PA50-144-12-3-2CBP

6m and 2m Ligt Weight Two Connectors DualBand Antenna

The "Dual" company has been producing antennas for **over 34 years.**

Our focus is on:
• Wide bandwidth - **no tuning antennas**
• Designs that work well in **all weather** conditions
• **Low SWR and superior G/T, F/B and F/S** ratios across the entire band
• Excellent **mechanical properties**
• High durability, built **without compromise**

A Major advance in Amateur Radio antenna design.

All antennas have been calculated using **state of the art full 3D Electromagnetic Simulation Software** including **the influence** of the boom, bracket, baluns and connectors.

The performance of antennas designed using these techniques are **exceptional, far better** than antennas designed using "wire" programs like EZNEC Pro/4 –NEC v5.0, 4NEC2, MMANA or AO These programs cannot calculate the effect of any metallic or dielectric structures near the antenna elements and therefore must be considered inaccurate

Designs are optimized using the Particle Swarm algorithm, which is considered **one of the best** antenna optimization algorithms available, followed by a classic Nelder-Mead Simplex algorithm for fine-tuning.

Our antennas are precision instruments, they really are **"Precision Antennas" (PA).**

DUAL

Company Dual The largest antenna and ham radio equipment manufacturer in Serbia, established 1988
Trg puk. D. Gavrilovica 2, 37000 Krusevac, Serbia. **www.dual.rs** **https://antennas-amplifiers.com/**
info@antennas-amplifiers.com Tel:+381 37 3419 100, +381 69 3419 100

PA50-144-12-3-2CBP

Electrical Specifications 6 meter

Frequency Range:	**50 - 50.5 MHz**
Free Space Forward Gain:	**8.5 dBi**
Front to Back Ratio:	**21 dB**
3 dB Horizontal Beamwidth:	61.4°
Polarization:	**Horizontal**
Nominal Input Impedance:	50 Ohms
SWR Across Entire Band:	**< 1.2**
Maximum Power Input:	**1500 W**
Matching Method:	Direct feed through common mode choke (curent balun)
Connector:	**"N"**

Mechanical Specifications 6 meter

Number of elements:	**4**
Element Diameter:	Tapered elements. Center tube 12mm, outer 10 and 8 mm
Longest element:	3.1 m
Element Mounting Position:	Below the Boom
Balun and Connector:	**Included**

Electrical Specifications 4 meter

Frequency Range:	**144 - 145 MHz**
Free Space Forward Gain:	**12.1 dBi**
Front to Back Ratio:	**27 dB**
3 dB Horizontal Beamwidth:	43°
Polarization:	**Horizontal**
Nominal Input Impedance:	50 Ohms
SWR Across Entire Band:	**< 1.2**
Maximum Power Input:	**1500 W**
Matching Method:	Direct feed through common mode choke (curent balun)
Connector:	**"N"**

Mechanical Specifications 4 meter

Number of elements:	**8**
Element Diameter:	**8 mm** Aluminum tube.
Dipole Diameter:	**8 mm** Hard Copper tube plastic coated.
Longest element:	1040 mm
Element Mounting Position:	Above the Boom
Balun and Connector:	**Included**

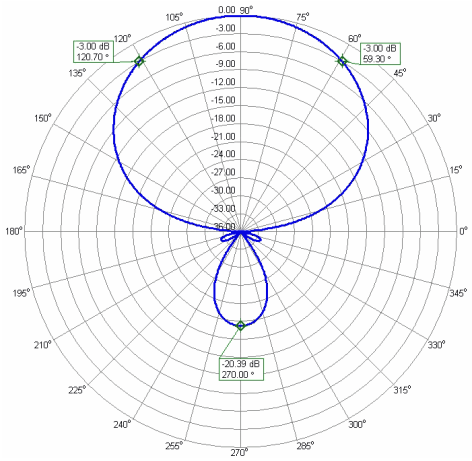
Common Mechanical Specifications

Boom Length:	**2.92 m**
Boom Size:	30 x 30 mm
Number of Boom Pieces:	**2**
Guy rope support:	**No**
Mounting Mast Diameter:	43 - 70 mm 1-11/16" - 2-3/4" OD
Clamp:	M8 Stainless Steel
Survival Wind Speed:	**150 km/h**
Wind Load:	**0.13 m^2**
Transportation Length:	**1.49 m**
Net Weight:	4.5 kg
Gross Weight:	5.7 kg

