



INSTRUCTION MANUAL

BICONICAL

ANTENNA

MODEL BIA-30

20 MHz – 200 MHz

INSTRUCTION MANUAL

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ASSOCIATED INFORMATION IS
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BICONICAL ANTENNA

20 MHz – 200 MHz

ELECTRO-METRICS

MODEL BIA-30

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-30 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-30 BICONICAL ANTENNA

1.0 Description

The BIA-30 Biconical Antenna performs EMI measurements from 20 MHz to 200 MHz to FCC, VDE, MIL-STD radiated emissions testing standards plus other commercial, military, and government EMI specifications.

The biconical elements are made from aluminum rods and are joined to the end pieces by tack welds. The elements mount in a balun network, fabricated from aluminum, containing the necessary impedance-matching components. The elements are also available in a collapsible version that allows the elements to be folded down for transport to field sites. Both sets of elements are interchangeable with a selected balun.

The BIA-30 is precisely manufactured for conformance to the requirements of MIL-STD-461 and other military standards as reflected in Drawing ES-F-201286. Each series of antennas is calibrated during manufacturing, with the calibration data (at 1 and 3 meters) included in the manual as gain and antenna factors versus frequency for use in Specification Compliance Testing.

NOTE: When performing measurements using the BIA-30 always include the level of attenuation within the measurement system plus coaxial cable losses, in addition to the actual antenna factors, for determining the signal level being measured.

1.1 Vertical Balun Orientation

No physical balun is an ideal balanced to unbalanced transformer. All designs display some non-uniformity. Therefore, for enhanced measurement repeatability, it is recommended that when the BIA-30 is oriented vertically; the same element orientation be maintained from measurement to measurement. A white dot or stripe on one side of the element block marks the coaxial shield side element. Keeping this side toward ground when the antenna is used vertically will increase test repeatability.

2.0 Specifications

2.1 Electrical

Frequency Range:	20-200 MHz
Input Impedance:	Calibrated in a 50 Ω system.
Maximum Continuous Power:	50 W
Connector:	Type TNC (standard). Type N (optional).

2.2 Mechanical

Length:	132 cm (52") tip-to-tip.
Diameter:	51 cm (21") maximum.
Depth:	56 cm (22").
Weight:	2.7 kg (6 lbs).

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

ELECTRO-METRICS MODEL BIA-30 BICONICAL ANTENNA

(50 WATTS MAXIMUM)

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.
20	9.0	0.05	-13.1	0.7	***	***
25	12.0	0.04	-13.9	0.8	***	***
30	13.0	0.05	-12.8	0.6	***	***
35	13.0	0.06	-12.2	0.6	***	***
40	14.0	0.07	-11.6	0.5	45.7	***
45	14.0	0.08	-10.7	0.4	39.4	***
50	13.0	0.13	-8.9	0.3	25.9	***
55	13.0	0.13	-8.0	0.2	20.9	***
60	13.0	0.21	-6.8	0.2	16.1	***
65	11.0	0.39	-4.1	0.1	8.6	34.5
70	9.0	0.68	-1.7	0.05	4.9	19.7
75	8.0	0.98	-0.1	0.05	3.4	13.6
80	8.0	1.11	+0.5	0.05	3.0	12.0
85	9.0	1.05	+0.2	0.05	3.2	12.7
90	10.0	0.95	-0.2	0.05	3.5	14.0
95	11.0	0.77	-1.1	0.05	4.3	17.3
100	11.0	0.76	-1.2	0.05	4.4	17.5
105	13.0	0.64	-2.0	0.1	5.2	21.0
110	15.0	0.37	-4.3	0.1	8.9	35.6
115	14.0	0.52	-2.9	0.1	6.5	25.9
120	14.0	0.60	-2.2	0.1	5.5	22.2
125	15.0	0.51	-3.0	0.1	6.6	26.3
130	15.0	0.62	-2.1	0.1	5.4	21.7
135	15.0	0.60	-2.2	0.1	5.5	22.0
140	16.0	0.57	-2.5	0.1	5.9	23.5
145	17.0	0.43	-3.7	0.1	7.7	31.0
150	18.0	0.34	-4.7	0.1	9.8	39.1
155	21.0	0.20	-6.9	0.2	16.3	***
160	21.0	0.23	-6.4	0.1	14.6	***
165	20.0	0.31	-5.1	0.1	10.9	4305
170	19.0	0.38	-4.2	0.1	8.7	34.9
175	19.0	0.45	-3.4	0.1	7.3	29.4
180	18.0	0.54	-2.7	0.1	6.2	24.7
185	18.0	0.61	-2.1	0.1	5.5	21.9
190	17.0	0.72	-1.4	0.05	4.6	18.5
195	17.0	0.76	-1.2	0.05	4.4	17.5
200	17.0	0.92	-0.4	0.05	3.6	14.5

*** NOT RECOMMENDED.

Gain And Antenna Factors

For

Model BIA-30

Biconical Antenna

At

1 Meter, 3 Meter

1 Meter: Page 6

3 Meter: Page 7

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