50-1530$ | Black | 8.19 | 7.88 |



Compact Panel
Mount DC Voltmeters DC moving coil meters provide accurate measurement of DC voltage from $0 \sim 30 \mathrm{~V}$, in three ranges.
 Mirrored scale
provides accurate readings at any angle. Front panel dimensions $1^{3 / 4} 4^{\prime \prime}(\mathrm{H}) \times 13{ }^{3 / 1}(\mathrm{~W})$. Requires $1^{1 / 2}{ }^{\prime \prime}$ diameter cutout. Includes all mounting hardware. Required mounting depth, 1 ", overall depth $1^{1 / 2}$ ".

| Order \# | Measurement Range | $(1-3)$ | (4-up) |
| :--- | :--- | :--- | ---: |
| PP11280 | 10VDC | $\$ 9.37$ | $\$ 7.95$ |
| PM11281 | 25VDC | 8.86 | 7.54 |
| PM11189 | 30VDC | 8.86 | 7.54 |

## 15VDC

Panel Mount Meter
DC moving coil meter provides accurate measurement from $0 \sim 15 \mathrm{VDC}$. Mirrored scale provides accurate readings at any angle. Front panel dimensions $2^{1 / 1 / 2}$ " H ) x $3^{13 / 2}$ " (W). Requires $1^{33 / 4}$ " diameter cutout. Includes all mounting hardware. Required mounting depth $1^{\prime \prime}$, overall depth $1 \not 1 / 2^{\prime \prime}$.

| Order \# | $(1-3)$ | $(4-$ up $)$ |
| :--- | :--- | :--- |
| PM11124 | $\$ 8.86$ | $\$ 7.54$ |

Backlight Assemblies


Cabinet Corner Pieces

- Protect the corners of your cabinets with these plastic or metal corner pieces -\#50-500 has grooved design for stacking •Screws not included $\bullet$ Four per package

Dimensions
 (W) $\times(H) \times(\mathrm{D})(1-9) \quad \begin{gathered}\text { Price Per Package } \\ (10-24) \quad(25-\mathrm{up})\end{gathered}$



Square Recessed Dish with Two $1 / 4$ " Jack Holes - Mfr. \#D0938

| Order \# | Type | $(1-9)$ | $(10-49)$ |
| :--- | :--- | ---: | :--- |
| $50-1560$ | Zinc | $\$ 2.04$ | $\$ 1.83$ |
| $50-1565$ | Black | 2.55 | 2.35 |



Project Accessories

MCM
an in one company
Section 19

## NEWI NEW! NEHI,

Nelleman-kir

## LCD Digital

## Panel Meter

Features: •Low cost version •Single $8 / 12 \mathrm{VDC}(1 \mathrm{~mA})$
operation $\bullet$ High input impedance: $>100 \mathrm{Mohm}$. Specifications: •Display: $3 ½$ digit LCD •Input sensitivity: $200 \mathrm{mVFS} \bullet$ Power supply: 9VDC (7~12VDC) $\cdot$ Decimal point selection with wire jumper -Automatic polarity indication $\bullet$ Figure height: 0.52" - Sampling rate: 2-3 readings/sec. •Guaranteed zero reading for 0 V input $\bullet$ Accuracy: $\pm 0.5 \% \bullet$ Power consumption: 1 mA DC •Size: $2.7^{\prime \prime} \times 1.7^{\prime \prime}$

| Order \# | $(1-4)$ | (5-up) |
| :---: | :---: | :---: |
| $72-8100$ | $\$ 5.99$ | $\$ 4.99$ |

