

# HF ANTENNAS

HF COMMERCIAL  
SUPPORT



## HF ANTENNAS

One of the most critical aspects of good HF communications is the choice and deployment of the antenna system. Care taken in the selection of the antenna, its location and installation, and matching to the associated transmitter are the most important factors in ensuring strong, reliable communications.

The antenna system should be carefully matched and the VSWR should not exceed 1.5:1 for best results. Datron realizes the importance of using the proper antenna, and has a wide range of experience in determining the correct antenna for the specific user application.

### Fixed Station Antennas

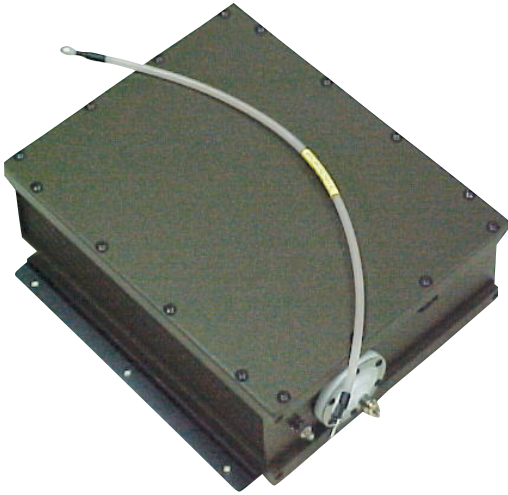
Datron's ABB-series antennas for the TW7000 HF transceiver are 100W and 1 kW fixed-station, broadband antennas with proven medium-range performance up to 2000 miles. They cover the MF and HF frequency ranges from 100 kHz-30 MHz in receive and from 1.6-30 MHz in transmit. The antennas don't require an antenna tuner and allow operation on all channels of the transceiver.

The ABB-series antenna is offered in two different lengths. The standard antenna length is 142 ft. (43.3m) while the shorter one is 112 ft. (34.1m). The shorter antenna is useful where space is limited. The standard, longer antenna provides better efficiency, particularly at lower frequencies, and is recommended where space permits.

Tactical mast kits are available for the ABB-series antennas containing the mast sections, guying equipment and tools necessary for installation. Optional RF surge suppressers and low-loss coaxial cable are also available.

For long range communications, Datron offers two fixed station, narrow-band whip antennas for use with the TW7000. The 35 ft. (10.5m) fiberglass AW10 antenna for marine and land usage and the 32 ft. (9.6m) RA-PAS portable antenna. Both provide lower angle radiation which results in

- Fixed Station, Mobile, Tactical
- Broadband or Narrowband
- Power Handling up to 1 kW
- NVIS Applications
- Rapid Deployment in the Field
- Applicable to any HF Transceiver
- 1.6 to 30 Mhz Frequency Coverage



- **Frequency Agile**
- **ALE Support**
- **Easy to Install**
- **Multiple Configurations**
- **125W and 1kW Models**

longer range communications. Since the electrical length of each antenna is small compared to the wavelength of the HF signal, they require an antenna tuner to provide an electrically longer antenna and to match the antenna to the 50 ohm resistance of the transmitter. Both antennas cover the 1.6-30 MHz HF frequency range and require a good ground plane.

#### Mobile Antennas

Datron offers whip antennas for use on vehicles including the MAR-12, MAR-16, and MAR-16T. These antennas are heavy-duty, flexible, fiberglass antennas that are ideal for mobile usage. They require an antenna tuner and a good ground plane which is typically provided by the metal on the vehicle. For best communications performance, it is important to secure the antennas to a portion of the vehicle with a contiguous length of metal to ensure that a good ground plane is provided.

The 16 ft. MAR-16 includes a flexible spring base and mobile mounting bracket. The MAR-16T includes a spring base and ratcheting mount to allow the antenna to be easily tilted for Near Vertical Incidence Skywave (NVIS) operation to help alleviate the loss of communications oftentimes encountered in the skip zone region.

#### Tactical Antennas

Datron offers a variety of tactical whip, dipole, and long wire antennas for use with the PRC1099A and PRC7700 HF manpack radios. The standard antenna for tactical HF use is the AT-271A/U 10-foot whip. This antenna is specifically designed to be tuned by the internal matching networks in the radios over the 1.6-30 MHz frequency range.

Datron also offers the ALD narrowband, tactical dipole antenna for situations where a rapidly deployable antenna is required. This antenna can be easily erected with the optimum length for the particular frequency of operation to provide resonance and superior gain. It requires an antenna tuner.

## 701407 SERIES BROADBAND HF ANTENNAS

A wide variety of missions can be handled with any of these easily deployable broadband HF antennas, from base stations to reconnaissance. They offer fully automatic, low SWR operation over the entire HF band without need for an antenna tuner/coupler. They are frequency agile and fully supports ALE at either 2 channels/second or 5 channels/second scan rates. They can be installed to support NVIS, medium and long distance communications.

Besides impressive performance transmitting, this antenna design also delivers when it comes to reception. The superior signal to noise ratio, loop configuration, and a high impedance terminator allows receiving the weakest signals that other antennas would lose in the background noise. You even get automatic static bleed off from wind or thunderstorms.

There are no mechanical parts like relays or motors to wear out, as in some other broadband tuning systems. Ready to use right out of the box, has no taps to change, no measuring, nothing to tune. These antennas are fast and simple to deploy.

The 701407 series is designed for commercial radio equipment and uses SO239 RF connectors. The 701407 supports 125 Watts continuous while the 701407-1 supports 1kW continuous.

