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 RS423 / RS422 interface and optional Ethernet interface
- We supply free-of-charge proprietary RCM application for remote control and monitor of the Intrac 505 unit via either serial or Ethernet interface. The software package is installed on the Windows™ operating system

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 >35 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 or Ethernet interface and supports a wide 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 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), including MC381, MC382 and MC392 models, 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 480V. 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 Auto (INTRAC)	Manual (Jog) Pre-set (Position Designate)	Search Scan Program Track	Remote Control 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 inclinations 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-L7 beacon receiver			
External	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	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.			
Antenna Position Resolvers	Single or dual resolver units. Operating frequency is 1500kHz nominal.			
R11W	Single resolver unit suitable for antennas with beamwidths greater than 0.4°.			
E11W	Single resolver units suitable for antennas with beamwidths greater than 0.3°. Measurement over 180°, then repeats.			
HD-001R	Mechanically geared dual resolver units suitable for antennas with beamwidths from 0.06°. They are particularly recommended for beamwidths below 0.3°.			
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			
Serial Interfaces	There are three serial ports on the INTRAC-505 which can be independently set to either RS423 or RS422.			
Options				
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 (Factory fitted option, see INTRAC-605).			
Beacon Receiver	Eliminates the need for an external tracking receiver. Beacon frequency is selected over a range from 950 to 2150 MHz from the INTRAC front panel.			
Ethernet Interface	Optional RJ45 Ethernet interface can be configured at the factory to support M&C either over RCM software or SNMP			
Type 1	Ethernet M&C interface for use with RCM software (Advantech Wireless proprietary application)			
Type 2	Ethernet M&C interface for use with SNMP			
Physical				
Temperature Range	0 to 40ºC – Operating	-25ºC to 85ºC - 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				
Standards	EN55022 and EN50082-1 (Europe)			
	FCC P.C.B. Part 15, Subpart B Class A (USA)			

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