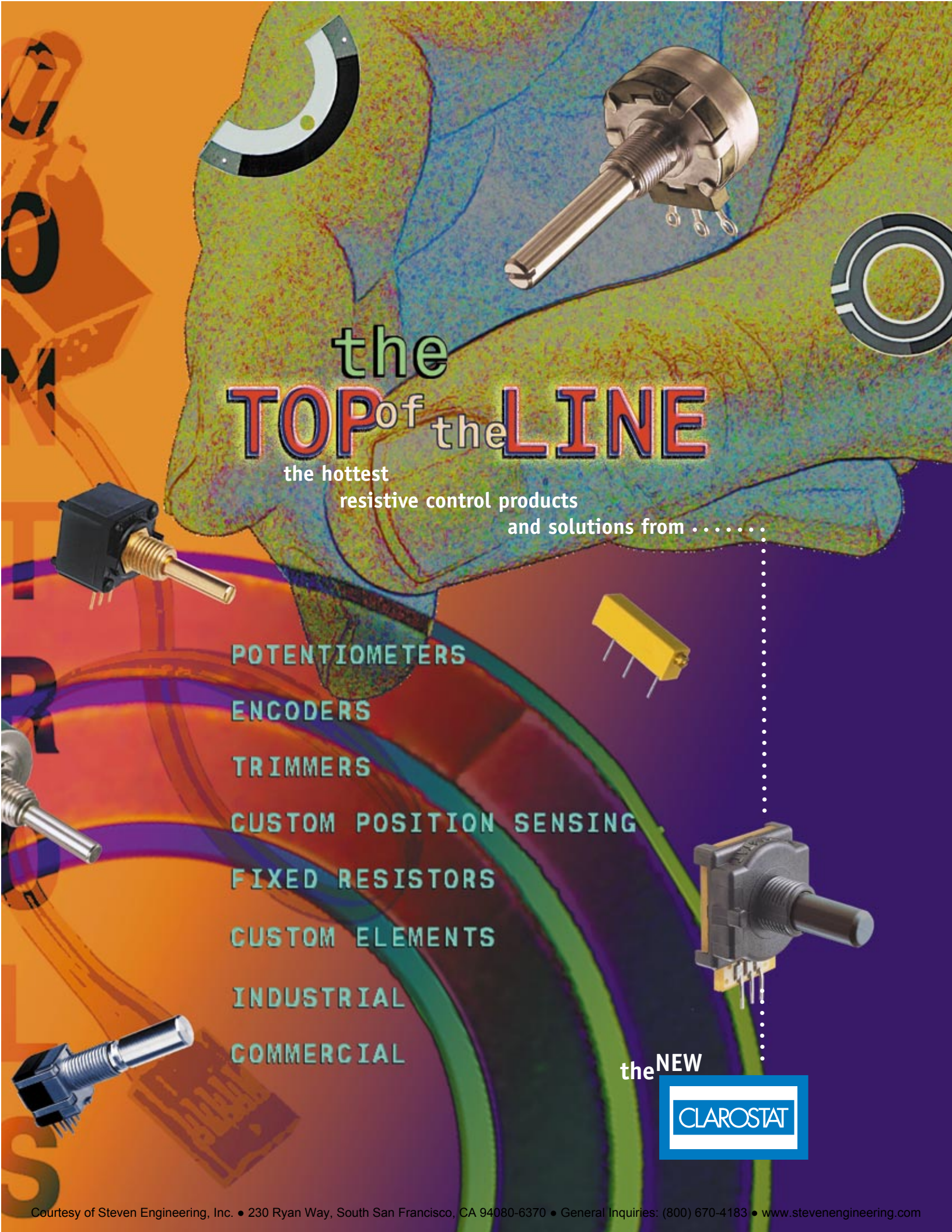




# the TOP<sup>of</sup> the LINE

the hottest  
resistive control products  
and solutions from . . . . .

POTENTIOMETERS

ENCODERS

TRIMMERS

CUSTOM POSITION SENSING

FIXED RESISTORS

CUSTOM ELEMENTS

INDUSTRIAL

COMMERCIAL

the NEW

CLAROSTAT

# Take Your Pick

from the cream of the crop. **Mechanical and Optical Encoders. Potentiometers. Variable and Fixed Resistors. Attenuators. Trimmers. Trimming Potentiometers. Custom Position Sensing Elements.**

This catalog features the best of the best. The most popular resistive control innovations and position sensing solutions. And this is just the beginning. Hybrid products and custom solutions addressing specific application are also available from the world leader in resistive technology.

## The New Clarostat: The Short Story

From its inception as a family business in the 1920's, Clarostat achieved recognition for technological pioneering and manufacturing leadership. Innovations with conductive plastic potentiometers and resistive controls sustained Clarostat's reputation in the industry for decades. Relocating to the Southwest in the early 80's, Clarostat was subsequently acquired by BTR, a leading global engineering company. Strategically aligned within the BTR Sensors Systems Group, business units representing the gamut of sensor technologies, Clarostat has translated this significantly increased access to technology and resources into benefits for customers.

Clarostat continues to partner with OEM's who seek improved control and cost solutions. Custom, turn-key, value-add options, low minimums, engineering support and fast delivery set Clarostat apart. Carefully re-thought quality policies, more new products, intense technology initiatives and fresh alliances with vendors and BTR extended family members promise to propel the New, 70-year-old Clarostat decades into the next millenium.

