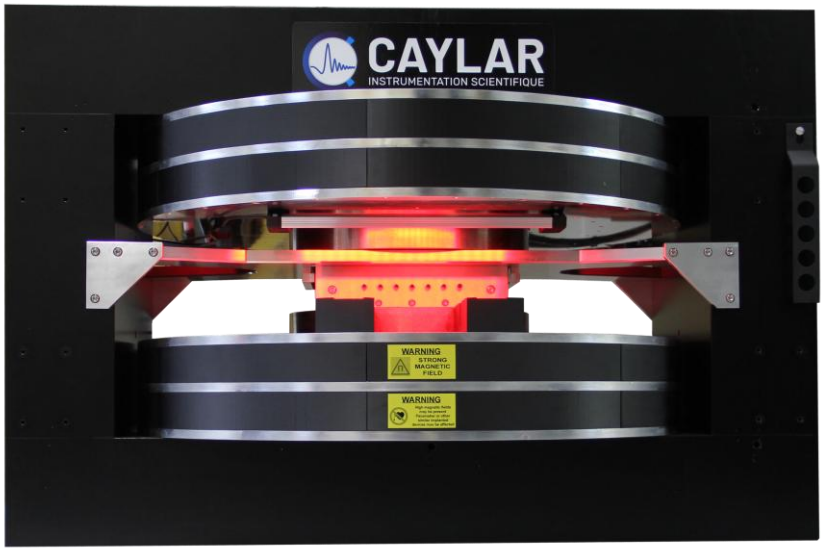
CAYLAR
INSTRUMENTATION SCIENTIFIQUE

EA300H

1450 Kg 905 x 618 x 1010 mm

Gap (mm)	Nominal (T)	Max. (T)
5	4.25	4.37
10	3.63	3.75
20	2.93	3.06
50	1.94	2.15
80	1.26	1.46



INTRODUCTION

The CAYLAR EA300H is an electromagnet with a variety of air gap and pole cap configurations ideal for material studies. Several options are available and custom modifications are possible.

Mechanical	
Weight	1450 Kg
Pole Gap	5 to 100 mm
Coil Spacing	>140 mm
Dimensions	905 x 618 x 1010 mm

Coils in series	
Nominal current[1]	150 A (8.8 kW - Max 10.6 kW)
Max continuous operating current	180 A (12.8 kW - Max 15.3 kW)
Water Cooling	16 L/min
Max coils surface temp.	45 °C
Overtemperature Interlock	70 °C (Inside coils)
Resistance @ 20 -70 °C	0.39 Ω – 0.47 Ω max
Inductance	Approx ~ 482 mH ±15 %

[1] Nominal Current: The nominal current is defined by a good ratio Power / Magnetic Field before too high saturation.

POWER SUPPLY

We recommend the **MPU-70V150A-4Q-10PPM**, ±150A ±70V 10.6kW true 10ppm bipolar 4-quadrant magnet power supply.

OPTIONS

- Special pole caps (cylindrical, conical, drilled poles etc.)
- Rotating base (manual / motorized)
- Custom coils adapted to a power supply
- Custom dimensions, coil space, taped holes...
- AC modulation coils
- Hall or NMR Regulation

