

Gain-Master™

Hi-Tech Fiberglass Base Station Antenna for Ham band

Gain-Master™ is a 0.625λ high tech fiberglass base station wide band antenna from 10m to 12m* amateur band, completely designed by electromagnetic simulation to achieve the maximum gain and optimize the radiation pattern and bandwidth. Engineered with the most advanced available technologies it is completely manufactured in Italy with high quality materials. The new design of the radiant element (**Patent Pending**) works like a central feeded dipole so all RF currents on the radiator are in-phase and the ground plane radials are not necessary. The coaxial coil at the bottom works like RF-choke for the optimum decoupling from mast and feeding line.

Made of telescopic fiberglass tubes, it is DC-grounded for the best protection from static discharges.

Gain-Master™ is the new reference standard in its class of antennas.

* 12m band covered with manual or automatic antenna tuner.

Electrical Data

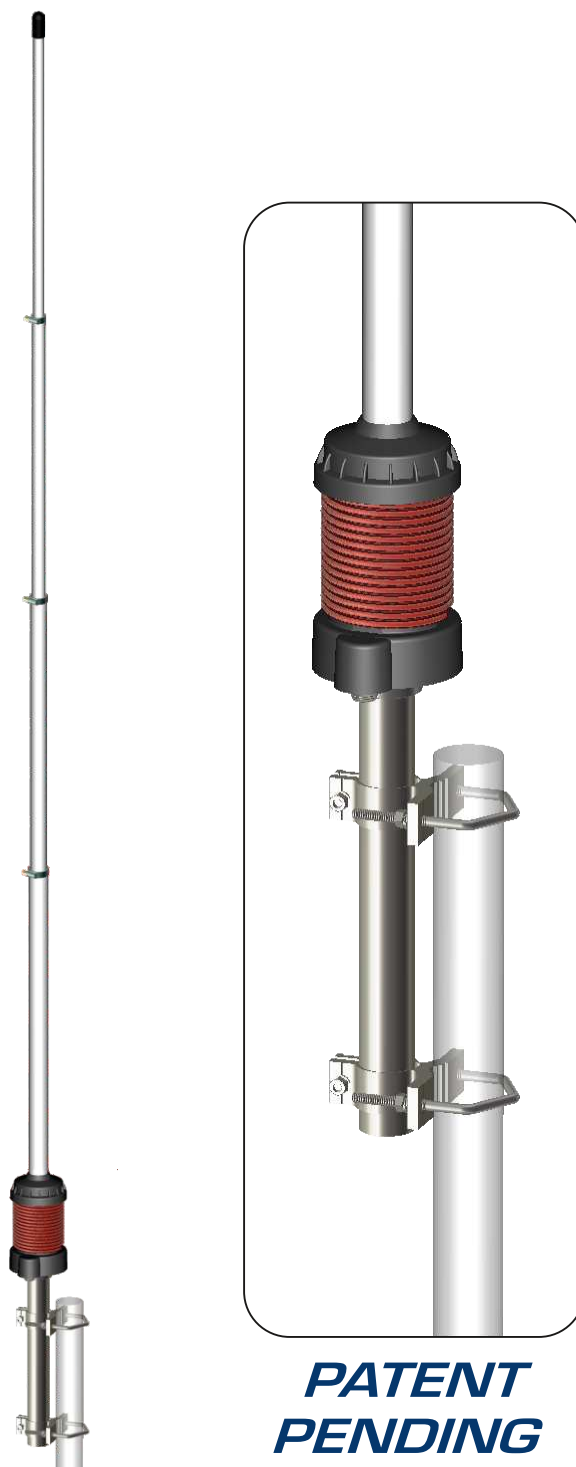
Type	0.625 λ center feeded vertical dipole
Frequency Range	25.5 - 30 MHz
@ SWR \leq 2.0	wide band from 10m to 12m* ham band
Impedance	50 Ω
Radiation	Omnidirectional
Polarization	Linear Vertical
Max Gain on the horizon	1 to 2 dB higher than conventional $5/8 \lambda$
Max Power	500 Watts (CW) continuous
Lightning protection	All metal parts are DC-grounded, the inner conductor shows a DC-short
Connector	UHF-female, PTFE insulator & gold plated central pin

Mechanical Data

Materials	Whip made of white fiberglass four sections composite tube, radiator made of copper wire and low loss coax cable, stainless steel hardware, anodized AW6060 aluminium, UV stabilized thermoplastic
Wind Resistance	w/bracing system: up to 160Km/h; 100mi/h
Height (approx.)	7360 mm; 24 ft with bracket, radiator 6850 mm; 22.5 ft
Packaging Dimensions	1950x100x130 mm; 77x4x5 in
Weight (approx.)	3 Kg; 6.6 lb
Mounting mast	\varnothing 35-54 mm; \varnothing 1.4-2.1 in side mast with "V" bolt

WARNING

INSTALLATION OF THIS PRODUCT NEAR POWER LINES IS DANGEROUS. FOR YOUR SAFETY AND BEFORE YOU BEGIN INSTALLATION, READ THE SEPARATE SAFETY INFORMATION SHEET.



