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resistive control products and solutions from .....

POTENTIOMETERS ENCODERS TRIMMERS CUSTOM POSITION SENSING FIXED RESISTORS CUSTOM ELEMENTS INDUSTRIAL COMMERCIAL

theNEW

CLAROSTAT

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## **Take Your Pick**

from the cream Mechanical and Optical Encoders. Potentiometers. Variable and Fixed Resistors. Attenuators. Of the crop. 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 tentimes 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.

	Resistive Element	Power (watts)	Resistive Range (ohms)	Tolerance	Resistance Taper (Law)	Body Dimension	Shaft	Bushing	Terminals
<b>POTE</b>	NTIOMETERS	MOD	ULAR						
388	Conductive plastic	0.5	100-5 meg	±10%	Linear Non -Linear	1/2" sq.	Plain, Slotted Flatted Knurled 1/8" &1/4" dia Metal	Plain Locking 1/4" dia 3/8" dia Metal	Solder hook PC
389	Cermet	1.0	100-5 meg	±5%	Linear Non-Linear	1/2" sq.	Plain, Slotted Flatted Knurled 1/8" &1/4" dia Metal	Plain Locking 1/4" dia 3/8" dia Metal	Solder hook PC
-	Note: 389 Series ava	liadie wit	n rotary, mo	mentary and a	iternate action	switches. Uv	er TOU styles, co	onfigurations av	allable.
Mod Pot 70	Cermet Carbon composition	2.0 1.0	100-5 meg 50-10 meg	±5%, ±10%	Linear Non-Linear	5/8" sq.	Plain, Slotted Flatted 1/8" dia 1/4" dia	Plain Locking 1/4" dia 3/8" dia Metal	Solder lug PC
0-1	Conductive plastic	0.5	100-1 meg				Metal		
	Note: Mod Pot 70 Se Over 100 styles, conf	ries avail iguration	able as L anc s available.	l Straight-T at	tenuator and w	<i>i</i> ith rotary, alte	rnate action swit	ches.	
Mod Pot 72	Cermet Carbon composition	1.0 0.5	100-5 meg 50-10 meg	±5%, ±10%	Linear Non-Linear	5/8" sq.	Plain, Slotted Flatted 1/4" dia	Plain Locking 3/8" dia. Metal	Solder lug PC
- PARCE	Conductive plastic	0.25	100-1 meg				Metal		
•									
408	Conductive plastic	0.5	100-5 meg	±10%, ±20%	Linear Non-Linear	1/2" sq.	Plain, Slotted Flatted Knurled 1/8" &1/4" dia	Plain Locking 1/4" dia. 3/8" dia.	Solder hook PC
409	Cermet	1.0	100-5 meg	±10%, ±20% ±5%	Linear Non-Linear	1/2"sq	Plain, Slotted Flatted Knurled 1/8" &1/4" dia Metal	Plain Locking 1/4" dia. 3/8" dia. Metal	Solder hook PC
	Note: 409 Series ava	ilable wit	h rotary, mo	mentary and al	Iternate action	switches.			
392	Conductive Plastic	0.5	100-5 meg	±10%, ±20%	Linear Non-Linear	1/2" dia.	Plain, Slotted Flatted 1/8" dia. Plastic, Metal	Plain 1/4" dia. Metal	Solder hook PC
DISCONTINUED 382	Conductive Plastic	0.5	100-5 meg	±10%, ±20%	Linear Non-Linear	1/2" dia.	Slotted Flatted 1/8" dia. Metal	Plain Locking 1/4" dia. Metal	Solder hook PC
C/PV6\CS	Carbon composition	0.5	100-5 meg	±10%, ±20%	Linear Non-Linear	1/2" dia.	Plain, Slotted Flatted 1/8" dia. Metal	Plain Locking 1/4"dia. Metal	Solder lug PC
0(110)03	Note: G(RV6) and GS	Series a	available with	SPST rotary s	witch (GS).				