APPLICATIONS

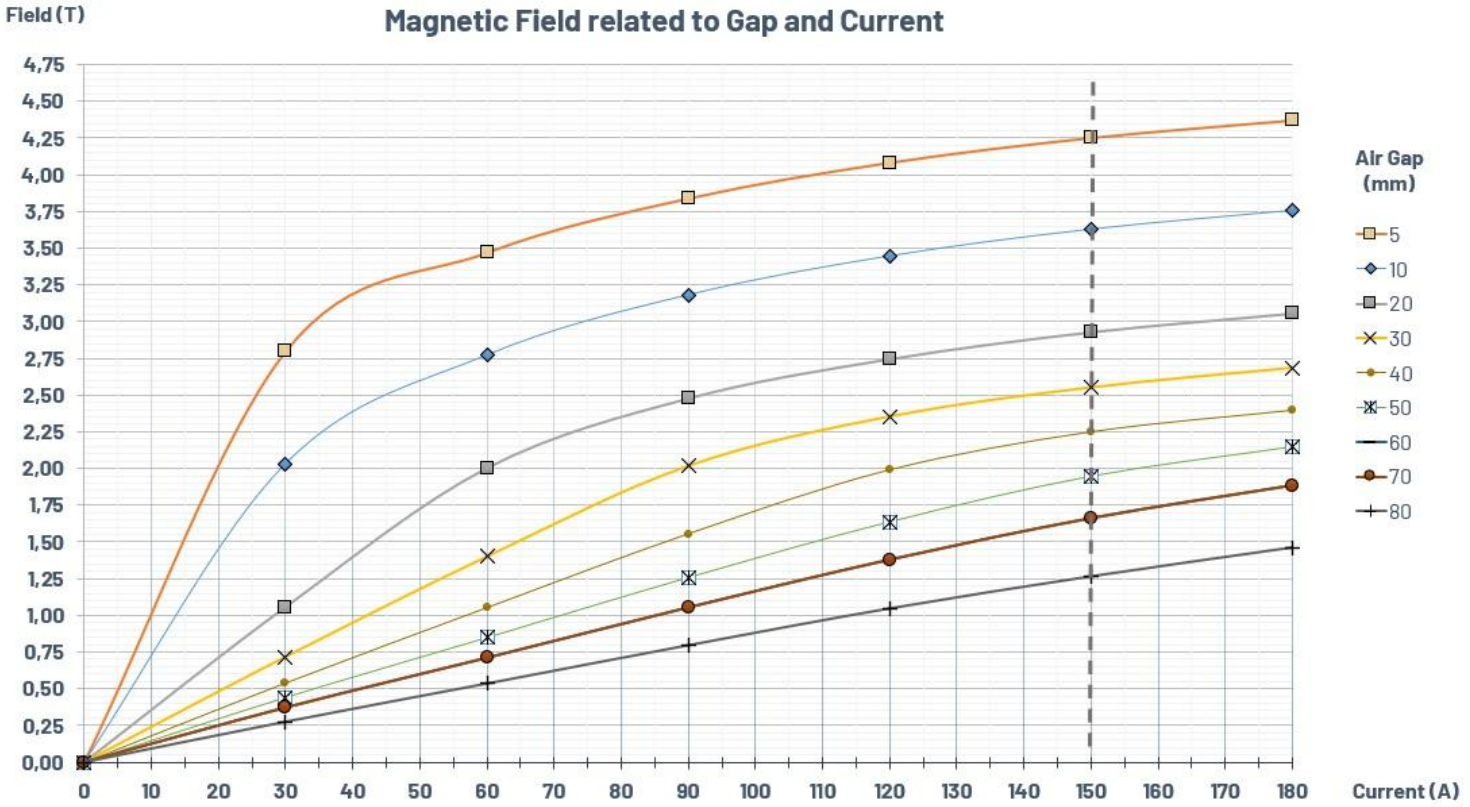
- Magnetic hysteresis studies
- Hall effect studies
- Susceptibility measurements
- Biological studies
- Vibrating Sample Magnetometer (VSM)
- Spin magnetic resonance, NMR
- EPR, ESR spectroscopy
- Ferromagnetic resonance spectroscopy (FMR)

SAS CAYLAR - 14 avenue du Québec - 91140 Villebon-sur-Yvette - FRANCE
VAT : FR55 441 581 618
contact@caylar.net - www.caylar.net - phone : +33 1 69 29 91 62