## Velleman-kir

## LED Digital

## Panel Meter

Features: • $3 ½$ LED
digital panel meter

- Single 9VDC operation
-High input impedance: $>100 \mathrm{Mohm}$
Specifications: - Input sensitivity: 200 mV FS
- Power supply: 9VDC •Decimal point selection with wire jumper •Automatic polarity indication $\bullet$ Figure height: 0.56 " -Sampling rate: 2-3 readings/sec.
- Guaranteed zero reading for 0 V input
- Accuracy: $\pm 0.5 \% \bullet$ Power consumption: $50 \sim 60 \mathrm{~mA}$
-Size: $2.7^{\prime \prime}$ x $1.7^{\prime \prime}$

| Order \# | $(1-4)$ | (5-up) |
| :--- | :---: | :---: |
| $72-8105$ | $\$ 16.95$ | $\$ 14.95$ |

Square Recessed Dish with Two EP Connector Cutouts - Mfr. \#D028 •Black

Order \#
(1-9)
(10-49)
50-1575 $\quad \$ 5.75 \quad \$ 5.44$


Metal Cabinet Handles
-Heavy-duty metal
construction $\bullet$ Handle is spring loaded for added convenience •Wide rubber convenience $\bullet$ Wide rubbe
grip - Ideal for large and
 heavy cabinets $\bullet$ Black finish $\bullet$ Screws not included

| Order \# | $(1-3)$ | $(4-9)$ | (10-up) |
| :---: | :---: | :---: | :---: |
| $50-505$ | $\$ 5.14$ | $\$ 4.52$ | $\$ 4.01$ |

Small Recessed Steel Handle

- Black •Mfr. \#H1105
- $858^{5}$ x $638^{\prime \prime}$

| Order \# | $(1-9)$ |
| :---: | :---: |
| $50-1610$ | $\$ 5.99$ |

Large Recessed Steel Handle -Mfr. \#H1070 •10\%/4 x 63"

| Order \# | $(1-9)$ | $(10-49)$ |
| :---: | :---: | :---: |
| $50-1615$ | $\$ 6.55$ | $\$ 6.35$ |



VISA
1-800-543-4330 ${ }_{10}^{\text {Fax } 80-765-6960} 445$

# 8 <br> MCM <br> <br> Section 19 

 <br> <br> Section 19}

## EEBEK

High Power FM
Transmitter
Pre-assembled board
accepts line level input $(300 \mathrm{mV})$, and transmits
 audio to any standard
FM radio. Output frequency can be adjusted anywhere in the $88 \sim 108 \mathrm{MHz}$ FM band. Requires $9 \sim 15 \mathrm{VDC}$ supply, 150 mA . Board dimensions $50 \mathrm{~mm} \times 65 \mathrm{~mm} \times 20 \mathrm{~mm}$.

| Order \# | Description | (ea.) |
| :--- | :--- | ---: |
| $28-4851$ | FM transmitter | $\$ 25.45$ |
| $28-4775$ | $12 \mathrm{~V}, 1 \mathrm{~A}$ supply | $\mathbf{2 0 . 3 5}$ |
|  | Digital Message Recorder with |  |

EEEEK Amplifie Pre-assembled board signal supplied to its onsignal supplied to its onand plays it back through its and plays it back through its time is up to 60 seconds, and time is up to 60 seconds, and information is stored, eve When power is removed. Volume is controlled via board mounted potentiometer. Requires $9 \sim 12 \mathrm{~V}$ power supply, 300 mA . Amplifier delivers
impedance $4 \sim 80 h m$, speaker not included. Board dimensions: $3.74^{\prime \prime} \times 2.56^{\prime \prime} \times 1.18^{\prime \prime}$

| Order \# | Description | (ea.) |
| :--- | :--- | ---: |
| $28-6245$ | Digital recorder | $\$ 89.71$ |
| $28-4772$ | 12 V 300mA supply | 15.25 |

## 드른ㄴ Voice Activation (VOX) Relay

Pre-assembled board Pre-assembled board switches output relay when audio signal level 50 mV is deted Input 50 mV , 10 Kohm .


