



ELITE SERIES CAPACITIVE SENSORS

POSITION · DISPLACEMENT | HIGH SPEED · HIGH RESOLUTION



Elite Series

sensors
PLUG&PLAY

Our top performing capacitive sensor system

Elite Series sensors combine high performance, easy DAQ interface, and the flexibility of custom configurations.

- 1-8 Sensors in a single system
- Sensors Plug&Play (TEDS) for easy LabVIEW™ interface with LabVIEW drivers available at www.lionprecision.com
- Rear-panel 64-pin connector configured for National Instruments™
- Support modules available: Temperature Sensors, Signal Processing/Display



CPL190 & CPL290 Sensor Modules

The CPL190 has one range (sensitivity); the CPL290 has two ranges.

- Five-element range indicator
- Coarse/Fine zero adjusts
- Zero adjust disable
- Front-panel BNC analog output
- Differential output to National Instruments 68-pin connector
- LabVIEW™ Plug&Play Compatibility with LabVIEW drivers

Resolution*:	0.002%-0.004%
Bandwidth:	Selectable: 100Hz, 1kHz, 10kHz, 15kHz
Linearity*:	<0.2% F.S. typical
Max Drift:	0.04% F.S./°C
Front-Panel BNC:	±10V, 0Ω
National Inst. Rear Conn.:	±10V, Differential
Operating Temp:	4°C-50°C
*See back for details.	



MM190 Signal Processing and Five-Digit Display Module

Two-channel summing and peak-capture functions

- Five-digit display: Selectable metric or inch units
- Summing: A, B, A+B, A-B of any two channels in the system
- Peak-capture functions: Max, Min, TIR, Tracking TIR (Self-resetting TIR)
- Analog output of conditioned signal through BNC
- Differential, analog output of conditioned signal through National Instruments 68-pin connector
- Display accuracy: 0.1%

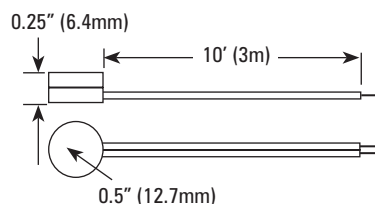


TMP190 Seven-Channel Temperature Sensor

Used in conjunction with LabVIEW™ or Lion Precision SEA™ V8 software to read temperature sensors and encoder/index inputs.

- Seven thermistors included
- Index and encoder inputs for SEA™
- +5V and +15V encoder/prox power
- Single-ended or differential encoder input
- Encoder and index state indicators

Magnetic Mount Thermistor



Enclosures

Enclosures provide power and drive signals.

Extra slots can be included for future expansion.

- Direct connect to National Instruments DAQ hardware
- Input power: 100-240VAC 50/60Hz
- 1-, 2-, 3-slot Options
 - External power supply
 - Mounting Flanges
- 6-, 8 slot Options
 - internal power supply
 - Tip-up handle

1-, 2-, and 3-slot enclosures include external power supply and case mounting flanges



6- and 8-slot enclosure includes internal power supply and tip-up handle



Probes/Ranges

Range is determined by the probe Sensing Area. The larger the area, the larger the range.

Sensing Areas are coded by letters (A, B, C...).

Many Sensing Area options are available in different probe body styles. This provides greater measurement and mounting flexibility for your application. All probes include two-meter cable.

Range is the distance between the Near Gap and Far Gap; Near Gap is never zero.

Shorting the Sensing Area or guard ring to ground will not damage the probe or driver.

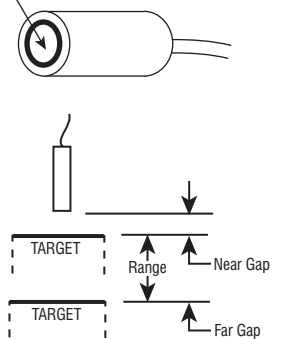
Four sets of ranges are available:

Standard, Fine, Ultrafine, and Extended.

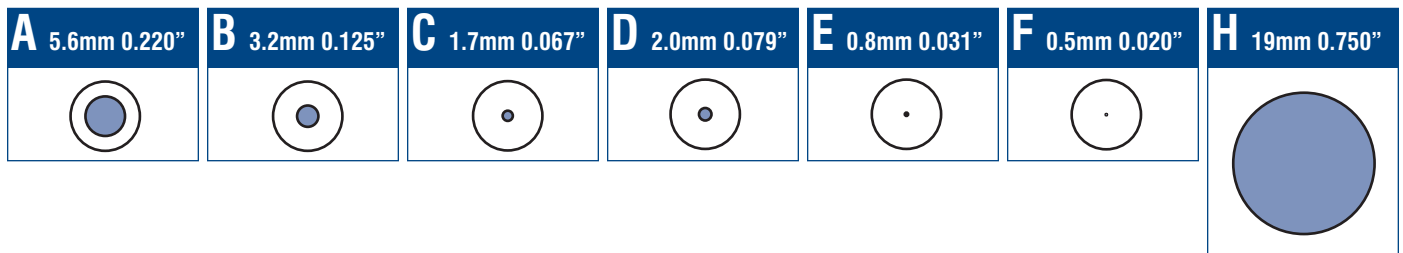
Probe model numbers consist of the Body Style and the Sensing Area, such as: C23-B or C5-E

Complete listing of ranges and resolutions are on the back of this datasheet.

