DX 500 wideband antenna system by RF Systems

The DX 500 is a very small active receiving antenna with a frequency range covering 30 kHz to 550 MHz. It is powered by either 12 Volt DC battery supply or 230 Volt ac mains supply. The DX 500 antenna is very unobtrusive and can be mounted in nearly every situation with a large range of optional mounting devices. Several indoorunits make it possible to connect the antenna to different receiver configurations, such as a shortwave receiver, a wideband scanner, a computer controlled receiver or up to three receivers to be used at the same time, whereby each receiver operates as though it is connected to its own independent antenna.

Features

* Miniature active wideband receiving antenna for long-wave, medium-wave, short-wave, VHF - Low, FM, Air, VHF - High and UHF
* Only 40 cm in height, and 35 mm in diameter
* Frequency range 30 kHz – 550 MHz
* Omni-directional reception pattern, vertical polarisation
* High intercept points, low noise
* Gain increasing with the increase in frequency, hence no overload problems from strong shortwave stations and optimum VHF – UHF reception
* Smal profile that attracts no attention, can be placed everywhere
* Stainless steel antenna tube, completely weatherproof
* Several mounting brackets available
* Several indoorunits at choice with a single wideband- or multiple outputs for up to 3 receivers
* Optional: An in – line amplifier for long antenna cables or stronger signals on VHF – UHF. An attenuator which adjusts the signallevel on short-wave, without influencing VHF – UHF reception. Splitters for 2 receivers to connect to a single output of one of the indoorunits.
* Powersupply 12 Volt DC or 230 Volt ac mains (110 Volt ac optional)
* Optional: DC converter to use the DX 500 with 24 V DC battery supply
* Comes complete with 12 mtrs Mil-spec coaxial antenna cable and a no – solder plug

Antenna problems

It is often very hard to place an antenna. For many modern buildings and appartments installing an antenna is either not allowed or the space available is very limited. The new wideband scanners and computer-controlled receivers with frequency ranges from long-wave through to UHF have created another problem: antennas with good reception on all frequencies over that enormous range do not exist. The DX 500 antenna system is the solution for both these problems. The DX 500 is a very small antenna, constructed as a stainless steel tube with a height of just 40 cm and a diameter of only 35 mm. Several mounting brackets make it possible to mount the antenna nearly anywhere: on a balcony rail, a short mast, a wall, hanging on the balcony above yours, a raingutter, a tilted plane like a windowsill, or in front of a window. Thanks to the very small dimensions, the antenna attracts no attention. In sitiuations where it is important that no one can ´´see´´ the antenna, the DX 500 can be camouflaged futher by painting it in the colours of the railing- or wall.

DX 500

The DX 500 antenna receives ´´everything´´ between 30 kHz and 550 MHz: long-wave, beacons, NAVTEX, medium-wave, short-wave, CB radio, VHF-low with radio amateurs and police networks, the FM broadcast band, civil- and militairy airbands, the VHF high bands with amateurs and other communication services, 433 MHz shortrange devices like cordless headphones, 446 MHz PMR handheld transceivers, 70 cm band radio amateurs and other UHF communications services. This makes the DX 500 an ideal antenna for wideband scanners and computer controlled receivers like Winradio and ICOM PCR 1000. But the DX 500 can also be used with one single receiver, such as a shortwave receiver, a scanner or an airband receiver or a simultaneous combination of these types of receivers.

The DX 500 antenna has several remarkable features. Short-wave signals are usually very strong, and VHF – UHF signals are often weaker. Therefore the antenna has a frequency dependent gain, increasing from + 3 dB at 30 kHz to + 12 dB at 500 MHz. The advantage is that strong shortwave stations do not overload the receiver while the weak VHF – UHF stations are extra amplified. Very important is that the DX 500 has a constant efficiency over the whole frequency range. Therefore the DX 500 antenna receives every frequency equally well unlike many other antennas which are only sensitive on one or a limited number of frequencybands (mostly amateurbands). The high intercept

points: + 55 dBm (2 nd order) and + 27 dBm (3 rd order) ensure that reception is not disturbed by intermodulation products. The low noisefigure (< 3,5 dB at 500 MHz) ensures that weak DX stations are also received. The antenna has three - fold protection against static discharges that can occur with lightnings in the vicinity; however, it is necessary that the antenna is grounded to get full protection and optimum reception results.