Sensitivity is adjusted relay contacts rated at 5A. Required Sutput relay contacts rated at 5A. Required supply voltage $12 \mathrm{VDC}, 50 \mathrm{~mA}$. Board dimensions 75 mm
$40 \mathrm{~mm} \times 30 \mathrm{~mm}$

| Order \# | Description | (ea.) |
| :--- | :--- | ---: |
| $28-4825$ | VOX module | $\$ 18.31$ |
| $28-4772$ | 12V, 300mA supply | 15.25 |



드BㅡㄴC $^{T}$
Pre-assembled counter
circuit board provides digital count from 0 to 9 Contact closure input provides one count up and reset-to-zero function. Each digit is $0.5^{\prime \prime}$ high. Requires 12 VDC ,
100 mA . Dimensions $70 \mathrm{~mm} x$
$52 \mathrm{~mm} \times 46 \mathrm{~mm}$.

| Order \# | Description | (ea.) |
| :--- | :--- | ---: |
| $28-4785$ | Counter | $\$ 15.40$ |
| $28-4772$ | $12 \mathrm{~V}, 300 \mathrm{~mA}$ supply | 15.25 |



boards may be used for many applications including repair or modification of equipment, projects or prototype work. They are easily installed into existing enclosures, speaker cabinets or audio equipment. Single and two channel models are available. All accept line level input, provide rated output, RMS into 8ohm load and are usable with 4ohm loads. Each may be powered with a single DC supply, voltage as listed. All boards are pre-tested and include a three year limited warranty.
$\begin{array}{cccc} & \text { Power } & \begin{array}{c}\text { Power } \\ \text { Order \# } \\ \text { Output }\end{array} & \text { Dimensions } \\ \text { Requirements } & \text { (H) } \times(\mathrm{W}) \times(\mathrm{D})(\text { ea. })\end{array}$ 28-5180 $75 \mathrm{mWx2CH}$. $3 \sim 6 \mathrm{VDC}, 50 \mathrm{~mA} 0.59 " \times 1.38 " \times 1.38$ " $\$ 9.26$ (headphone amplifier)
28-5175 500mWx2CH. 12VDC, 100mA 0.59"x2.17"x1.57"14.59 28-5170 1Wx2CH. $4 \sim 14 V D C, 250 \mathrm{~mA} 0.78$ " $\times 2.83^{\prime \prime} \times 1.97$ " 15.80 28-4800 5Wx2CH. 6~15VDC, 500mA 1.06"x3.54"x2.17"26.00 28-4801 $15 \mathrm{~W} \times 2 \mathrm{CH}$. $12 \sim 35 \mathrm{VDC}, 1 \mathrm{~A} 1.77$ " $\times 3.54^{\prime \prime} \times 2.17$ " 41.16 28-5165 500mWx1CH. 6~12VDC, $50 \mathrm{~mA} 0.59 " \times 1.10^{\prime \prime} \times 1.18$ " 7.95 28-4795 1Wx1CH. 4~14VDC, 200mA 0.79"x1.38×1.97" 7.71 28-4796 5Wx1CH. 6~15VDC, 250mA 0.79"x1.57x1.97" 14.37 28-4797 15Wx1CH. 12~35VDC, 500mA1.77"x2.56"x3.15"20.35 28-4798 20Wx1CH. 9~15VDC, 2A 1.57"x2.76"x2.76"26.08 28-4799 30Wx1CH. 12~35VDC, 1.5A 1.77"x2.56"x3.62"30.86


Each pre-assembled circuit module may be used with Cebek amplifiers, or any audio amplifier having a line level input. Microphone and guitar input modules feature board mounted level adjustments. The four channel mixer is unity gain on all channels, unless individual (optional) potentiometers are used. The stereo magnetic cartridge module also features RIAA equalization circuitry. All will operate from a single DC power supply, and require less than 50 mA (\#28-6225 requires 100 mA ). All boards are pre-tested and include a three year limited warranty.