**PATENT
PENDING**

More technical information on: www.gain-master.it
Gain-Master™ is a registered Trade Mark of SIRIO antenne s.r.l.



ITALIANO

Gentile Cliente, vogliamo ringraziarla per aver acquistato un antenna SIRIO Gain-Master™, siamo sicuri che le darà grandi soddisfazioni perché è stata progettata con le più avanzate tecnologie attualmente disponibili ed è costruita interamente in Italia con materiali di elevata qualità.

Gain-Master™ è il concentrato di quarant'anni di esperienza nel campo delle antenne che ci ha permesso di depositare la domanda di BREVETTO per questo prodotto unico che rimarrà uno standard di riferimento per molti anni a venire.

Come funziona Gain-Master™ (Brevetto Pendente)

Come mostrato in Fig.1 il segnale RF proveniente dal generatore percorre il cavo coassiale della bobina d'arresto, quindi prosegue lungo la prima parte dello stilo fino ad incontrare lo stub coassiale che funziona da adattatore d'impedenza, quindi prosegue fino ad arrivare alla terminazione della linea coassiale (centro di fase dell'antenna). A questo punto la parte di segnale presente sul conduttore centrale attraversa il condensatore e si propaga lungo la metà superiore della parte radiante mentre le correnti RF, che viaggiavano all'interno della schermatura del cavo, fuoriescono scorrendo all'esterno della schermatura e ridiscendono verso la bobina d'arresto dove l'elevata impedenza della bobina fa sì che si arrestino (funzionamento equivalente ad un dipolo alimentato nel suo centro).

Perché Gain-Master™ ha prestazioni migliori rispetto ad una 5/8λ convenzionale

In Fig.2 è illustrata la distribuzione di corrente di SIRIO Gain-Master™. La parte radiante di nuova concezione (Brevetto Pendente) si comporta come un dipolo alimentato al centro, di conseguenza tutte le correnti RF risultano in fase e concordi tra loro. Questo accorgimento ci ha permesso di aumentare l'efficienza della parte radiante di 0.6dB rispetto al guadagno massimo di un antenna 5/8λ convenzionale di pari lunghezza e contemporaneamente di avere un diagramma di irradiazione simile ad un dipolo con il suo massimo nel piano orizzontale (vedi confronto con antenna 5/8λ convenzionale Fig.3). Gain-Master™ presenta il massimo guadagno ottenibile per un'antenna 5/8λ e grazie al suo angolo di radiazione perfettamente orizzontale permette di migliorare le prestazioni, rispetto alle migliori antenne concorrenti, di almeno 1-2dB, che corrispondono al 26%-58% di segnale in più, come risulta evidente dal confronto diretto.

Altri vantaggi di Gain-Master™ sono:

E' realizzata e assemblata completamente in Italia con i migliori materiali disponibili, a partire dallo stilo che è realizzato in quattro sezioni da 1.92m di tubi telescopici composti in fibra di vetro con parete a triplo strato che rende Gain-Master™ molto più resistente e rigida rispetto alle concorrenti. Non necessita di radiali ground plane in quanto è un antenna bilanciata che funziona come un dipolo alimentato al centro. E' protetta contro le scariche statiche quindi risulta in cortocircuito DC. Grazie alla sua bobina di arresto (RF-Choke) posta alla base, Gain-Master™ risulta perfettamente disaccoppiata dalla sua struttura di sostegno (pali, tralici, etc.) con il beneficio di mantenere inalterati sia l'impedenza che il diagramma di irradiazione. Possiede una banda eccezionalmente larga di oltre 4,5MHz da 25.5 a 30MHz e non necessita di alcuna taratura entro tutta la banda dichiarata. Accetta una potenza massima continuata di 500Watts RMS.



ENGLISH

Dear Customer, we thank you for purchasing a SIRIO Gain-Master™ antenna, we are sure you will give great satisfaction because it was designed with the most advanced technologies currently available and it's entirely built in Italy with high quality materials.