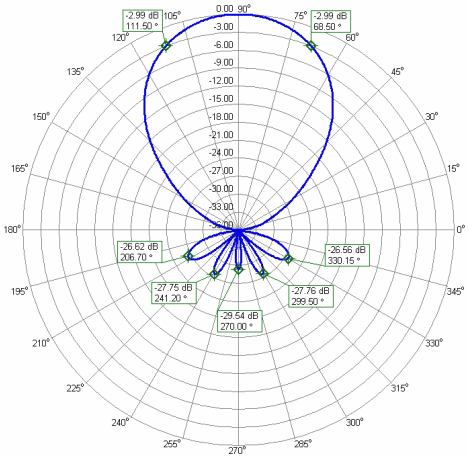
Company Dual The largest antenna and ham radio equipment manufacturer in Serbia, established 1988
Trg puk. D. Gavrilovica 2, 37000 Krusevac, Serbia. **www.dual.rs** **https://antennas-amplifiers.com/**
info@antennas-amplifiers.com Tel:+381 37 3419 100, +381 69 3419 100

PA50-144-12-3-2CBP

Radiation Patterns



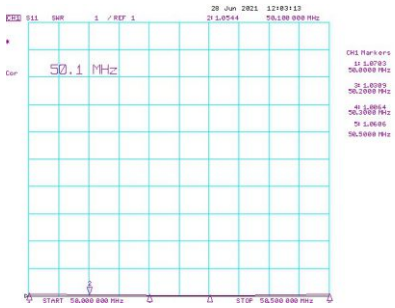
6 m Azimuth Radiation Pattern



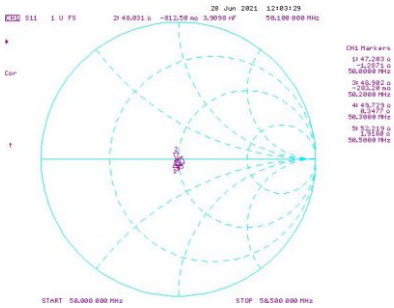
2 m Azimuth Radiation Pattern

PA50-144-12-3-2CBP Measured characteristics with calibrated HP8753ES Network Analyzer

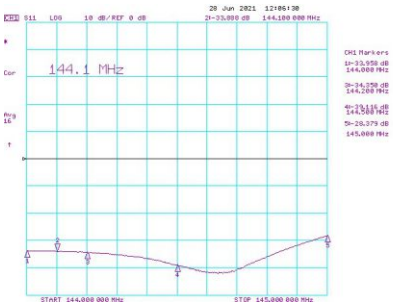
Measured Return Loss 50 - 50.5 MHz
at antenna connector



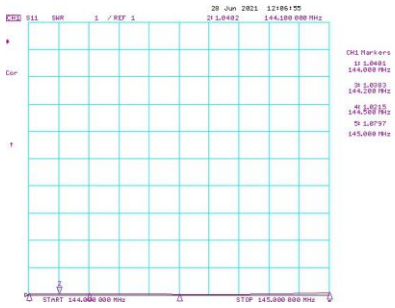
Measured SWR 50 - 50.5 MHz
at antenna connector



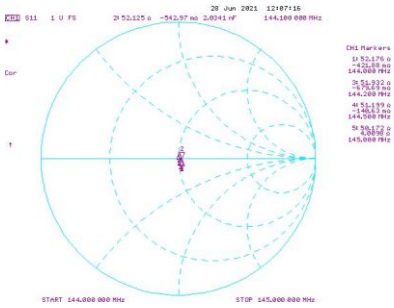
Smith Chart



Measured Return Loss 144 - 145 MHz
at antenna connector



Measured SWR 144 - 145 MHz
at antenna connector



Smith Chart

Assembly instruction

Join the boom.

