



INSTRUCTION MANUAL

HIGH FIELD BICONICAL

ANTENNA

MODEL BIA-30HF

20 MHz – 300 MHz

INSTRUCTION MANUAL

**THIS INSTRUCTION MANUAL AND ITS
ASSOCIATED INFORMATION IS
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HIGH FIELD BICONICAL ANTENNA

20 MHz – 300 MHz

ELECTRO-METRICS

MODEL BIA-30HF

SERIAL NO: N/A

ELECTRO-METRICS CORPORATION

231 Enterprise Road, Johnstown, New York 12095
Phone: (518) 762-2600 Fax: (518) 762-2812

EMAIL: info@emihq.com

WEB: <http://www.electro-metrics.com>

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WARRANTY

This Model BIA-30HF High Field Biconical Antenna is warranted for a period of 12 months (USA only) from date of shipment against defective materials and workmanship. This warranty is limited to the repair of or replacement of defective parts and is void if unauthorized repair or modification is attempted. Repairs for damage due to misuse or abnormal operating conditions will be performed at the factory and will be billed at our commercial hourly rates. Our estimate will be provided before the work is started.

DESCRIPTION AND USE ELECTRO-METRICS MODEL BIA-30HF HIGH FIELD BICONICAL ANTENNA

1.0 Description

The BIA-30HF High Field Biconical Antenna is designed to generate high levels of EM Fields from 20 to 300 MHz for use in Radiated Susceptibility testing.

The biconical elements are made from heliarc tack welded aluminum rods. The 4 to 1 ratio balun network is fabricated from TRE thermoplastics and specially machined brass and aluminum support and contact parts. The bifilar inductors of the balun are wound in precision machined cuts to provide high barrier insulation between windings while simultaneously providing good coupling between bifilar windings.

Each antenna is individually calibrated during manufacturing, at 1 meter, and 3 meter with the calibration data included in the manual as Gain and Antenna Factors vs Frequency (tabulated data--pages 7 & 8). Since slight variations in the testing environment can affect the field characteristics about an antenna, it is recommended that a field strength meter be used to accurately determine the field strength in the region under test.

2.0 Specifications

2.1 Electrical

Frequency Range:	20 to 300 MHz.
Input Impedance:	Calibrated in a 50 Ω system.
Connector:	Type N.
Power Input Capability:	1 kW long term average power. 2 kW short duration average power.
Average Balun VSWR:	2.5:1 or less.

2.2 Mechanical

Length:	1335 mm (52.5 inches) tip-to-tip.
Diameter:	520 mm (20.5 inches) maximum.
Weight:	3.2 kg (7 lbs).

**APPROXIMATE POWER REQUIREMENTS VS FREQUENCY
FOR FIELD STRENGTHS AT 1 METER SPACING**

ELECTRO-METRICS MODEL BIA-30HF HIGH FIELD BICONICAL ANTENNA

(MAXIMUM POWER 1 kW, PEAK POWER 2 kW)

FREQ. (MHz)	TYP. ANT. FACT.	TYP. GAIN NUM.	TYP. GAIN dB	1 V/m PWR (W) REQ.	10 V/m PWR (W) REQ.	20 V/m PWR (W) REQ.	100 V/m PWR (W) REQ.
20	11.5	0.03	-15.2	1.12	111.6	446.5	****
30	13.0	0.05	-13.3	0.71	71.1	284.4	****
40	15.0	0.06	-12.4	0.58	58.0	231.8	****
50	12.0	0.16	-8.0	0.21	21.1	84.5	****
60	10.0	0.37	-4.3	0.09	9.0	36.0	900.5
70	9.0	0.66	-1.8	0.05	5.0	20.2	505.0
80	8.0	1.07	0.3	0.03	3.1	12.5	312.3
90	8.9	1.09	0.4	0.03	3.1	12.3	306.6
100	9.6	1.15	0.6	0.03	2.9	11.6	290.4
120	12.8	0.79	-1.0	0.04	4.2	16.9	421.8
140	15.9	0.52	-2.8	0.06	6.4	25.4	635.8
160	16.0	0.67	-1.7	0.05	5.0	19.8	495.7
180	14.5	1.19	0.8	0.03	2.8	11.2	279.0
200	13.8	1.74	2.4	0.02	1.9	7.7	191.4
220	14.5	1.79	2.5	0.02	1.9	7.4	186.1
240	16.8	1.27	1.0	0.03	2.6	10.5	262.0
260	19.9	0.73	-1.4	0.05	4.6	18.3	457.4
280	22.6	0.45	-3.5	0.07	7.4	29.8	744.3
300	24.6	0.33	-4.8	0.10	10.1	40.3	****

****: Not recommended

NOTE: Not recommended for use above 100 V/m.

**GAIN AND ANTENNA FACTORS
FOR
MODEL BIA-30HF
HIGH FIELD BICONICAL ANTENNA
AT
1 METER, 3 METER
1 METER: PAGE 7
3 METER: PAGE 8**

ELECTRO-METRICS
GAIN AND ANTENNA FACTORS
MODEL BIA-30HF
HIGH FIELD BICONICAL ANTENNA
1 METER CALIBRATION
PAGE 6A

ELECTRO-METRICS
GAIN AND ANTENNA FACTORS
MODEL BIA-30HF
HIGH FIELD BICONICAL ANTENNA
3 METER CALIBRATION
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