

Ground plane electric field sensors –radial/axial output

PRODYN’s precision high frequency ground plane electric field (D-DOT) sensors are designed to measure time rate-of-change of electric displacement over a wide frequency spectrum. They can also be used to measure the time rate-of-change of surface current density.



Surface or thru-the-ground plane output configurations are available to allow testing flexibility. Testing has shown the asymptotic sensing element design to have less capacitance and higher upper frequency characteristics compared to older HSD (Hemi-Spherical D-Dot) design.

SPECIFICATION

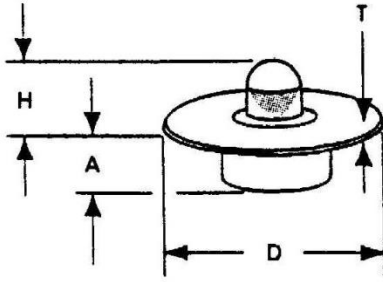
	AD-S10R	AD-10A	AD-S180R	AD-180A	AD-S110R	AD-110A	AD-S30R	AD-30A	AD-S60R	AD-60A
Equivalent Area (Aeq)	1 x 10 ⁻⁴ m ²	1 x 10 ⁻⁴ m ²	3 x 10 ⁻⁴ m ²	3 x 10 ⁻⁴ m ²	1 x 10 ⁻³ m ²	1 x 10 ⁻³ m ²	1 x 10 ⁻² m ²	1 x 10 ⁻² m ²	1 x 10 ⁻¹ m ²	1 x 10 ⁻¹ m ²
Freq. Resp.(3 db pt.)	>10GHz	>10GHz	>5.5GHz	>5.5GHz	>3.5GHz	>3.5GHz	>1GHz	>1GHz	>400MHz	>400MHz
Risetime (tr 10-90)	<0.03ns	<0.03ns	<0.08ns	<0.07ns	<.10ns	<.10ns	<.35ns	<.35ns	<1.0ns	<1.0ns
Maximum output (pk)	+150V	+150V	+ 1kV	+ 1kV	+ 1kV	+ 1kV	+ 4kV	+ 4kV	+5kV	+5kV
Output connector (female)	SMA	SMA	SMA	SMA	SMA	SMA	SMA	SMA	Type N	Type N

EQUATION

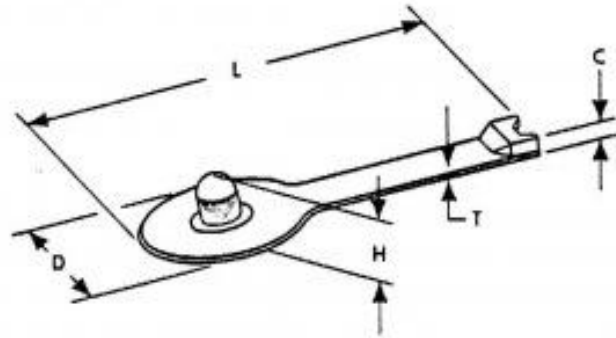
$$V_0 = R A_{eq} \frac{dD}{dt} \text{ or } V_0 = R A_{eq} \frac{dq_s}{dt}$$

Where V₀ = sensor output (volts), R = sensor characteristic load impedance (50Ω), A_{eq} = sensor equivalent area (m²), D = magnitude of electric displacement vector ($\vec{D} = \epsilon_0 \vec{E}$ in coul/m²) and dq_s = surface current density (coul/m²).

DIMENSIONS



Axial (type-A)



Radial (type-R)

	AD-S10R	AD-10A	AD-S180R	AD-180A	AD-S110R	AD-110A	AD-S30R	AD-30A	AD-S60R	AD-60A
Mass	16g	13g	57g	48g	70g	60g	546g	324g	1.5Kg	1.3Kg
H (cm) - see outline	.56	.56	.97	.97	1.73	1.73	5.03	5.03	15.54	15.54
D(cm) - see outline	2.54	2.54	5.08	5.08	7.62	7.62	13.97	13.97	28.24	28.24
L (cm) - see outline	7.62	-	8.89	-	12.7	-	30.48	-	55.88	-
T (cm) - see outline	.10	.10	-	.21	.23	.23	.23	.25	.30	.30
A (cm) - see outline	-	1.5	1.27	1.74	-	1.91	-	1.83	-	5.72
C (cm) - see outline	1.22	-	1.27	-	2.29	-	2.29	-	4.11	-