



## S + C bands 1.8 m ANTENNA & ANTENNA CONTROL UNIT



### DESCRIPTION

This station is designed for signals Receive in the S + C frequency bands.

A friendly Man Machine Interface installed on a PC allows its remote Monitoring & Control via a RS232 serial or TCP/IP link.

**Receive** is made through a **1.8 m dish** equipped with GPS tracking & RF tracking feed in RHCP & LHCP including 0.7 dB NF LNA, and filters.

Target tracking can be achieved through the three main modes: **GPS tracking, Manual (through Joystick) and Auto-tracking**

RF Auto Tracking can be performed through either AM/AGC signals delivered by the Telemetry Receiver or a dedicated 2 channels S + C Tracking Receiver.

The station is mainly composed of the following parts:

- External two-axis auto-tracking antenna

Electronic compass for automatic north reference. Electronic & spirit level for automatic set-up **in option** for mobile station.

- Antenna Drive Unit composed of three drawers: the microcontroller drawer, the power supply drawer and the servo power drawer.
- Antenna Control Unit (PC under Windows OS)

### SPECIFICATIONS

#### TM antenna

- Type: 1.8 m dish with primary feed (Single Channels Monopulse)
- Frequency band: 2200-2400 MHz (S band)  
: 5090– 5250 MHz (C band)
- G/T: 5.5 dB/K typ. @ 2.3 GHz and 15°EI angle (23°C)  
: 10.5 dB/K typ. @ 5170 MHz and 15°EI angle (23°C)
- Polarization: RHCP and LHCP
- 3 dB beamwidth: 5.6° typ. @ 2.3 GHz  
: 2.5° typ. @ 5.17 GHz
- Side lobes: < 17 dB

#### Pedestal

- Type: Elevation over Azimuth
- Elevation range: -5° to +90° or -5° to +185° (in option)
- Azimuth range: unlimited (continuous rotation with rotary joint/slip ring assembly)
- Rotation speed max.:  $\geq 25^\circ/\text{s}$  on both axes
- Acceleration max.:  $\geq 30^\circ/\text{s}^2$  typ. on both axes
- Pointing accuracy:  $\pm 0.08^\circ$  (in manual mode)
- Optical encoders: 12 bits

#### Environmental

- Storage temperature: -40° to +70°C
- Operating temperature: -30 to +50°C (outdoor), extended range in option.
- Rain: up to 50 mm/hour
- Relative humidity: 0 to 100% (outdoor)
- Operating wind load: 90 km/h
- Survival wind load: 144 Km/h (up to 210 Km/h in option)

#### Mechanical

- Antenna dimensions: 1.8 m
- Total weight (pedestal and dishes): < 300 kg
- Color (antenna and pedestal): RAL9003 (white) or other upon request.

#### Electrical

- Power supply: through Control & Servo Power Rack
- Pedestal peak consumption: 220 VAC, 50 Hz, 1.2 kVA

#### OPTIONS:

- Omnidirectional antennas for far field or zenith pass operating
- Video/IR system installed at the back of the dish.
- Optical encoders: 13 bits
- Electronic compass & electronic spirit levels
- Dry air pressurization unit for pedestal and feed
- Mechanical structure adapted to mobile version (trailer or shelter mounting)

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## S + C Bands 1.8 m ANTENNA & ANTENNA CONTROL UNIT



### ANTENNA CONTROL UNIT (ACU)

The dedicated software, through the color display, provides a user friendly interface (see below non contractual example of ACU screen).

The software can easily be customized for user's needs.

Touch screen with integrated PC in option

### MONITORING INFORMATION available through the PC Man-Machine Interface

- Elevation and Azimuth pedestal angles
- Selected operating mode
- Tracking signal level (when Auto-tracking mode is active)
- Tracking errors
- Tracking polarization in operation
- Alarms
- Logbook : events (El, Az, Time, antenna speed, received signal level, tracking errors, operating modes...) are recorded with 50ms step.



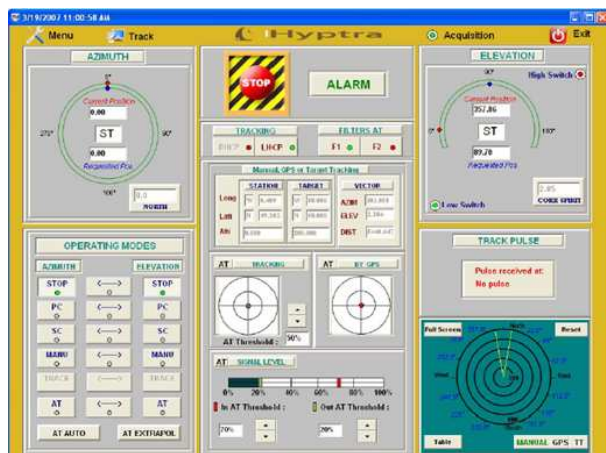
### OPERATING MODES available through the PC Man- Machine Interface

Elevation and Azimuth axes are independent :

- **STOP** : Stop on El. and Az. ; brakes are switched on
- **MANUAL** : El. and Az. axes reach the angular positions received through the PC (0 to 360° with 12 bits ; s step = 0.08°)
- **SLEW** : El. and Az. axes speed adjustment(-20 to +20% with 8 bits ; step = 0.16°/s)
- **AUTO-TRACKING**: manual or automatic (with tracking error angle criteria or HF signal level criteria)
- **GPS** : The ACU elaborates El. and/or Az. angles through the target GPS information received by RS232 or TCP/IP link under **NMEA 0183 standard**. The target range is calculated by the ACU and displayed on the screen.
- **SLAVE (option)**: The ACU elaborates El. and/or Az. angles through the SLAVE information received by TCP/IP link.
- **MEMORY TRACK (with AT mode)**: as back up mode in case of auto-tracking lost. When auto-tracking is lost, the antenna continues traveling of Az and El with extrapolated speed.
- **SEARCH (option)**: searching around current antenna location (spiral scan)
- **PROGRAM TRACK (option)**: Tracking following a predicted trajectory download from computer.
- **PRESET** : Up to 10 El. and Az. angles can be stored
- **SURVIVAL** : El. 90°, brakes applied on El. and Az.
- **INITIALIZATION** : The ACU calculates the correction to be applied according to the electronic spirit level and compass information.
- **AUTOTRACKING SUPPORTED BY GPS (with AT mode)**: When GPS data from aircraft are available, the operator through the Man Machine Interface, can follow the aircraft and locates the aircraft into the 5 dB antenna pattern.

Starting in AutoTracking mode, if for any reason, the aircraft reaches this " 5 dB circle" then the antenna will automatically switch to GPS tracking mode.

Then when antenna will cross the 2 dB circle on its way back, the antenna will switch automatically in Auto-Tracking mode.



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