Gain-Master™ is the result of four decades of experience in the antennas field; that allowed us to file the application PATENT for this unique product that will remain a standard reference for many years to come.

How Gain-Master™ works (Patent Pending)

As shown in Fig.1 the RF signal started from the generator run through the coaxial cable of the choke coil, then continue along the first part of the whip until it meet the coaxial stub that works as impedance matching, and then continue up to the termination of the coaxial line (antenna phase centre).

At this point, the signal on the inner conductor crosses the capacitor and propagates along the upper half of the radiation element. The RF current travelling inside the cable shield, protruding outside the screen and descend toward the choke coil where the high impedance stop it (in fact, it's equivalent to a centre-fed dipole).

Why Gain-Master™ has better performance compared to a conventional 5/8λ

Fig.2 shows the current distribution of SIRIO Gain-Master™. The new design of radiant element (Patent Pending) behaves as a centre-fed dipole, hence all currents are in phase. This arrangement allowed us to increase the maximum gain of 0.6dB in comparison to a conventional 5/8λ antenna with equal length; also it allowed us to have a radiation pattern similar to a dipole which has its maximum gain on the horizon (See comparison with conventional 5/8λ antenna, Fig.3). Gain-Master™ has the highest available gain for 5/8λ antenna and due to its angle of radiation perfectly horizontal, can improve performance, better than competing antennas, at least 1-2dB, corresponding to 26%-58% more signal, as shown by direct comparison.

Other Gain-Master™ advantages are:

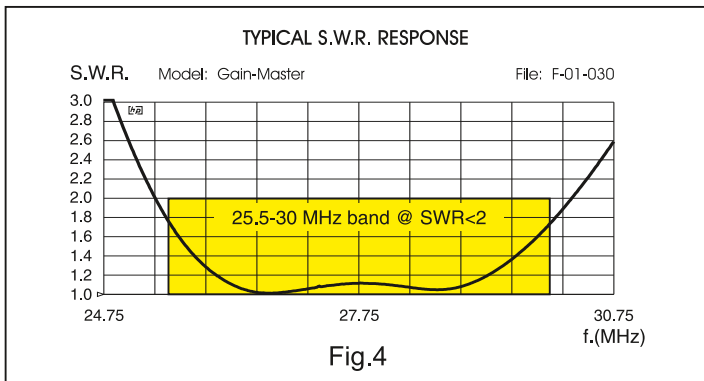
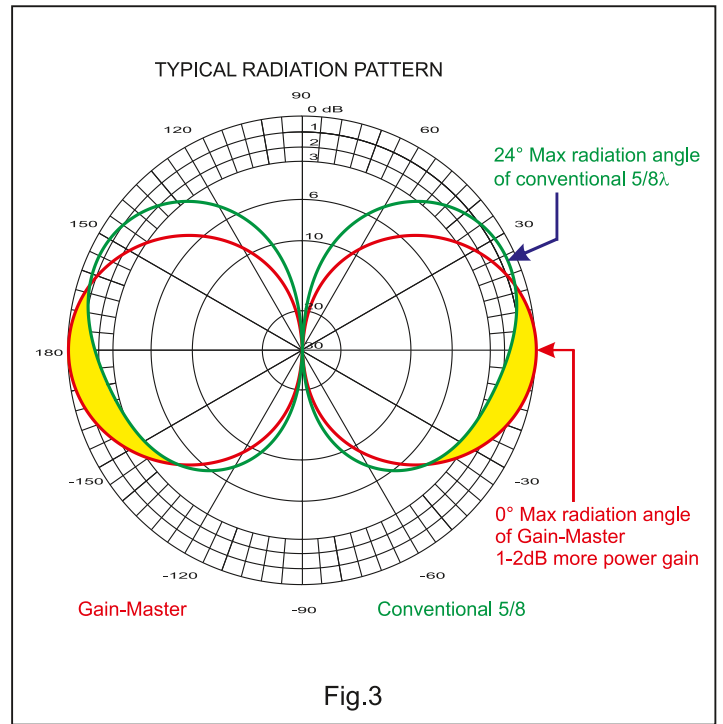
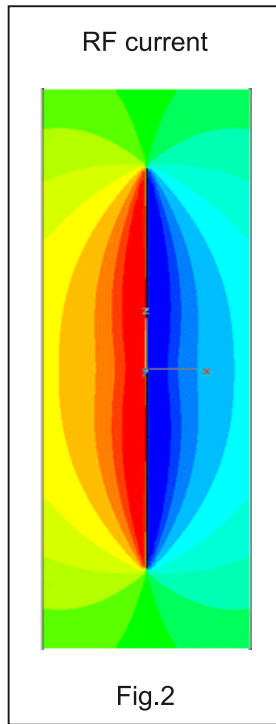
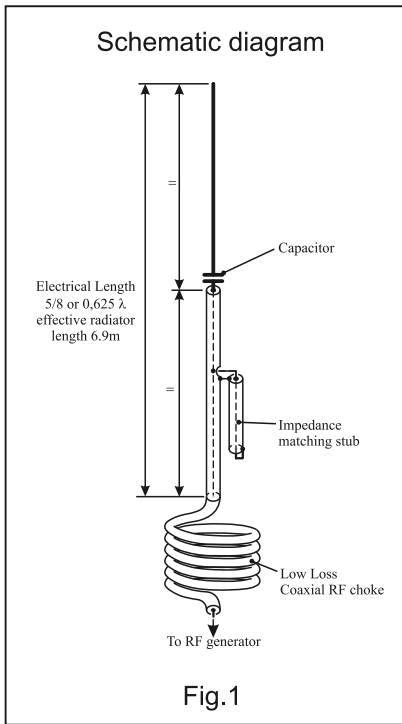
It's completely made and assembled in Italy with the finest materials available, starting from the whip which is carried out in four sections of 1.92m telescopic tubes with triple-layer fibreglass. It makes Gain-Master™ much more durable and rigid than the competitors.