Company Dual The largest antenna and ham radio equipment manufacturer in Serbia, established 1988
Trg puk. D. Gavrilovica 2, 37000 Krusevac, Serbia. **www.dual.rs** **https://antennas-amplifiers.com/**
info@antennas-amplifiers.com Tel:+381 37 3419 100, +381 69 3419 100

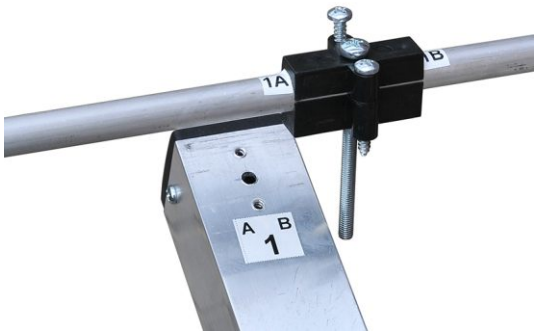
PA50-144-12-3-2CBP

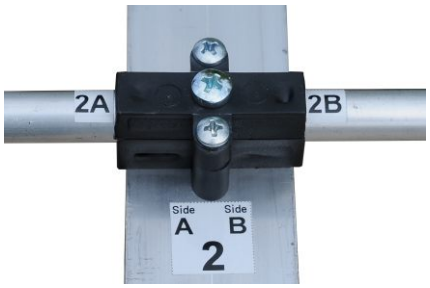
Join the element extensions. Starting with E1 to the end with supplied stainless steel screws.

Please use Torque screwdriver. Required torque is 1.4 Nm. Before tightening the screws, apply thread lock.

Attach the elements (number to number).

Not all pictures are related to the particular antenna.

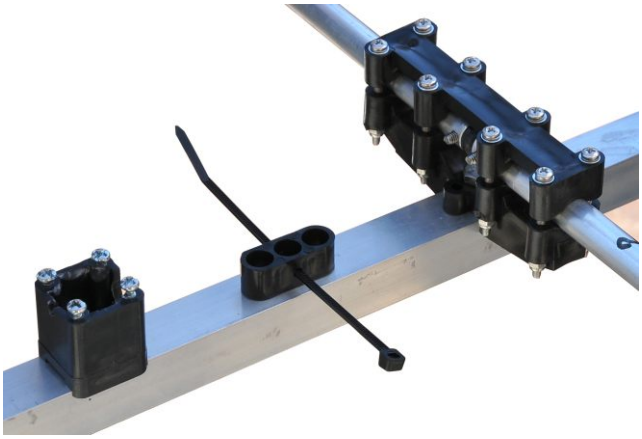


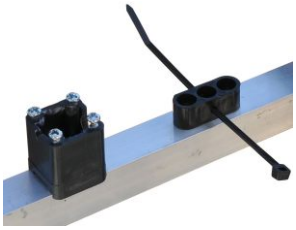


Starting with 1, paying special attention on orientation. Required torque 2.2 Nm.
If needed align elements and screw tightly. Elements must stand in one plane. Before tightening all screws, apply thread lock.

Attach the dipoles

Screw connector to connector holder.





Fasten balun with plastic zip tie to balun holder.

Not all pictures are related to the particular antenna.

Attach balun to the dipole.