## The New Solution

Our engineers excel in exploiting Clarostat's proven core resistive technology to provide effective, efficient, low cost solutions that successfully meet the competitive challenges facing OEMs

### Custom Position Sensing Element: The Answer to Effective, Low-cost Control

#### What is the composition of a position element?

The position element is the essence of the resistor control, determining its performance characteristics. The element is composed of a base substrate of PC board material, Kapton, ceramic or plastic. A resistance print on the substrate is most often Conductive Plastic resin (CP) or Cermet. The shape of the element varies, as dictated by a specific application.

CP-printed Sensor elements typically have a significantly longer life and cost less than their Cermet counterparts. Conductive Plastic is composed of carbon particles suspended in an epoxy resin. This composition makes CP a viable option in any operational temperature up to 150° C. Other advantages include the withstanding of up to 1 million wiper cycles, 10 million dither strokes (machine vibrations) and lower electrical noise. CP element life can be increased ten-times with specially designed wipers and lubrication.

Cermet is a mixture of glass frit and metal oxides fired onto a ceramic substrate at 850°C, melting the glass. This process yields a surface highly resistant to fluids, with the exception of certain acids, and withstands temperatures up to 300° C. Cermet has 10 times the wattage capabilities of CP, but element life is typically limited 50,000 cycles and 100,000 dithers unless extended somewhat by special design. Noise with Cermet is found to be 5 to 10 times higher than with CP.

#### Why custom position sensing elements when standard potentiometers exist?

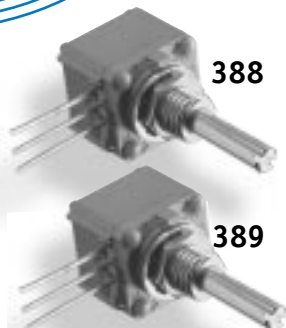
Designers employing value engineering often specify only the basic components to be combined in a single housing. The cost of the potentiometer housing, shaft and other components goes away. Usually, these custom control packages are internal to some system instead of a front panel control.

The CP or Cermet element permits expanded design freedom, space savings and cost control not always possible with self-contained units. Working with customer engineering, Clarostat now designs, prototypes and produces complete assemblies shipped to the OEM and incorporated into the system or product. This subassembly may include a portion of the molded product housing, a custom-designed position sensing element, contacts, wiring, cables, terminals, shaft or shaft opening. Multiple existing components in automotive and machine controls can now be consolidated to reduce manufacturing and repair costs.

# Potentiometers

Resistive Element   Power (watts)   Resistive Range (ohms)   Tolerance   Resistance Taper (Law)   Body Dimension   Shaft   Bushing   Terminals

## POTENTIOMETERS ■ MODULAR



388

389

|                    |     |           |      |                       |          |                                                                  |                                                   |                   |
|--------------------|-----|-----------|------|-----------------------|----------|------------------------------------------------------------------|---------------------------------------------------|-------------------|
| Conductive plastic | 0.5 | 100-5 meg | ±10% | Linear<br>Non -Linear | 1/2" sq. | Plain, Slotted<br>Flatted<br>Knurled<br>1/8" & 1/4" dia<br>Metal | Plain<br>Locking<br>1/4" dia<br>3/8" dia<br>Metal | Solder hook<br>PC |
| Cermet             | 1.0 | 100-5 meg | ±5%  | Linear<br>Non-Linear  | 1/2" sq. | Plain, Slotted<br>Flatted<br>Knurled<br>1/8" & 1/4" dia<br>Metal | Plain<br>Locking<br>1/4" dia<br>3/8" dia<br>Metal | Solder hook<br>PC |

Note: 389 Series available with rotary, momentary and alternate action switches. Over 100 styles, configurations available.



Mod Pot  
70

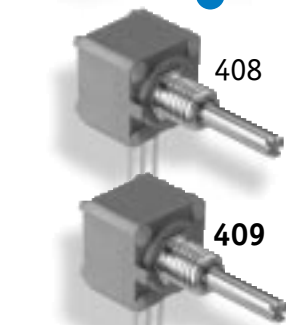
|                    |     |           |           |                      |          |                                                            |                                                |                  |
|--------------------|-----|-----------|-----------|----------------------|----------|------------------------------------------------------------|------------------------------------------------|------------------|
| Cermet             | 2.0 | 100-5 meg | ±5%, ±10% | Linear<br>Non-Linear | 5/8" sq. | Plain, Slotted<br>Flatted<br>1/8" dia<br>1/4" dia<br>Metal | Plain Locking<br>1/4" dia<br>3/8" dia<br>Metal | Solder lug<br>PC |
| Carbon composition | 1.0 | 50-10 meg |           |                      |          |                                                            |                                                |                  |
| Conductive plastic | 0.5 | 100-1 meg |           |                      |          |                                                            |                                                |                  |

Note: Mod Pot 70 Series available as L and Straight-T attenuator and with rotary, alternate action switches. Over 100 styles, configurations available.