It does not require ground plane radials because it is a balanced antenna that function as a centre-fed dipole. It's protected against static discharge by DC-short.

Thanks to it's cable coil (RF-Choke) at the base, Gain-Master™ is fully decoupled from its supporting structure (poles, towers, etc.) with the benefit of preserving both the impedance that the radiation pattern.

It has a exceptionally bandwidth of over 4.5MHz from 25.5 to 30MHz and does not requires any tuning. It accepts a maximum continuous power of 500Watts RMS.

Gain-Master™ Technical Informations



SAFETY FIRST: YOU CAN BE KILLED IF THIS ANTENNA COMES NEAR ELECTRIC POWER LINES. BEFORE DOING INSTALLATION, READ THIS MANUAL AND THE SUPPLIED SEPARATE SAFETY MULTI LANGUAGE INFORMATION SHEET.

SUGGESTION: We recommend to assemble the antenna on a flat ground open area. Use a good coax cable like BELDEN H1000R, AIRCOM PLUS or RG-213 as short as possible to get the best performance and we recommend to mount your antenna at minimum 3 meters above the roof, as far as possible from walls, power lines and other antennas.

TROUBLESHOOTING: Gain-Master is a pre-tuned antenna. It is factory checked one by one and it does not need any regulation. If you are unable to obtain an acceptable SWR reading from your antenna, follow these suggestions to try to solve the problem.

Check the coaxial cable and all its connections. Be sure that the cable is not pinched, shorted, broken or kinked.

Check if the equipments (Radio and SWR-meter) work properly. Make use of owner's manual for assistance in operating it.

Be sure that the antenna is installed at least 3 meters above the roof of the nearest building and 5-6 meters above or away from any metal objects in the area.

Parts List			
Pos	Q.ty	Part No	Description
1	1	SL05700	Wired coaxial radiator
2	1	-	Bottom section with coil
3	1	CH01407	8mm open key
4	1	CF02017	12x15x1920 fiberglass tube
5	1	CF02117	15.4x19x1920 fiberglass tube
6	1	CF02217	19.5x23.5x1920 fiberglass tube
7	3	FA00200	Ø 16-27mm AISI316 hose clamps
8	1	TE06900	Ø 14.8x17 radiator fixing part
9	1	VT13200	M4x6 AISI304 set screw cup point
10	1	CH00800	2 mm Allen key
11	1	TE06816	Ø 14.3 PVC top cap
12	1	IE560	self-adhering "DANGER" label
13	2	VT01300	M6x20 AISI304 exagonal head screw
14	2	ST04500	Extruded aluminium bracket
15	2	TI03100	M6x188 AISI304 V-bolt
16	6	DA01400	M6 AISI304 hexagonal nut
17	6	RO04200	M6 AISI304 spring lock washer

Mounting needed tools:

- n. 1 tape rules (meter)
- n. 1 screwdriver flat point
- n. 1 10 mm open jaw wrench
- n. 1 plier
- n. 1 electrical tape

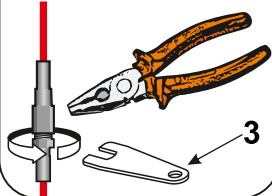
Gain-Master™ Mounting Instructions

Fase/Step 1

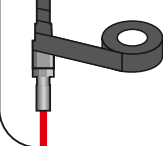
- Connessione del cavo radiante
Connection of wired radiator

1

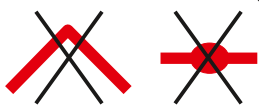
Avvitare i connettori
BEN SERRATI!
Screw on the connectors
WELL LOCKED!