	Resistive Element	Power (watts)	Resistive Range (ohms)	Tolerance	Resistance Taper (Law)	Body Dimension	Shaft	Bushing	Terminals
<b>POTE</b>	NTIOMETERS	BOAR	RD WASH	ABLE					
W(RV6)WR	Carbon composition	0.5	100-5 meg	±10%, ±20%	Linear Non-Linear	1/2" dia.	Plain, Slotted Flatted 1/8" dia. Metal	Plain Locking 1/4"dia. Metal	Solder lug PC
	Note: W (RV6) and V	VR Series	s available in	radial-lead ver	sion with optic	onal rotary swit	ch.		
SP	Cermet	1.0	50-1 meg	±5%, ±10%	Linear Non-Linear	3/8" dia.	Plain, Slotted Flatted 1/8" dia. Metal	Plain 1/4" dia. Metal	Solder lug PC
Type 2000	Conductive plastic	0.25	250-1 meg	±10%, ±20%	Linear Non-Linear	5/8"	Plain, Slotted 1/4" dia. Plastic, Metal	Threaded Unthreaded 3/8" dia. Plastic Metal	PC in 2 plains
Type 2000	Resistive Pow Element (watt	Res er R ts) (o	sistive ange hms) Tole	Resista Tap erance (Lav	ance er Indepen v) Linea	ident Bod rity Dimens	y sion Shaft	Bushing	Terminals



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

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

	Resistive Element	Power (watts) INDU	Resistive Range (ohms)	Tolerance	Resistance Taper (Law)	Body Dimension	Shaft	Bushing	Terminals
470	Conductive plastic	0.5	150-5 meg	±10%, ±20%	Linear Non-Linear	15/16" dia.	Plain, Slotted Flatted Knurled 1/4" dia. Metal	Plain Locking 3/8" dia. Metal	PC Solder lug Wire-wrap
53	Conductive plastic	2.0	50-5 meg	±10%, ±20%	Linear Non-Linear	1" dia.	Plain, Slotted Flatted Knurled 1/4 " dia. Metal	Plain Locking 3/8" dia. Metal	Solder lug
-	Note: 53 Series avai	lable with	rotary switc	hes.			1 1		1
J (RV4) (2RV7)	Carbon composition	2.25	50-5 meg	±10, ±20%	Linear Non-Linear	1.156" dia.	Plain, Slotted Flatted 1/4" dia. Metal	Plain Locking Watertight 3/8 " dia. Metal	Solder lug
	Note: J Series availa	ble as Bri	dged-T, Brid	ged-H, L and S	traight-T atten	uators.	• • • •		
38	O Conductive plastic	2.0	50-5 meg	±10%, ±20%	Linear Non-Linear	1" dia.	Plain, Slotted Flatted Knurled 1/4" dia. Metal	Plain Locking 3/8" dia. Metal	Solder lug
	Note: 380 Series ava	allable wit	n rotary swit	cnes. 100,000	cycle life.	[	1 1		1
38	Conductive plastic	1.0	100-5 meg	±10, ±20%	Linear Non-Linear	5/8" dia.	Plain, Slotted Flatted Knurled 1/8" dia. Metal	Plain Locking 1/4" dia. Metal	Solder lug Wire wrap
	Note: 381 Series ava	ailable wit	h rotary mor	mentary and all	ternate action	switches.			
48	Conductive plastic	2.0	50-5 meg	±10, ±20%	Linear Non-Linear	1" dia.	Plain, Slotted Flatted Knurled 1/4" dia. Metal	Plain Locking 3/8" dia. Metal	Solder lug
Militar	Note: 485 Series has	s rotationa	Il life of +1,0	00,000 cycles. Mil-spec p	roducts ir	ncluding, I	but not lim	ited to t	he follow
	y units		ayea in i waxaabab	LIIIS CATALO	y: Wirowa	und	Trimme	) F	Register
/////////	muusuidi	DUd	n maslight	G	witewu	ullu	minite	1	112919[0]

Industrial	Board Washable	Wirewound	Irimmer	Resistor
Series 53(RV4) Series J(RV4) Series 382(RV6), 392(RV6) G (RV6) and W(RV6)	Series 392 (RV6 & RV8) Series 382(RV6) G (RV6) W(RV6)	Series 43 (RA20) Series 58(RA30)	Series R(RJ11)	Series RW