| Description Order \# | Power Requirements | Dimensions <br> (H) $x(W) x(D)$ | (ea.) |
| :---: | :---: | :---: | :---: |
| Microphone preamplifier |  |  |  |
| 28-4805 | 6~18VDC | 0.78 "x1.38"x1.97" | \$9.22 |
| Guitar preamplifier |  |  |  |
| 28-4815 | 6~18VDC | 0.78 "x1.38"x1.97" | 9.35 |
| Stereo phono preamplifier |  |  |  |
| 28-5205 | 18VDC | 0.78 "x2.05"x2.95" | 15.40 |
| Guitar effects generator |  |  |  |
| 28-6225 | 9~15VDC | 0.59"x1.85"x2.91" | 20.8 |
| Noise gate |  |  |  |
| 28-6220 | 12VDC | 0.79 "x1.57"x2.56" | 29.22 |
| Audio compressor |  |  |  |
| 28-6230 | 9~15VDC | 0.79 "x1.57"x2.56" | 13.07 |
| Bass/treble control |  |  |  |
| 28-4810 | 9~24VDC | 0.79 "x2.95"x3.46" | 15.63 |
| Bass/treble/balance/volume control |  |  |  |
| 28-4835 | 12~24VDC | 0.79"x4.14"x5.51" | 28.5 |

## 

Single Channel Audio Amplifier Module
Compact audio amplifier circuit is housed in a fully potted plastic enclosure and is
great for a variety of hobby, service and prototype applications. Amplifier accepts line level input ( 80 mV ), and provides 12 W output into a 40 hm load. Requires $6 \sim 16 V D C, 12 V D C$ optimum ( 800 mA ). Dimensions: $2^{1 / 1 / 2}$
(W) x $1^{1 / 22^{\prime \prime}}(\mathrm{D}) \times 1^{\prime \prime}(\mathrm{H})$.

| Order \# | $(1-4)$ | $(5-9)$ | (10-up) |
| :--- | :--- | :--- | :--- |
| $28-6402$ | $\$ 9.58$ | $\$ 8.67$ | $\$ 7.84$ |



EE马E는 Timer


These pre-assembled circuit modules provide accurate, consistent timing functions for a variety of uses. All delay times are adjustable via board-mounted potentiometers, and each has SPDT relay outputs which handle 5A. Power requirements: $12 \mathrm{VDC},<100 \mathrm{~mA}$. All boards are pre-tested and include a three year limited warranty.

| Order \# | Timer Mode | Time Range | Dimensions (H) $\mathbf{x}(\mathrm{W}) \mathrm{x}(\mathrm{D})$ |  |
| :---: | :---: | :---: | :---: | :---: |
| Order \# |  |  |  | , |
| 28-4735 | Single event 1~180 sec. 1.18"x1.69x2.95" \$18.49 |  |  |  | (one shot)

28-4736 Single event 2~45 min. 1.18"x1.69"x2.95" 18.49 (one shot)
28-4750 On delay $1 \sim 180 \mathrm{sec} .1 .18$ " $\times 1.69^{\prime \prime} \times 2.95^{\prime \prime} 20.86$ 28-4751 On delay $2 \sim 45 \mathrm{~min} .1 .18 " x 1.69 " x 2.95 " 20.86$ 28-4745 Sequential $1 \sim 180$ sec. $1.18^{\prime \prime} \times 2.36 " x 3.03^{\prime \prime} 30.86$ dual time delay
28-6175 Retriggerable 1~180 sec. 1.18"x2.95"x1.69" 17.46 28-6176 Retriggerable 2~45 min. 1.18 " $\times 2.95 " \times 1.69^{\prime \prime} 18.77$ 28-4740 Repeat cycle $0.3 \sim 60 \mathrm{sec} .1 .18 " \times 1.69 " \times 2.95 " 21.37$ 28-4741 Repeat cycle $1 \sim 30 \mathrm{~min}$. 1.18 "x1.69"x2.95" 21.37

## 드BE잔

Hi-Fi Amplifier Power Supplies
Power supplies include center apped AC transformer and
pre-assembled circuit board, and are designed specifically for use with the Hi-fidelity audio amplifiers Each features necessary positive and negative voltage output and has sufficient current to power two amplifie modules. Additionally, each includes a regulated 18VDC output for additional preamplifier or other input module. Listed dimensions are for PC board only AC line cord is not included.