Datron can supply optional mast kits, RF surge suppressors and low-loss RF coaxial cable.

### MAIN SPECIFICATIONS

VSWR:	Less than 2:1 between 1.8 MHz and 30 MHz; extended coverage to 60 MHz @ 3:1 VSWR
TUNER:	No antenna tuner required
POWER HANDLING:	125W continuous for 701407 and 1kW continuous for 701407-1
CONSTRUCTION:	#14 stranded stainless steel
CONNECTIVITY:	50 ohm input with SO-239 connector
ASSEMBLY:	Comes completely assembled, easy to install Install as inverted V, flat top, or "sloper"
MAST:	Optional Mast kits available

\* Subject to export regulations  
Specifications subject to change without notice – rev 0111  
Made in the USA



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### Fixed Station, Broadband Antennas

PART NO.	LENGTH	RATED POWER	INPUT/LOAD	APPLICATION
ABB100A	142 ft. (43.3m)	125 W	100 ft. (30.5m) RG-213 with PL-259 (UHF) connector	Fixed station, low power, better low frequency efficiency than the ABB100B
ABB100B	112 ft. (34.1m)	125 W	100 ft. (30.5m) RG-213 with PL-259 (UHF) connector	Fixed station, low power
ABB1000A	142 ft. (43.3m)	1000 W	100 ft. (30.5m) RG-213 with PL-259 (UHF) connector	Fixed station, high power, better low frequency efficiency than the ABB1000B
ABB1000B	112 ft. (34.1m)	1000 W	100 ft. (30.5m) RG-213 with PL-259 (UHF) connector	Fixed station, high power
701407	90 ft. (27.4m)	125 W	SO239 Connector – Coax not supplied	Fixed Station
701407-1	90 ft. (27.4m)	1000 W	SO239 Connector – Coax not supplied	Fixed Station

### Narrowband, Whip Antennas

PART NO.	LENGTH	RATED POWER	MOUNTING	APPLICATION
MAR-12	12 ft. (3.6m)	1000W	Flexible Spring Base with side-mount bracket, feed-thru design	Vehicular; medium-range in vertical attitude or NVIS when tied down in semi-horizontal plane.
MAR-16	16 ft. (4.8m)	1000W	Flexible Spring Base with side-mount bracket, feed-thru design	Vehicular; long-range in vertical attitude or NVIS when tied down in semi-horizontal plane.
RA-MAS	16 ft. (4.8m)	400 W	Rigid Base with flange bracket, feed-thru design	Vehicular; long-range; minimal NVIS component
RA-PAS	32 ft. (9.7m)	1000 W	Rigid Base meant for horizontal surface mounting in fixed station installations; side-fed	Transportable Fixed Station; long-range
MAR-16T	16 ft. (4.8m)	1000 W	Flexible spring base and tilt whip adapter with side-mount bracket, feed-thru design	Vehicular; long-range or NVIS. Antenna can be locked in one of four separate positions from vertical to horizontal
AW7	23 ft. (7.0m)	1000 W	Anodized aluminum mounting flange, side-fed	Fixed station or marine; long-range
AW10	35 ft. (10.6m)	5000 W	Galvanized ductile iron mounting flange, side-fed	Fixed station or marine; long-range applications
AWM	9 ft. (2.7m)	150 W	Mounting base with spring and insulator	Vehicular; medium-range; for low-power systems
SL3-17-DWC	6.5ft. (2.0m)	125w	Metal base plate	Fixed stations, NVIS

### Tactical Whip and Deployable Dipole Antennas

PART NO.	DESCRIPTION	INPUT	APPLICATION
AT-271A/U	10 ft. (3.0m) collapsible, sectional, Whip	Direct connection to radio whip antenna connector	Tactical, PRC1099A standard antenna; used with internal 1099A radio tuner
ALW-R	100 ft. (30.5m) Rugged long-wire antenna kit	Comes with hang-up rope, counterpoise, and long-wire adapter	Tactical, can use with 1099A internal antenna tuner
ALD-REM	Lightweight dipole kit with longwire adapter and counterpoise	25 ft. (7.6m) of 300 ohm transmission line, with counterpoise and long-wire adapter	Tactical, can use with 1099A internal antenna tuner; provides NVIS operation
LWA	Long-wire Adapter	Connects to PRC1099A antenna port	For use with long-wire antennas and PRC1099A internal tuner
AGK	50 ft. (15.2m) braided 2-wire set	Connect to ground connector on 1099A radio	Tactical antenna grounding kit
NVISKIT	Transportable, deployable Near Vertical Incidence Skywave (NVIS) antenna (AS-2259) with mounting base	Connects to PRC1099A antenna port connector or output of external antenna tuner (when external amplifier is used)	Tactical NVIS usage; deployable by 2 people in 20 minutes
ALD	Lightweight Dipole Kit	33 ft. (10.1m) RG-58 feed line; connects to 50 ohm port on PRC1099A	Tactical, fixed-frequency, long range
AD1	Single-frequency dipole	50 ft. (15.2m) RG213 feed line	Fixed Station, fixed-frequency, long-range
AD2	Two-frequency dipole	50 ft. (15.2m) RG213 feed line	Fixed Station, fixed-frequency, long-range
AD3	Three-frequency dipole	50 ft. (15.2m) RG213 feed line	Fixed Station, fixed-frequency, long-range
AD4	Four-frequency dipole	50 ft. (15.2m) RG213 feed line	Fixed Station, fixed-frequency, long-range
ALW	Long-wire antenna kit	75 ft. (22.8m) with hang-up rope and insulators	Fixed station; requires antenna tuner