Mod Pot  
72

|                    |      |           |           |                      |          |                                                |                                     |                  |
|--------------------|------|-----------|-----------|----------------------|----------|------------------------------------------------|-------------------------------------|------------------|
| Cermet             | 1.0  | 100-5 meg | ±5%, ±10% | Linear<br>Non-Linear | 5/8" sq. | Plain, Slotted<br>Flatted<br>1/4" dia<br>Metal | Plain Locking<br>3/8" dia.<br>Metal | Solder lug<br>PC |
| Carbon composition | 0.5  | 50-10 meg |           |                      |          |                                                |                                     |                  |
| Conductive plastic | 0.25 | 100-1 meg |           |                      |          |                                                |                                     |                  |



408

409

|                    |     |           |                   |                      |          |                                                                  |                                                     |                   |
|--------------------|-----|-----------|-------------------|----------------------|----------|------------------------------------------------------------------|-----------------------------------------------------|-------------------|
| Conductive plastic | 0.5 | 100-5 meg | ±10%, ±20%        | Linear<br>Non-Linear | 1/2" sq. | Plain, Slotted<br>Flatted<br>Knurled<br>1/8" & 1/4" dia          | Plain<br>Locking<br>1/4" dia.<br>3/8" dia.          | Solder hook<br>PC |
| Cermet             | 1.0 | 100-5 meg | ±10%, ±20%<br>±5% | Linear<br>Non-Linear | 1/2"sq   | Plain, Slotted<br>Flatted<br>Knurled<br>1/8" & 1/4" dia<br>Metal | Plain<br>Locking<br>1/4" dia.<br>3/8" dia.<br>Metal | Solder hook<br>PC |

Note: 409 Series available with rotary, momentary and alternate action switches.



392

382

G(RV6)GS

|                    |     |           |            |                      |           |                                                          |                                        |                   |
|--------------------|-----|-----------|------------|----------------------|-----------|----------------------------------------------------------|----------------------------------------|-------------------|
| Conductive Plastic | 0.5 | 100-5 meg | ±10%, ±20% | Linear<br>Non-Linear | 1/2" dia. | Plain, Slotted<br>Flatted<br>1/8" dia.<br>Plastic, Metal | Plain<br>1/4" dia.<br>Metal            | Solder hook<br>PC |
| Conductive Plastic | 0.5 | 100-5 meg | ±10%, ±20% | Linear<br>Non-Linear | 1/2" dia. | Slotted<br>Flatted<br>1/8" dia.<br>Metal                 | Plain<br>Locking<br>1/4" dia.<br>Metal | Solder hook<br>PC |
| Carbon composition | 0.5 | 100-5 meg | ±10%, ±20% | Linear<br>Non-Linear | 1/2" dia. | Plain, Slotted<br>Flatted<br>1/8" dia.<br>Metal          | Plain<br>Locking<br>1/4" dia.<br>Metal | Solder lug<br>PC  |

Note: G(RV6) and GS Series available with SPST rotary switch (GS).

Consult factory for specific tapers  
Tolerances not included

# Potentiometers

| Resistive Element               | Power (watts) | Resistive Range (ohms) | Tolerance | Resistance Taper (Law) | Body Dimension | Shaft | Bushing | Terminals |
|---------------------------------|---------------|------------------------|-----------|------------------------|----------------|-------|---------|-----------|
| POTENTIOMETERS ■ BOARD WASHABLE |               |                        |           |                        |                |       |         |           |



W(RV6)WR

|                    |     |           |            |                      |           |                                                 |                                        |                  |
|--------------------|-----|-----------|------------|----------------------|-----------|-------------------------------------------------|----------------------------------------|------------------|
| Carbon composition | 0.5 | 100-5 meg | ±10%, ±20% | Linear<br>Non-Linear | 1/2" dia. | Plain, Slotted<br>Flatted<br>1/8" dia.<br>Metal | Plain<br>Locking<br>1/4" dia.<br>Metal | Solder lug<br>PC |
|--------------------|-----|-----------|------------|----------------------|-----------|-------------------------------------------------|----------------------------------------|------------------|

Note: W (RV6) and WR Series available in radial-lead version with optional rotary switch.



SP

|                    |      |           |            |                      |           |                                                 |                                                         |                   |
|--------------------|------|-----------|------------|----------------------|-----------|-------------------------------------------------|---------------------------------------------------------|-------------------|
| Cermet             | 1.0  | 50-1 meg  | ±5%, ±10%  | Linear<br>Non-Linear | 3/8" dia. | Plain, Slotted<br>Flatted<br>1/8" dia.<br>Metal | Plain<br>1/4" dia.<br>Metal                             | Solder lug<br>PC  |
| Conductive plastic | 0.25 | 250-1 meg | ±10%, ±20% | Linear<br>Non-Linear | 5/8"      | Plain, Slotted<br>1/4" dia.<br>Plastic, Metal   | Threaded<br>Unthreaded<br>3/8" dia.<br>Plastic<br>Metal | PC<br>in 2 plains |



Type 2000

| Resistive Element | Power (watts) | Resistive Range (ohms) | Tolerance | Resistance Taper (Law) | Independent Linearity | Body Dimension | Shaft | Bushing | Terminals |
|-------------------|---------------|------------------------|-----------|------------------------|-----------------------|----------------|-------|---------|-----------|
|-------------------|---------------|------------------------|-----------|------------------------|-----------------------|----------------|-------|---------|-----------|



43



58

|           |     |       |     |                      |     |               |                                                   |                                        |            |
|-----------|-----|-------|-----|----------------------|-----|---------------|---------------------------------------------------|----------------------------------------|------------|
| Wirewound | 2.0 | 5-50K | ±5% | Linear<br>Non-Linear | ±2% | 1 1/8" dia.   | Plain<br>Slotted<br>Flatted<br>1/4" dia.<br>Metal | Plain<br>Locking<br>3/8" dia.<br>Metal | Solder lug |
| Wirewound | 4.0 | 1-50K | ±5% | Linear<br>Non-Linear | ±1% | 1 11/16" dia. | Plain<br>Slotted<br>Flatted<br>1/4" dia.<br>Metal | Plain<br>Locking<br>3/8" dia.<br>Metal | Solder lug |

Note: Series 43 and 58 available with AE switches. Available as low L and T attenuators.