| Order \# | Power Output | Dimensions (H) $\times(W) \times(D)$ | (ea.) |
| :---: | :---: | :---: | :---: |
| 28-6111 | $\pm 24 \mathrm{VDC}$, | $1.38{ }^{\prime \prime} \times 1.97^{\prime \prime} \times 3.15$ | \$32.94 |
| 116 | $\pm 28 \mathrm{VDC}, 2.5 \mathrm{~A}$ | 1.38 " $\times 1.97$ " $\times 3.15$ " | 38.63 |
| 28-6121 | $\pm 32 \mathrm{VDC}, 3.0 \mathrm{~A}$ | $1.77{ }^{\prime \prime} \times 1.97^{\prime \prime} \times 3.5$ | 50.13 |
| 28-6126 | $\pm 42 \mathrm{VDC}, 4.4 \mathrm{~A}$ | 1.77 " $\times 1.97$ " $\times 3.54$ " | 66. |


modification or prototype projects requiring high output power with a high level of musical accuracy. The larger models may be used for powered monitors, active subwoofers and similar applications. All models atilize discrete output devices and require specific $\pm$ symmetrical power supplies. All accept line level input, provide rated output, RMS into 8ohm load, and are usable with 4ohm loads. THD: <0.1\%, @ 1W, $20 \mathrm{~Hz} \sim 20 \mathrm{KHz}$. All boards are pre-tested and include a three year limited warranty.

Power Power Dimensions Order \# Output Requirements (H) $\times(\mathrm{W}) \times(\mathrm{D}) \quad$ (ea.) 28-6110 $25 \mathrm{~W} \quad \pm 24 \mathrm{VDC}, 1 \mathrm{~A} 1.50^{\prime \prime} \times 2.75^{\prime \prime} \times 4.41^{\prime \prime} \$ 26.08$ 28-6115 $35 \mathrm{~W} \pm 28 \mathrm{VDC}, 1.25 \mathrm{~A} 1.50^{\prime \prime} \times 2.75^{\prime \prime} \times 4.41^{\prime \prime} 33.49$ 28-6120 60W $\pm 32$ VDC, $1.5 \mathrm{~A} 1.50^{\prime \prime} \times 2.75^{\prime \prime} \times 4.41^{\prime \prime} 52.22$ 28-6125 100W $\pm 42 \mathrm{VDC}, 2.2 \mathrm{~A} 2.76^{\prime \prime} \times 4.33^{\prime \prime} \times 4.33^{\prime \prime} 61.30$

## EEBEK

Single Channel Audio Amplifier Module
Ultra compact audio amplifier circuit is housed in a fully potted
 plastic enclosure and is
great for a variety of hobby, service and prototype applications. Amplifier accepts line level input ( 80 mV ), and provides 3.5 W output into a 4 ohm load. Requires $41 / 2 \sim 12 \mathrm{VDC}, 12 \mathrm{VDC}$ optimum ( 500 mA ). Dimensions: $1 \frac{1}{4} /{ }^{\prime \prime}$ (W) x $1^{\prime \prime}(\mathrm{D}) \times 58^{\prime \prime}(\mathrm{H})$

| Order \# | $(1-4)$ | $(5-9)$ | $(10-$ up $)$ |
| :--- | :---: | :---: | :---: |
| $28-6400$ | $\$ 7.20$ | $\$ 6.48$ | $\$ 5.93$ |

## 드Bㅡ난

Electronic Traffic Light
Pre-assembled module will suit numerous will suit numerous
novelty and practical novelty and practical applications. The three timer circuit is designed to simulate the operatio of a traffic light. The on board potentiometer may be anjusted "creen" output The "yrom 5~50 seconds for "red" $1 /$ of the time setting Board mounted red yellow and $1 / 4$ of the time setting. Board mounted red, yellow and Each output is capable of switching a $12 \sim 15 \mathrm{VDC}$ load 2A max. Requires $12 \sim 15 \mathrm{VDC}, 40 \mathrm{~mA}$ max.