Encoders

	Style	Pulses per Revolution	Body Dimension	Input Power	Operating Speed	Rotational Life	Shaft	Bushing	Terminal Configuration
		OPTICAL	,						
600E	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
690E	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



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 4-bit gray code	4, 6, 9 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
Wirewound	3.0	50-100K	±5%	Linear	±5%	2" dia.	Plain 1/4" dia. Metal	Plain 3/8" dia. Metal	Screws
			Sa	me as 42JA	with 1/2" rear-	shaft extensior	1.		
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

	Resistive Element	Power (watts)	Resistiv Range (ohms	ve ; ) Tolerance	Resistance Taper (Law)	Bod Dimen	y sion	Shaft	Bushing	Terminals	
POT	ENTIOMETE	RS ■ (	COMME	RCIAL							
574	Conductive plastic	0.5	100-2.5 m	±10, ±20%	Linear Non-Linear	0.830m	ım sq.	Slotted Flatted 1/4" dia. Plastic	Plain 3/8" dia. Plastic	3 in line Center ta PC in 2 pla 3 configurat	e ap .nes, tions
575	Conductive plastic	0.5	100-2.5 n	neg ±10, ±20%	Linear Non-Linear	0.830m 1.03n	ım x ım	Slotted Flatted 1/4" dia. Plastic	Plain 3/8" dia. Plastic	3 in line Center ta PC in 2 pla 3 configurat	e ap .nes, tions
576	Conductive plastic	0.5	100-2.5 meg	5 ±10, ±20%	Linear Non-Linear	0.830n 1.03n	וm x וm	Slotted Flatted 1/4" dia. Plastic	Plain 3/8" dia. Plastic	3 in line Center ta PC in 2 pla 3 configurat	e ap nes, tions
	Note: 576 Ser	ies has a	dded rotati	onal life up to 2 m	illion cycles.						
580	Conductive plastic	0.1	200-2.5 n	neg ±20%	Linear	9.90 m 9.50m	m x m x	Plain, Slotted Flatted Knurled 4.0mm dia. Metal	Plain M7	3 in line PC	9
	Note: 580 Serie	s availab	le with rota	ary, momentary ar	nd alternate act	tion switc	hes.			•	
590	Conductive plastic	0.5	100-5 m	eg ±10, ±20%	Linear Non-Linear	1/2" s Meta	sq. al	Plain, Slotted Flatted Knurled 1/4" & 1/8" dia. Metal	Plain Locking 1/4 " dia. 3/8" dia. Metal	PC B-24-5 suppo Solder ho Type A Mo Type C Mo	rt plate ook ount ount
0	Note: 590 Serie	s availab	le with rota	ary, momentary ar	nd alternate act	tion switc	hes.			1	
Position Sensing Elements	Conductive N plastic Cermet	/ariable	10-10 m	eg ±5, ±10, ±20%	Linear Non-Linear	Per Req	juest	NA	NA	Per Reque	est
<b>Swit</b> che	S						Serie S	s Operation WITCHES SPDT	n Ra PUSH 250m	<b>ting Use</b> I-PULL A-30Vdc	ed with
	Series	Ope	eration	Rating	Used with	h (	) S	WITCHES	■ PUSH	-PUSH	88/389
	53-10 53-20	SI	PST PST	3A-125Vac 3A-125Vac	Series 53 Series 53		Shado	w 2,4,6,8 po	le 500m 200mA 2A @	@ 100 Vac 5 @ 250 Vac 3 @ 25 Vac	Series 88/389
	SWE-10	SI	PST	3A-125Vac/0c 3A-125Vac	Series 53 Series 470	)		WITCHES	■ PUSH	MOMENTA	
	SWE-13 SWE-20	SI	PST PST	15A-10Vdc 3A-125Vac	Series 470 Series 470	)	BJN D.I	1 SPDT SPST	250n 125n	nA-30Vdc	Series 388/389
	SWE-21 (Mod) SWE-23 AJ	DI SPST	DP PST , SPDT	3A-125Vac/dc 15A-10/Vdc 125mA-28Vdc	Series 470 Series 470 Series 388/3	) )  89	Shade	ow 2,4,6,8 pc	le 500m 200mA	@ 100 Vac 3 @ 250 Vac 3	Series 388/389
	CJ	Multip	osition	125mA-28Vdc	Series 388/3	89			2A @	25 Vac	
	Note: These swi	itches ar	e combined	I with various pot	series.						