49

|           |     |       |     |        |     |           |                                        |                                        |            |
|-----------|-----|-------|-----|--------|-----|-----------|----------------------------------------|----------------------------------------|------------|
| Wirewound | 1.5 | 5-20K | ±5% | Linear | ±5% | 3/4" dia. | Plain<br>Slotted<br>1/8" dia.<br>Metal | Plain<br>Locking<br>1/4" dia.<br>Metal | Solder lug |
|-----------|-----|-------|-----|--------|-----|-----------|----------------------------------------|----------------------------------------|------------|

Consult factory for specific tapers  
Tolerances not included

# Potentiometers

Resistive Element    Power (watts)    Resistive Range (ohms)    Tolerance    Resistance Taper (Law)    Body Dimension    Shaft    Bushing    Terminals

## POTENTIOMETERS ■ INDUSTRIAL



|                    |     |           |            |                      |             |                                                            |                                        |                               |
|--------------------|-----|-----------|------------|----------------------|-------------|------------------------------------------------------------|----------------------------------------|-------------------------------|
| Conductive plastic | 0.5 | 150-5 meg | ±10%, ±20% | Linear<br>Non-Linear | 15/16" dia. | Plain, Slotted<br>Flatted<br>Knurled<br>1/4" dia.<br>Metal | Plain<br>Locking<br>3/8" dia.<br>Metal | PC<br>Solder lug<br>Wire-wrap |
| Conductive plastic | 2.0 | 50-5 meg  | ±10%, ±20% | Linear<br>Non-Linear | 1" dia.     | Plain, Slotted<br>Flatted<br>Knurled<br>1/4" dia.<br>Metal | Plain<br>Locking<br>3/8" dia.<br>Metal | Solder lug                    |

Note: 53 Series available with rotary switches.

|                    |      |          |           |                      |             |                                                 |                                                      |            |
|--------------------|------|----------|-----------|----------------------|-------------|-------------------------------------------------|------------------------------------------------------|------------|
| Carbon composition | 2.25 | 50-5 meg | ±10, ±20% | Linear<br>Non-Linear | 1.156" dia. | Plain, Slotted<br>Flatted<br>1/4" dia.<br>Metal | Plain<br>Locking<br>Watertight<br>3/8" dia.<br>Metal | Solder lug |
|--------------------|------|----------|-----------|----------------------|-------------|-------------------------------------------------|------------------------------------------------------|------------|

Note: J Series available as Bridged-T, Bridged-H, L and Straight-T attenuators.

|                                                                   |     |          |            |                      |         |                                                            |                                        |            |
|-------------------------------------------------------------------|-----|----------|------------|----------------------|---------|------------------------------------------------------------|----------------------------------------|------------|
| Extra long life version of J, with single or dual configurations. |     |          |            |                      |         |                                                            |                                        |            |
| Conductive plastic                                                | 2.0 | 50-5 meg | ±10%, ±20% | Linear<br>Non-Linear | 1" dia. | Plain, Slotted<br>Flatted<br>Knurled<br>1/4" dia.<br>Metal | Plain<br>Locking<br>3/8" dia.<br>Metal | Solder lug |

Note: 380 Series available with rotary switches. 100,000 cycle life.

|                    |     |           |           |                      |           |                                                            |                                        |                         |
|--------------------|-----|-----------|-----------|----------------------|-----------|------------------------------------------------------------|----------------------------------------|-------------------------|
| Conductive plastic | 1.0 | 100-5 meg | ±10, ±20% | Linear<br>Non-Linear | 5/8" dia. | Plain, Slotted<br>Flatted<br>Knurled<br>1/8" dia.<br>Metal | Plain<br>Locking<br>1/4" dia.<br>Metal | Solder lug<br>Wire wrap |
|--------------------|-----|-----------|-----------|----------------------|-----------|------------------------------------------------------------|----------------------------------------|-------------------------|

Note: 381 Series available with rotary momentary and alternate action switches.

|                    |     |          |           |                      |         |                                                            |                                        |            |
|--------------------|-----|----------|-----------|----------------------|---------|------------------------------------------------------------|----------------------------------------|------------|
| Conductive plastic | 2.0 | 50-5 meg | ±10, ±20% | Linear<br>Non-Linear | 1" dia. | Plain, Slotted<br>Flatted<br>Knurled<br>1/4" dia.<br>Metal | Plain<br>Locking<br>3/8" dia.<br>Metal | Solder lug |
|--------------------|-----|----------|-----------|----------------------|---------|------------------------------------------------------------|----------------------------------------|------------|

Note: 485 Series has rotational life of +1,000,000 cycles.

# Military

Clarostat provides Mil-spec products including, but not limited to the following units displayed in this catalog:

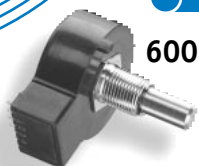
| Industrial                                                                         | Board Washable                                                 | Wirewound                           | Trimmer        | Resistor  |
|------------------------------------------------------------------------------------|----------------------------------------------------------------|-------------------------------------|----------------|-----------|
| Series 53(RV4)<br>Series J(RV4)<br>Series 382(RV6), 392(RV6)<br>G (RV6) and W(RV6) | Series 392 (RV6 & RV8)<br>Series 382(RV6)<br>G (RV6)<br>W(RV6) | Series 43 (RA20)<br>Series 58(RA30) | Series R(RJ11) | Series RW |