| Order \# | Description | (ea.) |
| :---: | :---: | :---: |
| 28-6215 | Timer | \$20.55 |
| 28-4772 | $12 \mathrm{VDC}, 300 \mathrm{~mA}$ supply | 15.25 |
| Flip-Flop Relay Module |  |  |
| With momentary contact at the input, the output relay closes and latches. Upon a second momentary closure of the same input, the relay opens. Relay contacts 5A. Requires $12 \mathrm{VDC}, 50 \mathrm{~mA}$. Board dimensions $60 \mathrm{~mm} \times 60 \mathrm{~mm} \times 30 \mathrm{~mm}$. |  |  |
| Order \# | Description | (ea.) |
| 28-5115 | Flip-flop module | \$16.83 |
| 28-4772 | $12 \mathrm{~V}, 300 \mathrm{~mA}$ supply | 15.25 |


 Sequential Relay Modules
Upon a single contact closure at the input, the output relays (either four or eight) sequentially close. The delay time between each relay closing is adjustable from $0.3 \sim 10$ seconds. Each relay is capable of switching 5A. Requires
$12 \mathrm{VDC}, 50 \mathrm{~mA}$.

| Order\# | Relays | Dimensions | (ea.) |
| :---: | :---: | :---: | ---: |
| $28-5116$ | Four | $11 \mathrm{~mm} \times 78 \mathrm{~mm} \times 30 \mathrm{~mm}$ | $\$ 41.16$ |
| $28-5117$ | Eight | $155 \mathrm{~mm} \times 112 \mathrm{~mm} \times 35 \mathrm{~mm}$ | 61.76 |
| $28-4772$ | 12V, 300 mA supply | 15.25 |  |


|  | Photoelectric (Sunset) Relay Module |  |
| :---: | :---: | :---: |
| Pre-assembled control |  |  |
| module utilizes an externalsensor to detect the absence |  |  |
|  |  |  |
| of light. Output relayenergizes when there is no |  |  |
|  |  |  |
| energizes when there is nolight present. Sensitivityis adjusted via board |  |  |
|  |  |  |
| mounted potentiometer. |  |  |
| Relay contacts are 5A. Board |  |  |
|  |  |  |
| $67 \mathrm{~mm} \times 45 \mathrm{~mm} \times 30 \mathrm{~mm}$. | $0 \mathrm{~mA} \text {. }$ |  |
| Order \# | Description | (ea.) |
| 28-5131 | Light detector | 20.86 |
| 28-4772 | 12V, 300mA Supply | 15.25 |

## 

Liquid Level Control
Pre-assembled module utilizes two included liquid sensors to provide control intended for "fill" or "drain" of a wate
 tank. "Fill" mode
energizes the relay when the lower sensor does not detect the presence of a liquid. The relay de-energizes when the top sensor then detects liquid. "Drain" mode energizes the relay when the top sensor detects the presence of liquid, and de-energizes when the lower sensor no longer detects liquid. Relay is SPDT with 5A contacts. Requires $12 \mathrm{VDC}, 50 \mathrm{~mA}$. Board dimensions $3^{\prime \prime} \mathrm{x}$ $2.17^{\prime \prime} \times 1.18^{\prime \prime}$. Note: This device is intended for use with water. Use with flammable or corrosive liquids could have hazardous results.

| Order \# | Description | (ea.) |
| :--- | :--- | ---: |
| $28-6185$ | Liquid level control | $\$ 27.70$ |
| $28-4772$ | 12V, 300mA supply | 15.25 |

