

# INTRAC™ 605 Antenna Control Unit

Monopulse Antenna Tracking Controller for Antennas up to 35 meters



## Features

- High performance, maximum flexibility and high reliability for antennas up to 35 meters in diameter
- Monopulse tracking backed up by INTRAC™ orbit modelling algorithm offers the highest tracking Integrity
- Full continuous servo control of both axes simultaneously
- Accurately tracks satellites with orbital inclinations up to and beyond 10°
- Average tracking signal degradation less than 0.05dB
- Accepts very high-resolution optical encoders (up to 21 bits, 0.5 arc second). Options to use high-resolution resolvers (19 bits, 2 arc seconds).
- Compatible with INTELSAT and EUTELSAT SCPC tracking specifications
- INTRAC™ algorithm tolerates signal fluctuations that defeat step track and memory track controllers
- Resilient to tracking or monopulse signal loss, maintaining tracking integrity for up to 72 hours by predicting from internal model.
- Non-volatile memory ensures tracking is resumed after power failure

## Overview

The INTRAC™ 605 Monopulse Antenna Controller enables satellite earth station antennas to accurately track geosynchronous satellites with orbital inclinations up to and beyond 10°. The system offers superior tracking integrity with a full continuous servo control suitable for all antennas up to 35m diameter.

The system comprises two interconnected units, the INTRAC™ ACU and the Monopulse Interface unit (MIU) that together implement Monopulse tracking supplemented by the INTRAC™ (INtelligent TRacking Antenna Control) algorithm, which has been developed and refined over a 20-year period. In the event of monopulse receiver failure, it provides an alternative tracking system with an accuracy accuracy comparable to monopulse that exhibits exceptional immunity to propagation disturbances and fades and maintains reliable pointing accuracy even at low angles of elevation in regions of high scintillation. The INTRAC 605 is compatible with INTELSAT and EUTELSAT SCPC tracking specifications and is resilient to loss of tracking and monopulse signals; the unit will maintain tracking integrity by predicting from its internal model for blackout periods up to 72 hours. The non-volatile memory ensures that accurate tracking is resumed after power failure.

The system features full remote monitoring and control via a remote control interface as well as full front panel control and supports a wide range selectable operating modes, including satellite acquisition and operation in program track mode using INTELSAT IESS-412 or NORAD data. The continuous servo control enables a fully variable speed manual control capability.

The INTRAC™ 605 offers full servo dual main axis (including counter torque systems) and polarization control. It drives both main axes simultaneously and continuously while maintaining an average tracking signal degradation less than 0.05dB. It also offers a wide range of auxiliary output options and interlocks, including stow pin drive, brake control and preliminary limit switches (in addition to normal final limits and soft limits). The INTRAC™ 605 features a large, multi-line backlit display and can be supplied with an integral L-Band beacon receiver (single channel for INTRAC™ algorithm tracking).

## INTRAC™ 605 Antenna Control Unit

### Specifications

Operational modes	Standby Auto (Monopulse)	Manual (Jog) Auto (INTRAC)	Manual (Velocity) Program Track	Search Scan IESS-412 Pre-set (Position Designate)	Remote Control
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 supported by battery backup in the event of power failure				
Configuration Memory	Configuration data is stored in EEPROM				
Monopulse Tracking Signals	Error signals provided by external Monopulse receiver. Co-ordinate rotation (for beam waveguide antennas) and cosecant correction performed in INTRAC-605				
External Error Signals	Voltages varying directly with error in 2 orthogonal axes (normally elevation and cross-elevation) Sensitivity 1.0V to 10V /degree Digital inputs for validity signals				
INTRAC 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				
Motor Drive	Drive enable and Velocity demand signals to control a velocity servo drive cabinet. Full continuous closed loop position servo control is implemented by the INTRAC simultaneously on both main axes.				

### Options

Polarization	Manual control of polarization axis motor, polarization angles displayed on screen.
Beacon Receiver	Eliminates the need for an external tracking receiver (INTRAC algorithm mode). 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.

### Physical

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	2 Units each 483mm (W) x 132mm (H) x 406mm (D).
Mounting	19" rack mounting units, 2 x 3U high.
Weight	24 kg

### Standards

Designed to Meet	EN55022 and EN50082-1 (Europe) FCC P.C.B. Part 15, Subpart B Class A (USA)
------------------	---

Ref.: PB-INTRAC605-001-19026

#### NORTH AMERICA

**USA**  
info.usa@advantechwireless.com

**CANADA**  
Info.canada@advantechwireless.com

#### EUROPE

**UNITED KINGDOM**  
info.uk@advantechwireless.com

**RUSSIA & CIS**  
info.russia@advantechwireless.com

#### SOUTH AMERICA

info.latam@advantechwireless.com

**BRAZIL**  
info.brazil@advantechwireless.com

#### ASIA

info.asia@advantechwireless.com

**INDIA**  
info.india@advantechwireless.com