Consult factory for specific tapers  
Tolerances not included

# Encoders

Style      Pulses per Revolution      Body Dimension      Input Power      Operating Speed      Rotational Life      Shaft      Bushing      Terminal Configuration

## ENCODERS ■ OPTICAL



600E



690E

|             |     |             |              |                     |                        |                       |                                |                                                 |
|-------------|-----|-------------|--------------|---------------------|------------------------|-----------------------|--------------------------------|-------------------------------------------------|
| Incremental | 128 | 1 1/8" dia. | 5Vdc @ 30 mA | 300 RPM to 3000 RPM | 10 million revolutions | Plain 1/4" dia. Metal | Plain 3/8" dia. Metal          | Cable PC Cable & Connector                      |
| Incremental | 128 | 1" squared  | 5Vdc @30 mA  | 200 RPM to 3000 RPM | 10 million revolutions | Plain 1/4" dia. Metal | Single Flatted 3/8" dia. Metal | Pins (vert. mount) Cable/connector Custom Cable |

## ENCODERS ■ MECHANICAL



388E



500E

|                                    |                                        |             |            |                |                     |                                 |                                     |    |
|------------------------------------|----------------------------------------|-------------|------------|----------------|---------------------|---------------------------------|-------------------------------------|----|
| 2-bit gray code                    | 4, 6                                   | 1/2" square | 5Vdc @5 mA | 30 RPM maximum | 100,000 revolutions | Slotted Flatted 1/8" dia. Metal | Plain 1/4" dia. Metal               | PC |
| 2-bit gray code<br>4-bit gray code | 4, 6, 9<br>12, 16 electrical positions | 7/8" square | 5Vdc @5 mA | 50 RPM maximum | 100,000 revolutions | Flatted Plain 1/4" dia. Plastic | Double Flat Plain 3/8" dia. Plastic | PC |

Resistive Element      Power (watts)      Resistive Range (ohms)      Tolerance      Resistance Taper (Law)      Independent Linearity      Body Dimension      Shaft      Bushing      Terminals



42JA



42-900



62



73

|                                              |     |          |     |        |       |           |                                 |                       |            |
|----------------------------------------------|-----|----------|-----|--------|-------|-----------|---------------------------------|-----------------------|------------|
| Wirewound                                    | 3.0 | 50-100K  | ±5% | Linear | ±5%   | 2" dia.   | Plain 1/4" dia. Metal           | Plain 3/8" dia. Metal | Screws     |
| Same as 42JA with 1/2" rear-shaft extension. |     |          |     |        |       |           |                                 |                       |            |
| Wirewound 10 turn                            | 2.0 | 100-100K | ±5% | Linear | ±1/4% | 7/8" dia. | Slotted 1/4" dia. Metal         | Plain 3/8" dia. Metal | Solder lug |
| Wirewound 10 turn                            | 2.0 | 100-100K | ±5% | Linear | ±1/4% | 7/8" dia. | Slotted 1/4" dia. Metal Plastic | Plain 3/8" dia. Metal | Solder lug |

Consult factory for specific tapers  
Tolerances not included

# Potentiometers

|                                                                                                                      | Resistive Element         | Power (watts) | Resistive Range (ohms) | Tolerance     | Resistance Taper (Law) | Body Dimension     | Shaft                                                 | Bushing                                 | Terminals                                                     |
|----------------------------------------------------------------------------------------------------------------------|---------------------------|---------------|------------------------|---------------|------------------------|--------------------|-------------------------------------------------------|-----------------------------------------|---------------------------------------------------------------|
| <b>POTENTIOMETERS ■ COMMERCIAL</b>                                                                                   |                           |               |                        |               |                        |                    |                                                       |                                         |                                                               |
|  <b>574</b>                         | Conductive plastic        | 0.5           | 100-2.5 meg            | ±10, ±20%     | Linear Non-Linear      | 0.830mm sq.        | Slotted Flatted 1/4" dia. Plastic                     | Plain 3/8" dia. Plastic                 | 3 in line Center tap PC in 2 planes, 3 configurations         |
|  <b>575</b>                         | Conductive plastic        | 0.5           | 100-2.5 meg            | ±10, ±20%     | Linear Non-Linear      | 0.830mm x 1.03mm   | Slotted Flatted 1/4" dia. Plastic                     | Plain 3/8" dia. Plastic                 | 3 in line Center tap PC in 2 planes, 3 configurations         |
|  <b>576</b>                         | Conductive plastic        | 0.5           | 100-2.5 meg            | ±10, ±20%     | Linear Non-Linear      | 0.830mm x 1.03mm   | Slotted Flatted 1/4" dia. Plastic                     | Plain 3/8" dia. Plastic                 | 3 in line Center tap PC in 2 planes, 3 configurations         |
| Note: 576 Series has added rotational life up to 2 million cycles.                                                   |                           |               |                        |               |                        |                    |                                                       |                                         |                                                               |
|  <b>580</b>                         | Conductive plastic        | 0.1           | 200-2.5 meg            | ±20%          | Linear                 | 9.90 mm x 9.50mm x | Plain, Slotted Flatted Knurled 4.0mm dia. Metal       | Plain M7                                | 3 in line PC                                                  |
| Note: 580 Series available with rotary, momentary and alternate action switches.                                     |                           |               |                        |               |                        |                    |                                                       |                                         |                                                               |
|  <b>590</b>                        | Conductive plastic        | 0.5           | 100-5 meg              | ±10, ±20%     | Linear Non-Linear      | 1/2" sq. Metal     | Plain, Slotted Flatted Knurled 1/4" & 1/8" dia. Metal | Plain Locking 1/4" dia. 3/8" dia. Metal | PC B-24-5 support plate Solder hook Type A Mount Type C Mount |
| Note: 590 Series available with rotary, momentary and alternate action switches.                                     |                           |               |                        |               |                        |                    |                                                       |                                         |                                                               |
|  <b>Position Sensing Elements</b> | Conductive plastic Cermet | Variable      | 10-10 meg              | ±5, ±10, ±20% | Linear Non-Linear      | Per Request        | NA                                                    | NA                                      | Per Request                                                   |