 R/C Transmitters and Receivers Pre-assembled receiver and transmitter modules provide wireless operation of single or dual relay outputs. UHF operation ( 433.92 MHz ) allows optimal signal penetration through walls and ther obstructions. Eight position dip switch selector allows over 13,000 code possibilities to prevent accidental activation by other transmitters on the same frequency. Single and dual channel transmitters require 12 VDC source such as a GP23A battery, and measure $2.24^{\circ} \mathrm{x}$ $1.42^{\prime \prime} \times 0.63^{\prime \prime}$. Receivers measure approximately 4 " $\times 2.5$ $1^{3} / 6^{\prime \prime}$ and are available in 120 VAC and $12 \mathrm{VDC}(140 \mathrm{~mA})$ models. Relay contacts are SPDT, 5A.

| Order \# | Description | (ea.) |
| :---: | :--- | ---: |
| $28-6237$ | Single channel transmitter | $\$ 18.49$ |
| $28-6242$ | Dual channel transsitter | 20.86 |
| $28-6235$ | Single channel receiver, 12VDC | 33.49 |
| $28-6240$ | Dual channel receiver, 12VDC | 44.43 |
| $28-6236$ | Single channel receiver, 120VAC | 43.79 |
| $28-6241$ | Dual channel receiver, 120VAC | 54.09 |

 necessary AC transformer. Standard models have conventional $\mathrm{V}+$ and ground connections symmetrical models have V+, ground and Vconnections, both are fixed voltage. Variable models are continuously adjustable within the stated range, via a board mounted potentiometer. Listed dimensions are for PC board only. AC line cord is not included.

| Order \# | Typ | Output |  | (ea.) |
| :---: | :---: | :---: | :---: | :---: |
| 4771 | Standard |  |  |  |
| -4772 | Standard | 12V, 300 m |  |  |
| 8-4774 | Standard | $9 \mathrm{~V}, 1 \mathrm{~A}$ | 1.38"x169"x2 | 20.86 |
| 28-4775 | Standard | 12V, 1 A | 1.38 "x1.69"x2.76" | 20.35 |
| 28-4776 | Standard |  | $1380 \times 1.60 " \times 2.76$ |  |
| 28-4777 | Standard | 12V, 2A | 1.57 "x3.94"x2.5 | 36.40 |
| 28-4778 | Standard | 12V, 5A | $2.17{ }^{\prime \prime} \times 3.15$ "x4.13" | 52.83 |
| 28-7874 | Variable | 12~24V, 1 A | 1.77"x2.09"x2.80" | 31.20 |
| 28-4780 | Variable | 12~24V, 2 A | 1.57 "x2.95"x4.33" | 52.22 |
| 28-4779 | Variable | 3~15V, 1A | 1.57"x2.09"x2.01" | 30.86 |
| 28-7882 Symmetric $\pm 15 \mathrm{~V}, 500 \mathrm{~mA}$ |  |  | 0.98"x2.20"x3.66" | 31.71 |
| 28-7886 Symmetric $\pm 15 \mathrm{~V}, 1 \mathrm{~A}$ |  |  | 0.98"x2.20"x3.66" |  |

## PC Controlled Eigh

Channel Switch
Pre-assembled circuit module has numerous possibilities for computer controlled automation of electrical devices. Simply connect to LPT1 parallel port of any 486 or higher PC and solid state output of eight channels is provided via 25 pin female sub "D" connector. Each output switches $6 \sim 40 \mathrm{VDC}$ @ 400 mA , or 4~40VAC @ 200mA. Especially suitable for switching external relays. Included $3^{1 ⁄ 2} /{ }^{\prime \prime}$ diskette contains necessary software and a complete reference manual which may be printed. Separately available 15 ' cable (\#83-0470), not included, has a DB-25 male connector to stripped leads, greatly easing connection of external components. Dimensions: $2^{1 / 4 \prime}$ " (W) x $3^{\prime \prime}$ (D) x $1 \frac{1}{8}$ " (H)

| Order \# | Description | $(1-4)$ | $(5-9)$ | (10-up) |
| :--- | :--- | :---: | :---: | :---: |
| $28-6420$ | PC switch | $\$ 26.08$ | $\$ 23.52$ | $\$ 20.12$ |
| $83-0470$ | DB-25 cable | 9.49 | - | - |