DatasheetV8.1
30/03/2026

CAYLAR
INSTRUMENTATION SCIENTIFIQUE

EA300H



Full data are available on our website

Magnetic fields and uniformities

Air Gap	Pole Face	B@ 90 A	Uniformity[1]	B @ 120 A	Uniformity[1]	**B @ 150 A**	**Uniformity[1]**	B @ 180 A	Uniformity[1]
5 mm	10 mm	3.84 T	/	4.08 T	/	**4.25 T**	**/**	4.37 T	/
10 mm	14 mm	3.18 T	/	3.44 T	/	**3.63 T**	**/**	3.75 T	/
20 mm	42 mm	2.48 T	0.62 %	2.75 T	0.58 %	**2.93 T**	**0.53 %**	3.06 T	0.50 %
30 mm	62 mm	2.02 T	0.14 %	2.35 T	0.19 %	**2.55 T**	**0.19 %**	2.68 T	0.17 %
40 mm	80 mm	1.55 T	0.12 %	1.99 T	0.15 %	**2.25 T**	**0.17 %**	2.39 T	0.16 %
50 mm	90 mm	1.26 T	0.15 %	1.64 T	0.15 %	**1.94 T**	**0.17 %**	2.15 T	0.18 %
60 mm	95 mm	1.05 T	0.16 %	1.38 T	0.15 %	**1.66 T**	**0.15 %**	1.88 T	0.16 %
70 mm	100 mm	0.90 T	0.14 %	1.19 T	0.13 %	**1.44 T**	**0.13 %**	1.65 T	0.14 %
80 mm	150 mm	0.80 T	0.04 %	1.05 T	0.04 %	**1.26 T**	**0.04 %**	1.46 T	0.04 %
90 mm	180 mm	0.71 T	0.03 %	0.93 T	0.03 %	**1.13 T**	**0.02 %**	1.30 T	0.02 %
100 mm	200 mm	0.64 T	0.03 %	0.85 T	0.02 %	**1.04 T**	**0.02 %**	1.20 T	0.02 %

[1] Uniformity volume: In a cylinder 1 cm high and 1cm in diameter (coaxial with poles)
<5 % of error on magnetic field value and uniformity

SAS CAYLAR - 14 avenue du Québec - 91140 Villebon-sur-Yvette - FRANCE
VAT : FR55 441 581 618
contact@caylar.net - www.caylar.net - phone : +33 1 69 29 91 62

CAYLAR
INSTRUMENTATION SCIENTIFIQUE

MAGNETIC FIELD DATA

[1] Normal power: It is the normal power in optimal cooling
[2] Power @ max temp.: Maximum power at the limit (overtemperature interlock switch)
[3] Uniformity volume: In a cylinder 1cm high and 1cm in diameter (coaxial with poles)
[4] Uniformity surface in 1cm in diameter (coaxial with poles)

5 mm Gap / 10 mm Pole face diameter					
Current	Magnetic Field	Normal Power[1]	Power @max temp. [2]	Uniformity volume[3]	Uniformity surface[4]
0 A	0.00 T	0.0 W	0.0 W	nc	nc
30 A	2.80 T	391.2 W	426.8 W	nc	nc
60 A	3.47 T	1565.0 W	1707.2 W	nc	nc
90 A	3.84 T	3521.2 W	3841.3 W	nc	nc
120 A	4.08 T	6259.9 W	6828.9 W	nc	nc
150 A	4.25 T	9781.0 W	10670.2 W	nc	nc
180 A	4.37 T	14084.7 W	15365.1 W	nc	nc

10 mm Gap / 14 mm Pole face diameter					
Current	Magnetic Field	Normal Power[1]	Power @max temp. [2]	Uniformity volume[3]	Uniformity surface[4]
0 A	0.00 T	0.0 W	0.0 W	nc	0.000 %
30 A	2.03 T	391.2 W	426.8 W	nc	4.676 %
60 A	2.77 T	1565.0 W	1707.2 W	nc	3.420 %
90 A	3.18 T	3521.2 W	3841.3 W	nc	2.904 %
120 A	3.44 T	6259.9 W	6828.9 W	nc	2.618 %
150 A	3.63 T	9781.0 W	10670.2 W	nc	2.445 %
180 A	3.75 T	14084.7 W	15365.1 W	nc	2.335 %