Screw connector to connector holder

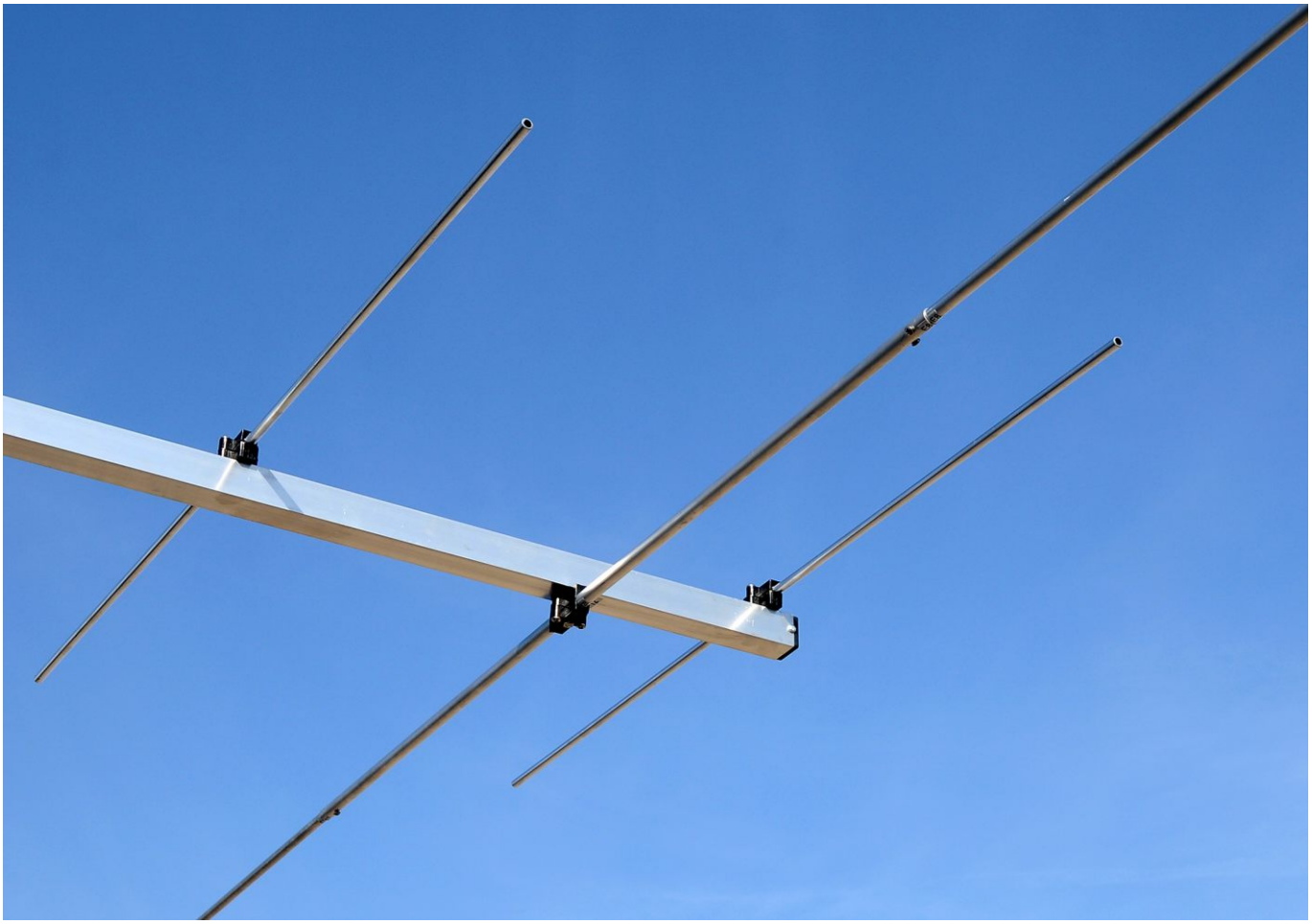
Fasten balun with plastic zip tie to balun holder.

Company Dual The largest antenna and ham radio equipment manufacturer in Serbia, established 1988
Trg puk. D. Gavrilovica 2, 37000 Krusevac, Serbia. **www.dual.rs** **https://antennas-amplifiers.com/**
info@antennas-amplifiers.com Tel:+381 37 3419 100, +381 69 3419 100

PA50-144-12-3-2CBP

Company Dual The largest antenna and ham radio equipment manufacturer in Serbia, established 1988
Trg puk. D. Gavrilovica 2, 37000 Krusevac, Serbia. **www.dual.rs** **https://antennas-amplifiers.com/**
info@antennas-amplifiers.com Tel:+381 37 3419 100, +381 69 3419 100

PA50-144-12-3-2CBP



Raise the antenna. Measure SWR. It must be as predicted or very close on all frequencies. Low SWR is a sign that you assembled everything correctly. Best DX.

Company Dual The largest antenna and ham radio equipment manufacturer in Serbia, established 1988
Trg puk. D. Gavrilovica 2, 37000 Krusevac, Serbia. **www.dual.rs** **https://antennas-amplifiers.com/**
info@antennas-amplifiers.com Tel:+381 37 3419 100, +381 69 3419 100