S + C bands 3 m ANTENNA
&
ANTENNA CONTROL UNIT

Tracking Down Excellence

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 **3 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.

In option the feed can be equipped with one **Acquisition-Aid Antenna** mounted directly at the rear of the main antenna feed.

The pedestal is equipped with **Digital Servo Amplifiers**, **brushless servomotors**, **Digital Microcontroller boards** for Tracking Servo Loop and TCP/IP communication.

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.

- Control & servo power boards (**integrated into the pedestal)**
- Antenna Control Unit (PC under Windows)

SPECIFICATIONS

TM antenna

- Type: 3 m dish with primary feed (Single Channels Monopulse)
- Frequency bands:2200-2400 MHz (S band)
  : 5090– 5250 MHz (C band)
- G/T: 10.5 dB/K@ 2300 GHz 15° Elevation and 23°C
  : 15.5 dB/K@ 5170 MHz 15° Elevation and 23°C
- Polarization: RHCP and LHCP
- 3 dB beamwidth: 2.5°typ. @ 2.3 GHz
- 3 dB beamwidth: 1.2°typ. @ 5.17 GHz
- V.S.W.R < 1.5
- Side lobes: < 17 dB

Pedestal

- Type: Elevation over Azimuth
- Elevation range: -5°to +90°or –5°to +185°
- Azimuth range: unlimited (continuous rotation with rotary joint/slip ring assembly)
- Rotation speed max.: ≥ 25°/s on both axes
- Acceleration max.: ≥ 30°/s ^{2} typ. on both axes
- Pointing accuracy: ± 0.005°(in manual mode)
- Tracking accuracy: 0.15°at 25°/s
- Optical encoders: 16 bits

Environmental

- Storage temperature: -40°to +70°C
- Operating temperature: -30°C 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: 3.1 m
- Total weight (pedestal and dishes): < 950 kg
- Color (antenna and pedestal): RAL9003 (white) or other upon request.

Electrical

- Power supply: 220—230 VAC, 50—60 Hz
- Pedestal peak consumption: 3.2 KVA

OPTIONS:

- Omni directional antennas for far field or zenith pass operating
- Video/IR system installed at the back of the dish.
- Electronic compass & electronic spirit levels
- High antenna travel speed & acceleration
- Acquisition-Aid Antenna
- Dry air pressurization unit for pedestal, feed and video camera

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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
- Main antenna / Acquisition-Aid antenna status
- Alarms
- Logbook : events (El, Az, Time, antenna speed, received signal level, tracking errors, operating modes…) are recorded with 50ms step.

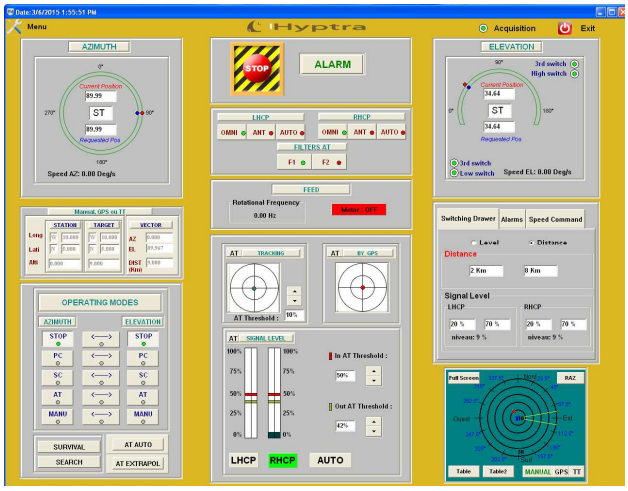
OPERATING MODES available through the PC Man- Machine Interface

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
- ***SLEW*** : El. and Az. axes speed adjustment(-25 to +25°/s 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.
- ***Acquisition-Aid Antenna (option)***: manual or automatic selection between the main antenna and the Acuisition-Aid Antenna.
- ***PRESET*** : Up to 100 El. and Az. angles can be stored
- ***SURVIVAL*** *(STOW)*: 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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