20 mm Gap / 42 mm Pole face diameter					
Current	Magnetic Field	Normal Power[1]	Power @max temp. [2]	Uniformity volume[3]	Uniformity surface[4]
0 A	0.00 T	0.0 W	0.0 W	0.00 %	0.000 %
30 A	1.06 T	391.2 W	426.8 W	0.77 %	0.108 %
60 A	2.00 T	1565.0 W	1707.2 W	0.31 %	0.071 %
90 A	2.48 T	3521.2 W	3841.3 W	0.62 %	0.215 %
120 A	2.75 T	6259.9 W	6828.9 W	0.58 %	0.196 %
150 A	2.93 T	9781.0 W	10670.2 W	0.53 %	0.178 %
180 A	3.06 T	14084.7 W	15365.1 W	0.50 %	0.166 %

CAYLAR
INSTRUMENTATION SCIENTIFIQUE

30 mm Gap / 62 mm Pole face diameter					
Current	Magnetic Field	Normal Power[1]	Power @max temp. [2]	Uniformity volume[3]	Uniformity surface[4]
0 A	0.00 T	0.0 W	0.0 W	0.00 %	0.000 %
30 A	0.72 T	391.2 W	426.8 W	0.10 %	0.041 %
60 A	1.40 T	1565.0 W	1707.2 W	0.14 %	0.053 %
90 A	2.02 T	3521.2 W	3841.3 W	0.14 %	0.055 %
120 A	2.35 T	6259.9 W	6828.9 W	0.19 %	0.071 %
150 A	2.55 T	9781.0 W	10670.2 W	0.19 %	0.066 %
180 A	2.68 T	14084.7 W	15365.1 W	0.17 %	0.062 %

40 mm Gap / 80 mm Pole face diameter					
Current	Magnetic Field	Normal Power[1]	Power @max temp. [2]	Uniformity volume[3]	Uniformity surface[4]
0 A	0.00 T	0.0 W	0.0 W	0.00 %	0.000 %
30 A	0.54 T	391.2 W	426.8 W	0.13 %	0.049 %
60 A	1.05 T	1565.0 W	1707.2 W	0.12 %	0.044 %
90 A	1.55 T	3521.2 W	3841.3 W	0.12 %	0.044 %
120 A	1.99 T	6259.9 W	6828.9 W	0.15 %	0.055 %
150 A	2.25 T	9781.0 W	10670.2 W	0.17 %	0.059 %
180 A	2.39 T	14084.7 W	15365.1 W	0.16 %	0.055 %

50 mm Gap / 90 mm Pole face diameter					
Current	Magnetic Field	Normal Power[1]	Power @max temp. [2]	Uniformity volume[3]	Uniformity surface[4]
0 A	0.00 T	0.0 W	0.0 W	0.00 %	0.00 %
30 A	0.44 T	391.2 W	426.8 W	0.20 %	0.06 %
60 A	0.85 T	1565.0 W	1707.2 W	0.23 %	0.08 %
90 A	1.26 T	3521.2 W	3841.3 W	0.25 %	0.09 %
120 A	1.64 T	6259.9 W	6828.9 W	0.31 %	0.11 %
150 A	1.94 T	9781.0 W	10670.2 W	0.46 %	0.17 %
180 A	2.15 T	14084.7 W	15365.1 W	0.44 %	0.16 %