# Switches

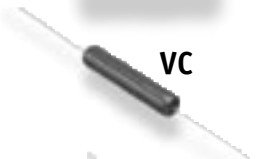
| Series                           | Operation    | Rating                                           | Used with      |
|----------------------------------|--------------|--------------------------------------------------|----------------|
| <b>SWITCHES ■ PUSH-PULL</b>      |              |                                                  |                |
| BJ                               | SPDT         | 250mA-30Vdc                                      | Series 388/389 |
| <b>SWITCHES ■ PUSH-PUSH</b>      |              |                                                  |                |
| Shadow                           | 2,4,6,8 pole | 500m @ 100 Vac<br>200mA @ 250 Vac<br>2A @ 25 Vac | Series 388/389 |
| <b>SWITCHES ■ PUSH MOMENTARY</b> |              |                                                  |                |
| BJM<br>DJ                        | SPDT<br>SPST | 250mA-30Vdc<br>125mA-28Vdc                       | Series 388/389 |
| Shadow                           | 2,4,6,8 pole | 500m @ 100 Vac<br>200mA @ 250 Vac<br>2A @ 25 Vac | Series 388/389 |

| Series       | Operation     | Rating       | Used with      |
|--------------|---------------|--------------|----------------|
| 53-10        | SPST          | 3A-125Vac    | Series 53      |
| 53-20        | DPST          | 3A-125Vac    | Series 53      |
| 53-21 (Mod)  | DP            | 3A-125Vac/dc | Series 53      |
| SWE-10       | SPST          | 3A-125Vac    | Series 470     |
| SWE-13       | SPST          | 15A-10Vdc    | Series 470     |
| SWE-20       | DPST          | 3A-125Vac    | Series 470     |
| SWE-21 (Mod) | DP            | 3A-125Vac/dc | Series 470     |
| SWE-23       | DPST          | 15A-10/Vdc   | Series 470     |
| AJ           | SPST, SPDT    | 125mA-28Vdc  | Series 388/389 |
| CJ           | Multiposition | 125mA-28Vdc  | Series 388/389 |

Note: These switches are combined with various pot series.

Consult factory for specific tapers  
Tolerances not included

# Resistors

|                                                                                                 | Resistive Element    | Power (watts)                                        | Resistive Range (ohms)        | Tolerance                 | Terminal Style | Packaging                   |
|-------------------------------------------------------------------------------------------------|----------------------|------------------------------------------------------|-------------------------------|---------------------------|----------------|-----------------------------|
| <b>RESISTORS ■ VITREOUS</b>                                                                     |                      |                                                      |                               |                           |                |                             |
| <br><b>VPR</b> | Wirewound            | VPR5F = 5-8<br>VPR10F = 10-12<br>VPR20H = 20         | 1-25K<br>0.4-50K<br>0.4-100K  | ±5%<br>(±10% below 1 ohm) | Lug and lead   | Individually boxed          |
| <br><b>VK</b>   | Wirewound            | VK100N = 100<br>VK160W = 160-175<br>VK200W = 200-225 | 1-100K<br>1-100K<br>1-100K    | ±5%                       | Radial lug     | Individually boxed          |
| <br><b>VPA</b> | Wirewound Adjustable | VP10FA = 12<br>VP25KA = 25<br>VP50KA = 50            | 1-10K<br>1-25K<br>1-100K      | ±10%                      | Radial lug     | Individually boxed          |
| <br><b>VC</b>  | Wirewound            | VC3D = 3-3.25<br>VC5E = 5-6.50<br>VC10F = 10-11      | 0.1-10K<br>0.1-25K<br>0.1-50K | ±5%<br>(±10% below 1 ohm) | Axial lead     | 10 per box<br>Tape and reel |
| <br><b>VP</b>  | Wirewound            | VP25K = 25<br>VP50K = 50                             | 1-100K<br>1-250K              | ±5%                       | Radial lug     | Individually boxed          |

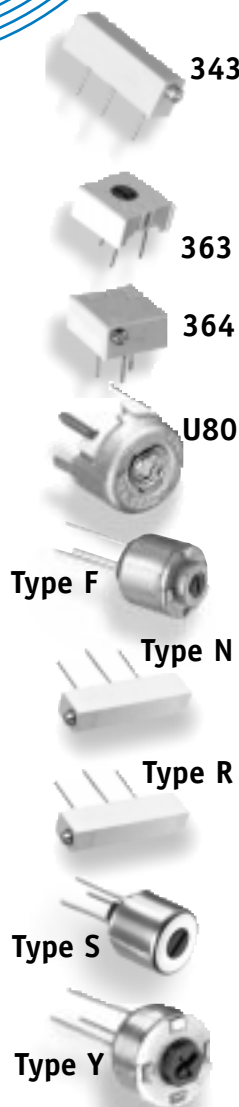
|                                                                                                   |           |                                                    |                                      |     |                                |                    |
|---------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------|--------------------------------------|-----|--------------------------------|--------------------|
| <br><b>CMC</b> | Wirewound | CMC5 = 5<br>CMC10 = 10<br>CMC25 = 25<br>CMC50 = 50 | .1-2.5K<br>.5-5K<br>.1-10K<br>.1-25K | ±1% | Chassis mountable<br>axial lug | Individually boxed |
|---------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------|--------------------------------------|-----|--------------------------------|--------------------|

