INTRAC™ 505 Antenna Control Unit

Antenna Tracking Controller

Features

- High performance, maximum flexibility and high reliability for antennas up to 35 meters in diameter
- INTRAC™ orbit modelling algorithm offers the highest tracking Integrity
- Accurately tracks satellites with orbital inclinations up to and beyond 10°
- Average tracking signal degradation less than 0.05dB
- Accepts very high resolution resolver transducers down to 2 arc seconds (19 bits)
- Compatible with INTELSAT and EUTELSAT SCPC tracking specifications
- Tolerates signal fluctuations that defeat step track and memory track controllers
- Resilient to tracking signal loss, maintaining integrity for up to 72 hours
- Non-volatile memory ensures tracking is resumed after power failure
- Full M&C control via RS232 / RS422 interface

Overview

The INTRAC™ 505 Antenna Control Unit enables satellite earth station antennas to accurately track geosynchronous satellites with orbital inclinations up to and beyond 10°. The unit offers superior tracking integrity with practically any antenna C or Ku-Band up to 35 meters in diameter. The control unit uses the INTRAC (INtelligent TRacking Antenna Control) algorithm which has been developed and refined over a 20 year period. It provides a tracking accuracy equivalent to a monopulse controller at a fraction of the cost. It offers exceptional immunity to propagation disturbances and fades, maintaining reliable pointing accuracy even at low angles of elevation in regions of high scintillation.

The INTRAC™ 505 is compatible with INTELSAT and EUTELSAT SCPC tracking specifications. It is able to tolerate signal fluctuations that defeat step track and memory track controllers and is resilient to loss of tracking signal, the unit will maintain tracking integrity for blackout periods up to 72 hours. The non-volatile memory ensures that accurate tracking is resumed after power failure.

The unit is simple to install, reducing set up costs. It features full remote monitoring and control via an RS232 / RS422 interface and supports a wide range a range of front panel selectable operating modes, including satellite acquisition and operation in program track mode using INTELSAT IESS-412 or NORAD data.

The INTRAC™ 505 has a very high angular resolution capability and with suitable resolver position transducers it can determine movements as small as 2 seconds of arc (19 bits). The unit can also accept optical encoder (21 bits resolution) inputs as an option. The INTRAC 505 offers dual axis and polarization control. It can drive both axes simultaneously while maintaining an average tracking signal degradation less than 0.05dB.

The INTRAC™-505 supports a full range of motor controllers (drive cabinets) that will handle single and dual wound motors. These include single and dual speed contactor drives, single and dual speed variable frequency drives and continuously variable speed servo drives. Counter torque servo drives are available for large installations. The motor controllers are available for motor systems up to 15hp using ac motors from 110V to 415V or dc motors. The INTRAC™-505 also offers a wide range of auxiliary output options and interlocks, including stow pin drive and electromagnetic and dc injection braking.

The INTRAC™-505 features a large, multi-line backlit display and can be supplied with an integral L-Band beacon receiver.

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SPECIFICATIONS

Operational modes	Standby, Manual (Jog), Search Scan, Remote Control Auto (INTRAC), Pre-set (Position Designate), Program Track, IESS-412
Tracking Accuracy	Typically better than 0.05dB RMS signal degradation after tracking for 24 hours (with tracking signal), for orbit inclinations up to 10°
Prediction Accuracy	Typically better than 0.05dB RMS signal degradation over 72 hours (after loss of tracking signal), for orbit inclination up to 10°
Battery Backup	Model data stored in EEPROM and real time clock support with battery backup
Configuration Memory	Configuration data is stored in EEPROM
Tracking Signal	May be derived from an external tracking receiver or optionally from the integral IBR-L beacon receiver
External Tracking Signal	Voltage varying directly with received signal strength (in dB). Sensitivity 0.1V / dB to 1.0V / dB Offset + / - 10 volts max. Lost Lock input, contact closure when tracking signal is lost (can be inverted).
Internal IBR-L	This option accepts an L-Band signal, with an input level of -80 to -45dBm. The signal voltage and lock lost indicators are generated internally.
Display	Graphics LCD display giving the areas of information: Azimuth angle, Signal strength, Elevation angle Diagnostics, Polarization angle, On-line help Mode of operation, Operational menus, Configuration menus
Limit Switches	Limit switch inputs for elevation, azimuth and polarization. Contacts normally closed
Polarization	Manual control of polarization axis motor, polarization angles displayed on screen.
Continuous Servo	Provides the INTRAC-505 with conventional velocity demand output signals and (with suitable velocity servos) implements a continuous closed loop position servo.
Beacon Receiver	Eliminates the need for an external tracking receiver. Beacon frequency is selected over a range from 948 to 1700 MHz from the INTRAC front panel.
Remote Control Terminal	IBM PC compatible software is available to provide a remote control terminal function. This terminal monitors and controls the INTRAC via the standard serial remote control port.
Temperature Range	0 to 40°C – Operating -25°C to 85°C - Non Operating (storage)
Humidity	5% to 95% RH non condensing - Operating 0% to 99% RH non condensing - Non Operating (storage)
Altitude	10,000 feet max
Input Power	110 or 230V, single phase, 50/60Hz, 50W
Dimensions	483mm (W) x 132mm (H) x 406mm (D).
Mounting	19" rack mounting unit, 3U high.
Weight	12 kg
Designed to Meet	EN55022 and EN50082-1 (Europe) FCC P.C.B. Part 15, Subpart B Class A (USA)

NORTH AMERICA
USA
Tel: +1 703 659 9796
Fax: +1 703 635 2212
info.usa@advantechwireless.com

CANADA
Tel: +1 514 420 0045
Fax: +1 514 420 0073
info.canada@advantechwireless.com

EUROPE
UNITED KINGDOM
Tel: +44 1480 357 600
Fax: +44 1480 357 601
info.uk@advantechwireless.com

RUSSIA & CIS
Tel: +7 495 971 59 18
info.russia@advantechwireless.com

INDIA
Tel: +91 33 2415 5922
info.india@advantechwireless.com

SOUTH AMERICA
Tel: +1 514 420 0045
Fax: +1 514 420 0073
info.latam@advantechwireless.com

BRAZIL
Tel: +55 11 3054 5701
Fax: +55 11 3054 5701
info.brazil@advantechwireless.com

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