# Resistors

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

M			C	M
è	6	3	a	5

-						
СМС	Wirewound	CMC5 = 5	.1-2.5K	±1%	Chassis mountable	Individually boxed
		CMC10 = 10	.5-5K		axial lug	
8		CMC25 = 25	.1-10K			
9		CMC50 = 50	.1-25K			

10 per box Tape and reel available

SC/RW	Wirewound	SC1A/RW70U = 1.0 SC3D/RW79U = 3.0 SC5E/RW74U = 5.0	.1-3K .1-10K .1-25K	±1%	Axial lead

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

Trimmers

Resistive Element	Number of Turns	Power Rating (watts)	Resistance Range (ohms)	Tolerance	Body Dimension L x W x H (inches)	Terminal Configuration
Cermet	20	0.75	10-2 meg	±10%	0.75 x 0.19 x 0.25	PC
Cermet	Single	0.5	10-2 meg	±20%	0.375 sq. x 0.190	PC in 3 configurations
Cermet	25	0.5	10-2 meg	±10%	0.375 sq. x 0.190	PC in 4 configurations
Wirewound	Single	3.0	5-5K	±20%	0.770 dia.	PC
Carbon composition	Single	0.25	100-5meg	±10%, ±20%	0.500 dia x 0.531	PC Solder lug
Carbon composition	3	0.25	100-2.5 meg	±10%, ±20%	1.250 x 0.250 x 0.359	PC
Carbon composition	25	0.25	100-2.5 meg	±10%, ±20%	1.250 x 0.250 x 0.359	PC in 2 configurations
Cermet	Single	0.5	50-1 meg	±10%	0.375 dia. x 0.375	PC in 2 configurations
Carbon composition	Single	0.25	100-5 meg	±10%, ±20%	0.500 dia x 0.359	PC Solder lug
	Resistive         Cermet         Cermet         Cermet         Wirewound         Carbon composition         Carbon composition	Resistive ElementNumber of TurnsCermet20CermetSingleCermet25WirewoundSingleCarbon compositionSingleCarbon composition3Carbon composition25Carbon composition25Carbon compositionSingleCarbon compositionSingleCarbon compositionSingleCarbon compositionSingleCarbon compositionSingleCarbon compositionSingleCarbon compositionSingleCarbon compositionSingleCarbon compositionSingleCarbon compositionSingle	Resistive ElementNumber of TurnsPower Rating (watts)Cermet200.75CermetSingle0.5Cermet250.5WirewoundSingle3.0Carbon compositionSingle0.25Carbon composition30.25Carbon composition250.25Carbon composition250.25Carbon composition250.25Carbon compositionSingle0.25Carbon compositionSingle0.25Carbon compositionSingle0.25Carbon compositionSingle0.25Carbon compositionSingle0.25Carbon compositionSingle0.25Carbon compositionSingle0.25Carbon compositionSingle0.25Carbon compositionSingle0.25	Resistive ElementNumber of TurnsPower Rating Range (watts)Resistance Range (ohms)Cermet200.7510-2 megCermetSingle0.510-2 megCermet250.510-2 megWirewoundSingle3.05-5KCarbon compositionSingle0.25100-5 megCarbon composition250.25100-2.5 megCarbon composition250.25100-2.5 megCarbon composition250.25100-2.5 megCarbon compositionSingle0.2550-1 megCarbon compositionSingle0.25100-5 meg	Resistive ElementNumber of TurnsPower Rating (watts)Resistance Range (ohns)ToleranceCermet200.7510-2 meg±10%CermetSingle0.510-2 meg±20%Cermet250.510-2 meg±10%WirewoundSingle3.05-5K±20%Carbon compositionSingle0.25100-5 meg±10%, ±20%Carbon composition30.25100-2.5 meg±10%, ±20%Carbon composition250.25100-2.5 meg±10%, ±20%Carbon compositionSingle0.2550-1 meg±10%, ±20%Carbon compositionSingle0.550-1 meg±10%, ±20%Carbon compositionSingle0.25100-5 meg±10%, ±20%Carbon compositionSingle0.550-1 meg±10%, ±20%Carbon compositionSingle0.25100-5 meg±10%, ±20%	Resistive Element         Number of Turns         Power Rating (watts)         Rage (ohms)         Tolerance         Body Dimension L X W x H (inches)           Cermet         20         0.75         10-2 meg         ±10%         0.75 x 0.19 x 0.25           Cermet         Single         0.5         10-2 meg         ±20%         0.375 sq. x 0.190           Cermet         Single         0.5         10-2 meg         ±20%         0.375 sq. x 0.190           Cermet         25         0.5         10-2 meg         ±10%         0.375 sq. x 0.190           Wirewound         Single         3.0         5-5K         ±20%         0.370 dia.           Carbon composition         Single         0.25         100-5meg         ±10%, ±20%         0.500 dia x 0.531           Carbon composition         25         0.25         100-2.5 meg         ±10%, ±20%         1.250 x 0.250 x 0.359           Carbon composition         25         0.25         100-2.5 meg         ±10%, ±20%         0.375 dia. x 0.375           Carbon composition         25         0.25         100-2.5 meg         ±10%, ±20%         0.375 dia. x 0.375           Carbon composition         25         0.25         100-5 meg         ±10%, ±20%         0.500 dia x 0.359