 displays t.0.5. LED display clearly
displays temperature with accuracy to $0.1^{\circ} \mathrm{C}$
Requires $12 \mathrm{VDC}, 160 \mathrm{~mA}$. Board dimensions
$84 \mathrm{~mm} \times 66 \mathrm{~mm} \times 51 \mathrm{~mm}$

| Order \# | Description | (ea.) |
| :--- | :--- | :---: |
| $28-4760$ | Thermometer | \$51.46 |
| $28-4772$ | 12V, 300mA supply | $\mathbf{1 5 . 2 5}$ |

## Project Accessories <br> MCM <br> Section 19

## C/EMY NEWI NEYN.

## Infrared

$4 \times 7$ LED Array
Compact circuit is housed in a fully potted plastic enclosure and requires only $12 \mathrm{VDC} @ 300 \mathrm{~mA}$. Intended
for CCTV applications, this device will light up any area when viewed through a CCD camera, yet leave that area dark to the naked eye. The array of 28 LEDs provides considerably more illumination than that included with CCTV cameras, with much lower cost and power consumption than typical infrared lights. Dimensions $2^{7 / 8 "}(\mathrm{~W}) \times 2^{\prime \prime}(\mathrm{D}) \times 7 / 8^{\prime \prime}(\mathrm{H})$, black color.
Order \# $\quad(1-4) \quad(5-9) \quad(10-u p)$

Infrared 4 x 7 LED Array
Compact circuit is housed in a fully potted plastic enclosure and requires only 12 VDC @ 300 mA . Intended for CCTV applications, this device will light up any dark area when viewed through a CCD camera, yet leave that area dark to the naked eye. The array of 28 LEDs provides considerably more illumination than that included with CCTV cameras, with much lower cost and power consumption than typical infrared lights.
Dimensions: $2^{7 / 8 "}(\mathrm{~W}) \times 2^{\prime \prime}(\mathrm{D}) \times 7 / 8^{\prime \prime}(\mathrm{H})$

| Order \# | $(1-4)$ | $(5-9)$ | $(10-$ up $)$ |
| :---: | :---: | :---: | :---: |
| $28-6418$ | $\$ 19.56$ | $\$ 17.46$ | $\$ 15.97$ |

##  <br> Digital Message

Recorder
Pre-assembled board digitally records any audio signal supplied to its mic level input, and plays it back through ts built-in 100 mW
 amplifier. Recording
time is up to 16 seconds, and information is stored even when power is removed. Electret microphone is included Requires 9~12VDC supply, 150 mA . Board dimensions $80 \mathrm{~mm} \times 60 \mathrm{~mm} \times 25 \mathrm{~mm}$

| Order \# | Description | (ea.) |
| :--- | :--- | ---: |
| $28-4855$ | Digital recorder | $\$ 36.01$ |
| $28-4772$ | 12V, 300mA supply | $\mathbf{1 5 . 2 5}$ |

Ultrasonic Signal Generator Module

Compact circuit is housed in a fully potted plastic enclosure and can be powered from any $12 \sim 24 \mathrm{~V}$ power supply ( 50 mA ). When connected to any piezo
electric speaker, such as
MCM \#53-071 (not included), device emits ultrasonic tones from $20 \mathrm{KHz} \sim 40 \mathrm{KHz}$, ideal for repelling insects, birds, rodents and other pests. Up to four piezo speakers may be connected to a single module. Top mounted 10 position rotary BCD switch selects output frequency. Dimensions: $23 / 8^{3 \prime}(\mathrm{~W}) \times 13 / 41$ (D) x $3 / 41$ (H).

| Order \# | $(1-4)$ | $(5-9)$ | (10-up) |
| :--- | :---: | :---: | :---: |
| $28-6404$ | $\$ 9.81$ | $\$ 8.88$ | $\$ 8.04$ |



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