

### M2 Antenna Systems, Inc. Model No: 10-15M1DX



#### **SPECIFICATIONS:**

Model	.10-15M1DX
Frequency Range	.20 — 30 MHz
*Gain, (FS) / Over gnd	.2.14 dBi* / Varies**
Front to back	.N/A
Beamwidth	.90°
Feed type / Balun	.SO-239/1:1 Balun
Feed Impedance.	.50 Ohms
Maximum VSWR	.2.0:1 @ Band Edges
Power Handling	.3 kW
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Boom Length / Dia	N/A
Maximum Element Length	25' (7.6 m)
Turning Radius:	12.5' (3.8 m)
Stacking Distance	Varies**
Mast Size	1-1/4-2" (30-50 mm)
Wind Area / Survival	1.1 sq ft / 80 MPH
	(.34 m <sup>2</sup> / 128 km/h)
Weight / Ship Wt	5 lbs. / 7 lbs.
	(2 kg / 3 kg)

#### \*Subtract 2.14 from dBi for dBd / FS = Free Space \*\* Spec Varies with Frequency and/or Height

#### FEATURES:

The 10-15M1DX is a single-band dipole antenna designed with performance and affordability in mind without skimping on quality. Originally designed by radio pioneer Heinrich Hertz in 1886, the dipole antenna was originally called the "Hertz" antenna. It stands the test of time as the basis of most high performance antennas today.

Built to the demanding specs of our "DX" series yagis, this antenna uses 6061-T6 aluminum tubing and 6061-T6 aluminum machined hardware for its durable, lightweight elements. A solid fiberglass center insulator, machined aluminum mast mounting components and stainless steel hardware will keep this in the air for years.

Versatility is key for this antenna—equally suited as a fixed or rotatable dipole. Lightweight and low-profile, it's the perfect HF antenna for your QTH, whether you want a simple, unobtrusive, no-compromise radiator on a tower or mast, or in a stealthier application such as in an attic. "Uni-cradle" mounting allows it to securely grip a wide range of masts. With element sections of 48 inches (122 cm) or less in length, its light, simple and compact design makes it an ideal candidate for Field Day, SOTA, DXpeditions and EMCOM use. It can easily be configured and reconfigured for any frequency from 20-30 MHz simply by changing the tip length. Have a custom application that you would like to try? Use it as the basis for your own high-performance, innovative antenna projects.

## **10-15M1DX BTM & BALUN DETAIL**



BEFORE YOU BEGIN: Look over all of the DRAWINGS to get familiar with the various parts and assemblies in the system. Tools handy for assembly process: screwdriver, 11/32, 7/16, 1/2, 9/16 and 5/8" spin-tites, end wrenches and/or sockets, measuring tape.

#### Note:

All installations are unique in some way, which means it's OK to preassemble certain hardware, or rearrange the assembly process to meet specific site requirements. A quick review of the assembly drawings should help firm up the appropriate strategy. Please remember to double-check all hardware for tightness BEFORE it becomes inaccessible.

Two containers of zinc paste (Penetrox, Noalox, or equiv.) have been provided to enhance and maintain the quality of all mechanical and electrical junctions on this system. Apply a thin coat wherever two pieces of aluminum come in contact or any other electrical connections are made. It is also useful on screws and bolt threads as an ANTI–SEIZE compound.

### **10-15M1DX HALF ELEMENT ASSEMBLY**



# 10-15M1DX WITH 17-20 KIT (OPTIONAL)



# 10-15M1DX WITH 17-20 KIT (OPTIONAL)



# **GENERIC COMPRESSION CLAMP DETAIL**



### **10-15M1DX TUNING NOTES**

#### <u>Tuning</u>

Tuning this antenna is straightforward. Referring to the chart on the corresponding "Dimension Sheet," starting tip length measurements are given for a select number of common HF frequencies. Select the one closest to where you want the center frequency of your operating band to be placed and set the "A" dimension as depicted in the tuning chart.

When using the 17-20 Kit, please note that for 20 meters, element sections #1 and #2 from the 17-20 Kit are used on each element half, while for 17 meters, only element section #1 is used. As an added bonus, the 17 meter configuration can be easily changed to 15 meter by shortening tip dimension "A" as indicated on the dimension sheet.