Clarostat provides a variety of stock and custom Attenuators. Options and features include ULapproved, 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

Attenuators

ials & Knobs

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	Style	Resistive Element	Power Rating (watts)	Resistive Range (ohms)	Tolerance
) DECA	DE BOX				
240C	Table top	Wirewound	225 Max	1-999K	±2%, ±5%

	Series	Style	Housing	Brake Lever
<b>DIAL</b>	S  CONCE	NTRIC SC	CALE	
. 100	411		Black anodized	No
	1411	10-turn,	Black plastic	No
1.62	412	1 inch dia.,	Black anodized	Yes
	1412	accepts	Black plastic	Yes
-	461	1/4" dia.	Clear anodized	No
100	1461	shaft.	Gray plastic	No
1.453	462		Clear anodized	Yes
Per alles	1462		Gray plastic	Yes

•	Style	Knob Diameter	Color	Snaft Diameter
HD	Saw-cut indicator	HD-50= .500" HD-75= .750" HD-90= .925"	1= clear 2= black 3= matte clear 4= matte black	5= .250" 6= .125"
JD	Sraight knurl, top and side indicator	JD-50= .500" JD-75= .750" JD-90= .925"	1= clear 2= black 3= matte clear 4= matte black	5= .250" 6= .125"

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.

Series	Style	Number of Turns
IGITAL R	EADOUT	
DR300 DR400	1.75 inch long x 1 inch wide, brake lever, accepts 1/4" diameter shaft.	10 100

	Series	Style	Housing
) DIALS ■ CONCEN	TRIC SCAL	E/DIGITAL REA	DOUT
316-11	316-11 316-12	10-turn, 7/8 inch diameter, brake lever, accepts 1/4" diameter shaft.	Clear anodized Black anodized

Style	Knob Diameter	Color	Shaft Diameter

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

## 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.



- 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.

Wiper contact

\*Subject to terms and volume

Sensing element with CP ink on substrate



# CLAROSTAT also makes these exceptional industrial and commercial sensor products

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- Slotted Optical Switches
- Reflective Optical Switches
- Optical Couplers
- Hall Effect Sensors
- Custom Motion Sensors
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#### SKAN-A-MATIC®

- Thrubeam Photoelectric Sensors
- Reflective Photoelectric Sensors
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- Dynamic Scanning Light Curtain



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