|                                                                                                     |           |                                                          |                           |     |            |                                          |
|-----------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------|---------------------------|-----|------------|------------------------------------------|
| <br><b>SC/RW</b> | Wirewound | SC1A/RW70U = 1.0<br>SC3D/RW79U = 3.0<br>SC5E/RW74U = 5.0 | .1-3K<br>.1-10K<br>.1-25K | ±1% | Axial lead | 10 per box<br>Tape and reel<br>available |
|-----------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------|---------------------------|-----|------------|------------------------------------------|

|                                                                                                  | Style    | Resistive Element | Power Rating (watts)                    | Resistive Range (ohms)  | Tolerance |
|--------------------------------------------------------------------------------------------------|----------|-------------------|-----------------------------------------|-------------------------|-----------|
| <br><b>CR</b> | Rheostat | Wirewound         | CR12.5 = 12.5<br>CR25 = 25<br>CR50 = 50 | 1-10K<br>1-10K<br>1-10K | ±10%      |

Consult factory for specific tapers  
Tolerances not included

# Trimmers



|        | Resistive Element  | Number of Turns | Power Rating (watts) | Resistance Range (ohms) | Tolerance  | Body Dimension L x W x H (inches) | Terminal Configuration |
|--------|--------------------|-----------------|----------------------|-------------------------|------------|-----------------------------------|------------------------|
| 343    | Cermet             | 20              | 0.75                 | 10-2 meg                | ±10%       | 0.75 x 0.19 x 0.25                | PC                     |
| 363    | Cermet             | Single          | 0.5                  | 10-2 meg                | ±20%       | 0.375 sq. x 0.190                 | PC in 3 configurations |
| 364    | Cermet             | 25              | 0.5                  | 10-2 meg                | ±10%       | 0.375 sq. x 0.190                 | PC in 4 configurations |
| U80    | Wirewound          | Single          | 3.0                  | 5-5K                    | ±20%       | 0.770 dia.                        | PC                     |
| Type F | Carbon composition | Single          | 0.25                 | 100-5meg                | ±10%, ±20% | 0.500 dia x 0.531                 | PC Solder lug          |
| Type N | Carbon composition | 3               | 0.25                 | 100-2.5 meg             | ±10%, ±20% | 1.250 x 0.250 x 0.359             | PC                     |
| Type R | Carbon composition | 25              | 0.25                 | 100-2.5 meg             | ±10%, ±20% | 1.250 x 0.250 x 0.359             | PC in 2 configurations |
| Type S | Cermet             | Single          | 0.5                  | 50-1 meg                | ±10%       | 0.375 dia. x 0.375                | PC in 2 configurations |
| Type Y | Carbon composition | Single          | 0.25                 | 100-5 meg               | ±10%, ±20% | 0.500 dia x 0.359                 | PC Solder lug          |

# Attenuators

Clarostat provides a variety of stock and custom Attenuators. Options and features include UL-approved, long rotational life, low to high power, versatile, circuit board mountable and compact units to meet specific design requirements. For a complete listing or for engineering assistance, call our Applications Engineers at the toll-free number below.

In this catalog, refer to the following: *Modular MOD POT 70 and 72*, *Wirewound Series 43 and 58*, *Board Washable Series 2000* and *Industrial Series J*. Also, Type BT hot-molded, adjustable attenuators featuring 0.500" diameter, PC pin terminals, operation to 35 MHz, compact, board mountable (not shown).

Consult factory for specific tapers  
Tolerances not included

# Dials & Knobs



The CLAROSTAT POWER RESISTOR DECADE is the essential tool in electronic and electrical design, testing and repair...for controlling known or unknown resistances...selected or determined under active operational conditions.

It provides a power resistor of any required resistance from 1 to 999,999 ohms in 10hm increments. The ohmage is selected by six dials, and the value is read directly - in sequence - from the dials, simplifying the selection of known or unknown resistance for use in working circuits.

| Style | Resistive Element | Power Rating (watts) | Resistive Range (ohms) | Tolerance |
|-------|-------------------|----------------------|------------------------|-----------|
|-------|-------------------|----------------------|------------------------|-----------|

## DECADE BOX

240C

|           |           |         |        |          |
|-----------|-----------|---------|--------|----------|
| Table top | Wirewound | 225 Max | 1-999K | ±2%, ±5% |
|-----------|-----------|---------|--------|----------|

| Series | Style | Number of Turns |
|--------|-------|-----------------|
|--------|-------|-----------------|

## DIALS ■ DIGITAL READOUT



|                              |                                                                         |     |
|------------------------------|-------------------------------------------------------------------------|-----|
| <b>DR300</b><br><b>DR400</b> | 1.75 inch long x 1 inch wide, brake lever, accepts 1/4" diameter shaft. | 10  |
|                              |                                                                         | 100 |

| Series | Style | Housing | Brake Lever |
|--------|-------|---------|-------------|
|--------|-------|---------|-------------|