CAYLAR
INSTRUMENTATION SCIENTIFIQUE

60 mm Gap / 95 mm Pole face diameter					
Current	Magnetic Field	Normal Power[1]	Power @max temp. [2]	Uniformity volume[3]	Uniformity surface[4]
0 A	0.00 T	0.0 W	0.0 W	0.00 %	0.000 %
30 A	0.37 T	391.2 W	426.8 W	0.23 %	0.078 %
60 A	0.71 T	1565.0 W	1707.2 W	0.18 %	0.060 %
90 A	1.05 T	3521.2 W	3841.3 W	0.16 %	0.053 %
120 A	1.38 T	6259.9 W	6828.9 W	0.15 %	0.050 %
150 A	1.66 T	9781.0 W	10670.2 W	0.15 %	0.052 %
180 A	1.88 T	14084.7 W	15365.1 W	0.16 %	0.055 %

70 mm Gap / 100 mm Pole face diameter					
Current	Magnetic Field	Normal Power[1]	Power @max temp. [2]	Uniformity volume[3]	Uniformity surface[4]
0 A	0.00 T	0.0 W	0.0 W	0.00 %	0.000 %
30 A	0.31 T	391.2 W	426.8 W	0.20 %	0.065 %
60 A	0.61 T	1565.0 W	1707.2 W	0.15 %	0.051 %
90 A	0.90 T	3521.2 W	3841.3 W	0.14 %	0.046 %
120 A	1.19 T	6259.9 W	6828.9 W	0.13 %	0.045 %
150 A	1.44 T	9781.0 W	10670.2 W	0.13 %	0.045 %
180 A	1.65 T	14084.7 W	15365.1 W	0.14 %	0.046 %

80 mm Gap / 150 mm Pole face diameter					
Current	Magnetic Field	Normal Power[1]	Power @max temp. [2]	Uniformity volume[3]	Uniformity surface[4]
0 A	0.00 T	0.0 W	0.0 W	0.00 %	0.000 %
30 A	0.28 T	391.2 W	426.8 W	0.09 %	0.029 %
60 A	0.54 T	1565.0 W	1707.2 W	0.06 %	0.019 %
90 A	0.80 T	3521.2 W	3841.3 W	0.04 %	0.015 %
120 A	1.05 T	6259.9 W	6828.9 W	0.04 %	0.013 %
150 A	1.26 T	9781.0 W	10670.2 W	0.04 %	0.013 %
180 A	1.46 T	14084.7 W	15365.1 W	0.04 %	0.013 %

CAYLAR
INSTRUMENTATION SCIENTIFIQUE

90 mm Gap / 180 mm Pole face diameter					
Current	Magnetic Field	Normal Power*	Power @max temp. *	Uniformity volume*	Uniformity surface*
0 A	0.00 T	0.0 W	0.0 W	0.00 %	0.000 %
30 A	0.24 T	391.2 W	426.8 W	0.09 %	0.028 %
60 A	0.48 T	1565.0 W	1707.2 W	0.05 %	0.016 %
90 A	0.71 T	3521.2 W	3841.3 W	0.03 %	0.011 %
120 A	0.93 T	6259.9 W	6828.9 W	0.03 %	0.009 %
150 A	1.13 T	9781.0 W	10670.2 W	0.02 %	0.008 %
180 A	1.30 T	14084.7 W	15365.1 W	0.02 %	0.008 %

100 mm Gap / 200 mm Pole face diameter					
Current	Magnetic Field	Normal Power*	Power @max temp. *	Uniformity volume*	Uniformity surface*
0 A	0.00 T	0.0 W	0.0 W	0.00 %	0.000 %
30 A	0.22 T	391.2 W	426.8 W	0.06 %	0.021 %
60 A	0.43 T	1565.0 W	1707.2 W	0.04 %	0.013 %
90 A	0.64 T	3521.2 W	3841.3 W	0.03 %	0.009 %
120 A	0.85 T	6259.9 W	6828.9 W	0.02 %	0.007 %
150 A	1.04 T	9781.0 W	10670.2 W	0.02 %	0.006 %
180 A	1.20 T	14084.7 W	15365.1 W	0.02 %	0.006 %