A system adaptable to every situation

The DX 500 is an antenna system because it can be adapted to the users personal needs. Depending of the situation a choice can be made between several mountings: from a low-cost antenna clamp to mount the DX 500 on a standing pipe or balcony rail, to a high-grade seawater resistant, tilting bracket for the mounting on vertical-, horizontal-, and tilted planes like walls, a roof or a windowsill.

For receivers with an antenna input capable of delivering 12 Volt DC feed for active antennas (like the Lowe HF 150 marine, the Lowe HF 350 and the Nasa HF 4), no other parts besides the antennaclamp are neccessary. For all other receivers an indoorunit is required. The indoorunit delivers the supply voltage to the antenna and the received signals to the receiver: several types are available.

Indoorunits

The DX 500/1 (12 Vdc) and the DX 500/1/230 (230 Vac, 110 V ac optional) are indoor units with one wideband output for a single receiver, like a short-wave receiver, a scanner, a computer controlled receiver or any other receiver in the 30 kHz - 550 MHz frequency range.

The DX 500/2 (12 V dc) has 2 outputs: one for a communications receiver for LW, MW and short-wave from 30 kHz to 32 MHz, the other with a range from 32 MHz - 550 MHz for a scanner or other VHF - UHF receiver. Both receivers operate as if they are connected to their own antenna: the built-in duplexer ensures no mutual influence.

The DX 500/3 (12 V dc) indoorunit has 3 outputs: output one for long-wave and NAVTEX from 30 kHz - 520 kHz, output two for medium- and short-wave from 520 kHz to 32 MHz and a third output from 32 MHz to 550 MHz. The built-in triplexer ensures that every receiver works as if it is connected to its own antenna. There is no need to connect all three receivers: the unit works also with one or two receivers. All indoorunits are protected against short-circuits of the antenna cable and the outputs, and wrong polarisation of the 12 V dc supply and high voltage spikes out of the 12 V supply or 230 V (110 V) mains. Every indoorunit has also a built-in filter which suppresses interference from the 12 Volt dc supply or the mains. Using the optional SP - 1 (50 kHz - 50 MHz) or SP - 3 (10 MHz - 2500 MHz) splitters make it possible to connect two receivers with the same frequency range to one indoor unit output. This allows for the use of two scanners or two short-wave receivers without mutual influence to the wideband output of the DX 500/1 indoor unit.

Special modules

For the DX 500 antenna system several special modules are available. The DX 500/AMP is an amplifier which can be inserted in the antenna cable to compensate the losses of extended cable lengths or to get stronger signals in the VHF - UHF bands.

The DX 500/ATT module can adjust the output level of the antenna on the short-wavebands only; the VHF and UHF bands are not attenuated. The advantage of this module is that a wideband scanner will not become overloaded by strong short-wave stations when the scanner is switched to full sensitivity in order to receive weak VHF - UHF stations. This module can also be useful for short-wave receivers because a continuous adjustable signallevel is often preferred to the single value attenuator as used in most short-wave receivers.

The DX 500/2412 is a low-noise DC converter module which offers the possibility to use the DX 500 on trucks and ships with 24 Volt dc boardnets.

The DX 500/ADAP is a stabilised, low-noise, short-circuit proof wall adapter to use the 12 Volt dc indoor units on 230 Volt ac mains supply.

Interconnection cables

The DX 500 antenna comes complete with 12 mtrs Mil-spec coaxial antenna cable and a solderless plug. If the antenna has to be placed higher or further away, the cable can be extended with the DX 500/extension set, which includes 15 mtrs mil-spec coaxial cable and a no - solder waterproof

connection. Receivers are equipped with different types of antenna connectors, therefore interconnection cables between the indoorunits and the receivers are not included. These cables can be made by yourselves, because all the plugs are available. For those who do not want to solder, ready-made interconnection cables with the most used plugs are available. Because computer-controlled receivers often suffer from interference, a number of these cables have a ferrite filter on both sides that suppresses interference on the outside of the cable.

Specifications and system overview

RF Systems is acknowledged as a world-leader in the active antenna field. RF Systems antennas are in use at governmental organisations, militairy- and other professional installations. The DX 500 antenna system was developed with a grant from the Dutch government. The DX 500 makes use of the latest microwave technology and its specifications fulfils all the requirements of professional users. Your dealer has a special datasheet with a detailed description and all the specifications of the DX 500 antenna system. This datasheet gives also an overview of all the available components and interconnection cables.

More Info.
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