## DIALS ■ CONCENTRIC SCALE



|             |                                                |                |     |
|-------------|------------------------------------------------|----------------|-----|
| <b>411</b>  | 10-turn, 1 inch dia., accepts 1/4" dia. shaft. | Black anodized | No  |
| <b>1411</b> |                                                | Black plastic  | No  |
| <b>412</b>  |                                                | Black anodized | Yes |
| <b>1412</b> |                                                | Black plastic  | Yes |
| <b>461</b>  |                                                | Clear anodized | No  |
| <b>1461</b> |                                                | Gray plastic   | No  |
| <b>462</b>  |                                                | Clear anodized | Yes |
| <b>1462</b> |                                                | Gray plastic   | Yes |

| Series | Style | Housing |
|--------|-------|---------|
|--------|-------|---------|

## DIALS ■ CONCENTRIC SCALE/DIGITAL READOUT



|                                |                                                                       |                                  |
|--------------------------------|-----------------------------------------------------------------------|----------------------------------|
| <b>316-11</b><br><b>316-12</b> | 10-turn, 7/8 inch diameter, brake lever, accepts 1/4" diameter shaft. | Clear anodized<br>Black anodized |
|--------------------------------|-----------------------------------------------------------------------|----------------------------------|

| Style | Knob Diameter | Color | Shaft Diameter |
|-------|---------------|-------|----------------|
|-------|---------------|-------|----------------|

**HD**

|                                        |              |                                  |          |
|----------------------------------------|--------------|----------------------------------|----------|
| Saw-cut indicator                      | HD-50= .500" | 1= clear                         | 5= .250" |
|                                        | HD-75= .750" | 2= black                         | 6= .125" |
|                                        | HD-90= .925" | 3= matte clear<br>4= matte black |          |
| Straight knurl, top and side indicator | JD-50= .500" | 1= clear                         | 5= .250" |
|                                        | JD-75= .750" | 2= black                         | 6= .125" |
|                                        | JD-90= .925" | 3= matte clear<br>4= matte black |          |

**JD**

| Style | Knob Diameter | Color | Shaft Diameter |
|-------|---------------|-------|----------------|
|-------|---------------|-------|----------------|

**DD**

**DDS**

|                                |               |                                  |          |
|--------------------------------|---------------|----------------------------------|----------|
| Straight knurl, side indicator | DD-50= .500"  | 1= clear                         | 5= .250" |
|                                | DD-75= .750"  | 2= black                         | 6= .125" |
| Skirted, arrowhead on skirt    | DDS-50= .500" | 1= clear                         | 5= .250" |
|                                | DDS-75= .750" | 2= black                         | 6= .125" |
|                                | DD-90= .925"  | 3= matte clear<br>4= matte black |          |
|                                | DDS-90= .925" | 3= matte clear<br>4= matte black |          |

If **Your** application needs to transform a mechanical movement into an electrical signal, we can help.

**New Thru-hole Position Sensors**

- A mobile RV stove functions more efficiently when the gas/air mixture is optimized. A feedback pot attached to the gas valve knob allows the controller to set the optimum airflow for the desired flame setting.

- In agricultural heavy machinery, the position of a control lever is sensed electrically, rather than requiring a direct mechanical connection to control the implement, for a more compact and user-friendly interface between the operator and the implement. A feedback sensor on the implement provides the controller information regarding the implement's position. The controller can then take corrective action when necessary.
- In some industrial valve controls, a position sensor is integrated with a microcontroller to translate a joystick position into serial digital data modulated onto a master control bus. Previously, the valve control manufacturer assembled a separate potentiometer, control module and housing. Clarostat now provides the entire electronic control system in an extremely compact integrated package.

**Custom Subassemblies**

Sensing element with CP ink on substrate

Wiper contact

- For a fuel level sensor in a gasoline tank, the custom-designed element, (often called a "fuel card") is mounted at the pivot point of a toilet bowl type float. The float moves up and down as a function of the amount of fuel in the tank. The pivot arm is attached to a mechanism that moves a wiper contact across the resistor surface, translating the float position into an electrical signal that causes the meter on the dashboard to indicate fuel capacity.
- Manufacturers of the windshield wiper delay control on the steering arm of most cars purchase the resistor element and assemble it with various switch features into a decorative package. Instead, Clarostat can provide the complete assembly, ready to install.
- Many lever or handle controls, joy stick controllers, vane adjusters and valve actuators can use a much less costly and easier to assemble electrical position sensing connection to eliminate a direct cable from the lever to the mechanical device or to provide feedback to a computer controller.
- The movement of an electronic gas foot pedal rotates a wiper contacting a resistance element. A computer controller reads the input, causing a motor to rotate the butterfly assembly in the carburetor. A second sensor element is attached to the motor to feed back its position so the controller can constantly track the position of the motor with respect to the gas pedal.
- For some transmission assemblies, a position sensing element tracks the movement of the shift lever in the car. As it is shifted, a motor arrangement in the transmission changes the gears as required, eliminating the direct cable connection. These new systems are highly reliable and the weight reduction and ease of assembly provide substantial cost reduction for the end consumer.

Let us help you design your position sensing solution at no extra charge.\*  
And ask about our Value-Add options.

\*Subject to terms and volume



CLAROSTAT also makes these  
exceptional industrial and commercial sensor products

**OptoSwitch®**

- Slotted Optical Switches
- Reflective Optical Switches
- Optical Couplers
- Hall Effect Sensors
- Custom Motion Sensors
- Custom Position Sensors

**SKAN-A-MATIC®**

- Thrubeam Photoelectric Sensors
- Reflective Photoelectric Sensors
- Proximity (Diffuse) Photoelectric Sensors
- Fiber Optic Sensors
- Liquid Level Sensors
- Hostile Environment Sensors
- Self-contained Photoelectric Sensors
- Dynamic Scanning Light Curtain

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