Sigillare entrambi i
connettori con nastro
adesivo in PVC
Seal both connectors
with electrical
PVC tape



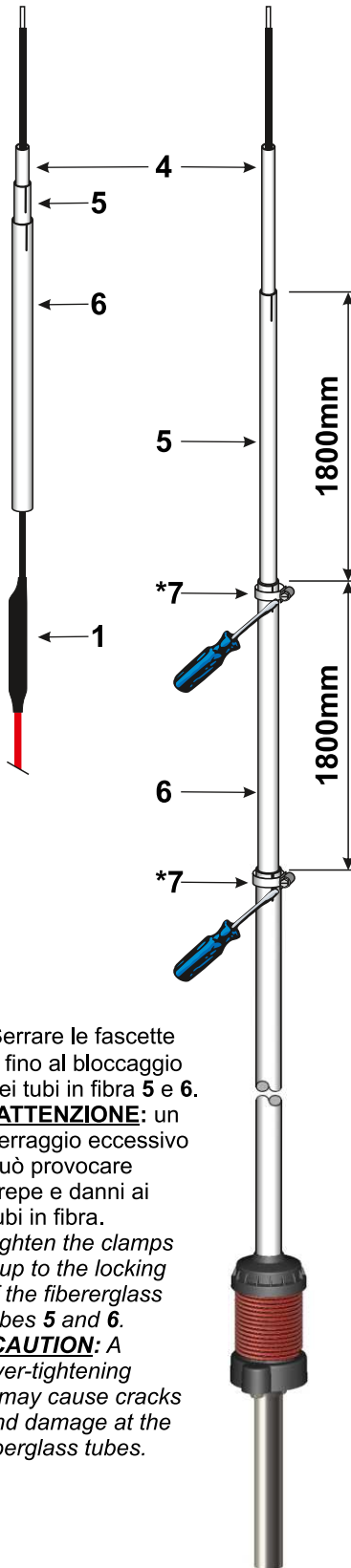
2



ATTENZIONE!
Non piegare o schiacciare
il cavo coassiale
ATTENTION!
Do not bend or pinch
the coaxial cable.

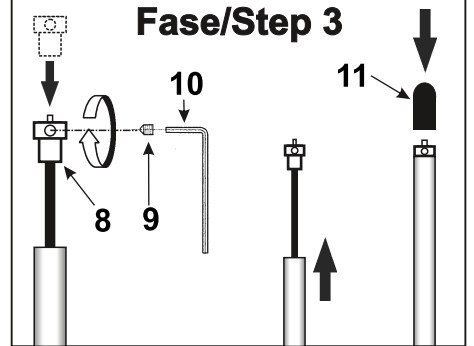
Fase/Step 2

- Inserimento tubi sul cablaggio
Insert the tubes on wiring



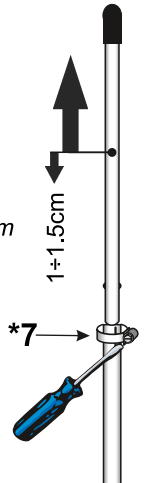
- Serrare le fascette
7 fino al bloccaggio
dei tubi in fibra 5 e 6.
***ATTENZIONE:** un
serraggio eccessivo
può provocare
crepe e danni ai
tubi in fibra.
Tighten the clamps
7 up to the locking
of the fiberglass
tubes 5 and 6.
***CAUTION:** A
over-tightening
it may cause cracks
and damage at the
fiberglass tubes.

Fase/Step 3



Fase/Step 4

- Sfilare il tubo fino a
tendere il cavo quindi
rientrare di 1÷1.5cm.
**NOTA: IL CAVO NON
DEVE ESSERE TESO**
Pull the tube until
then stretch the cable
and then return 1÷1.5mm
**REMARK: THE CABLE
MUST NOT BE TIGHT**



Fase/ Step 5

- Applicare
l'etichetta
DANGER in un
punto visibile
Apply the
DANGER
sticker in a
visible point



12



Robusto palo di montaggio
Ø 35-54mm (non fornito)
Strong steel mast
Ø 35-54mm (not supplied)