You may find that the lowest SWR point varies from that given on the chart. Several factors affect tuning, including height above ground, adjacent structures, and other nearby antennas. All tip measurements given are based on a height of 1/2 wavelength above average ground. You may have to adjust the tip length in 1/2 inch (1 cm) increments until the SWR minimum is found at the desired frequency.

#### About SWR and Dipoles

In free space, a dipole antenna exhibits a characteristic feed point impedance of approximately 72 ohms. In practice, when feeding a dipole with a 50 ohm feedline, it's quite common to see an SWR of 1.2:1 to 1.5:1.

In our testing, we found the SWR ran between 1.25:1 and 1.3:1 at 1/2 wavelength above ground. This is normal. With a worst case 1.5:1 SWR, 96% of RF power applied is radiated; with a 1.2:1 SWR, 99% is radiated. For virtually all applications, this low SWR yields excellent results.

Likewise, the 2:1 SWR bandwidth on these antennas varied from over 1 MHz at 21 MHz to over 2 MHz at 28 MHz, making them usable without retuning on the entirety of each band covered.

For more information about dipoles and feedline matching, the *ARRL Antenna Book* has a wealth of information available. Please visit the American Radio Relay League website at <u>http://www.arrl.org</u> for more information.

### **10-15M1DX PARTS & HARDWARE**

DESCRIPTION	QTY
ELEMENT SEC #3: 1" X .058 X 48" SOE	2
ELEMENT: 3/4" X .049 X 48" SOE	2
ELEMENT TIP: 1/2" X .049 X 46"	2
FIBERGLASS INSULATOR, 7/8" X 14-3/4" (M2AFG0030)	1
BALUN, 1:1 3-60 MHZ, 3 KW (FGBL0700)	1
BALUN MOUNT PLATE, 2" X 4" X 1/8" (M2APT0018)	1
BOOM TO MAST PLATE, 4 X 6 X 3/16" (M2APT0tbd)	1
UNICRADLE (M2AMC0076)	2
COMPRESSION CLAMP, 5/8"	2
2" U-BOLT, STAINLESS STEEL	2
1-1/2" U-BOLT & CRADLE	1
ZINC PASTE,	1
ASSEMBLY MANUAL	1

#### HARDWARE:

WASHER, 5/16" SPLIT RING, SS	2
NUT, 5/16-18, SS	2
BOLT, 1/4-20 X 1-3/4", SS	4
WASHER, 1/4" SPLIT RING, SS	4
WASHER. 1/4" FLAT, SS	2
NUT, 1/4-20, SS	8
LOCKNUT, 1/4-20, SS	4
SCREW, 8-32 X 1-1/4" PAN HEAD PHL, SS	4
SCREW, 8-32 X 1/2" PAN HEAD PHL, SS	2
NUT, 8-32, SS	2
LOCKNUT, 8-32, SS	4
RING LUG, 1/4 HOLE #10 WIRE	2

#### (OPTIONAL) 17-20 ADD ON KIT

ELEMENT SECTION #1, 1" X .058 X 36" SOE	2
ELEMENT SECTION #2, 1" X .058 X 36" SOE	2
TURNBUCKLE PLATE, 1/8" X 2" X 4" (M2APT0115)	.1
JNICRADLE (M2AMC0076)	.1
EYEBOLT, 1/4-20 X 2-1/2", ZINC	.2
CABLE EYE, 1/8"	.2
DACRON, 3/32 X 12'	.2
2" U-BOLT, STAINLESS STEEL	.1
WASHER, 1/4" SPLIT RING, SS	.2
NUT, 1/4-20, SS	.2
_OCKNUT, 1/4-20,SS	.2
SCREW, 8-32 X 1-1/4", PAN HEAD PHL,SS	.12
_OCKNUT, 8-32, SS	.12
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### M<sup>2</sup> ANTENNA SYSTEMS, INC.

4402 N. Selland Ave. Fresno, CA 93722 (559) 432-8873 Fax: 432-3059 www.m2inc.com Email: sales@m2inc.com