Sensing Area



Sensing Areas (diameters)



Probe Body Styles/Sizes

C1 - 3/8"	C2 - 3/8"	C23 - 8mm	C24 - 8mm																												
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Range, Resolution, Linearity (custom ranges are available)

Sensing Area	Min. Target Ø mm inch	Ultrafine					Fine					Standard					Extended				
		Range µm mils	Near Gap µm mils	Resolution*		Lin.* %F.S.	Range µm mils	Near Gap µm mils	Resolution*		Lin.* %F.S.	Range µm mils	Near Gap µm mils	Resolution*		Lin.* %F.S.	Range µm mils	Near Gap µm mils	Resolution*		Lin.* %F.S.
				BW Hz	nm µin				BW Hz	nm µin				BW Hz	nm µin				BW Hz	nm µin	
F†	0.8 0.03	—	—	—	—	—	10 0.4	20 0.8	100 1.1 0.04	0.25	50 2.0	50 2	100 3.8 0.15	0.30	80 3.0	60 2.5	100 6.8 0.27	0.85			
C3, C5, C6				—	—				6k 1.5 0.06				6k 5.0 0.20				6k 9.0 0.36				
E†	1.0 0.04	—	—	—	—	25 1.0	75 3.0	100 3.0 0.12	0.15	100 4.0	100 4	100 7.5 0.30	0.15	—	—	—	—	—			
C3, C5, C6				—	—			6k 4.0 0.16				6k 10 0.40					—	—			
D	2.5 0.10	10 0.4	20 0.8	100 0.2 0.01	0.15	50 2.0	75 3.0	100 1.0 0.04	0.15	250 10.0	125 5	100 4.5 0.18	0.10	500 20.0	125 5	100 9.0 0.36	0.15				
C3, C5, C6				15k 0.4 0.02				15k 2.0 0.08				15k 9 0.35				15k 18.0 0.71					
C	2.3 0.09	10 0.4	20 0.8	100 0.2 0.01	0.20	50 2.0	75 3.0	100 1.2 0.05	0.15	250 10.0	125 5	100 5.0 0.20	0.10	500 20.0	125 5	100 9.0 0.36	0.20				
C23, C24				15k 0.4 0.02				15k 2.4 0.09				15k 10 0.40				15k 18.0 0.71					
B	4.1 0.16	—	—	—	—	50 2.0	125 5.0	100 1.0 0.04	0.20	500 20.0	250 10	100 5.0 0.20	0.15	1250 50.0	250 10	100 20.0 0.79	0.20				
C23, C24				—	—			15k 2.0 0.08				15k 10 0.40				15k 40.0 1.6					
A	7.6 0.30	—	—	—	—	50 2.0	225 9.0	100 0.8 0.03	0.20	500 20.0	500 20	100 6.0 0.24	0.20	2000 80.0	250 10	100 20.0 0.79	0.45				
C1, C2				—	—			15k 1.5 0.06				15k 12 0.47				15k 40.0 1.6					
H	25 1.0	—	—	—	—	—	—	—	—	2500 100	5000 200	100 100 3.9	0.20	6000 250.0	3000 100	100 180 7.1	0.25				
R2				—	—			—				15k 50 2.0				15k 90 3.5					

*Resolution values are RMS; Peak-to-peak values are typically ten times greater than the RMS values.

For other bandwidths use 100Hz values with these multipliers: 1kHz-1.4, 10kHz-1.8, 15kHz-2.0 (standard unfiltered).

In high EMI conditions (10V/m), output DC level may shift and noise may rise to 0.2VRMS (1% resolution).

†10kHz maximum bandwidth for these sensing areas.

Complete Technical Detail

www.lionprecision.com

The Lion Precision web site provides a high level of technical detail about our products and about capacitive sensing in general. Our Capacitive Sensing Tutorial is viewed thousands of times a month. The tutorial enables you to better understand the sensing technology, what pitfalls to avoid, and how to maximize the effectiveness of your measurement.

The web site also provides detailed TechNotes providing insight into the specific operation of our sensors and answering your questions about an entire range of issues.

Of course, all of the product manuals are available from the web site as well as information about the company, its history, vision, and way of doing business.

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