This receiver makes use of digital signal processing techniques to track a CW pilot signal. A phase continuous, 1 Hz step size, frequency synthesizer generates an error correction signal which is used in conjunction with MITEQ’s INMARSAT AFC capable frequency converters to provide Automatic Frequency Control for both maritime and aeronautical (Enhanced AFC) applications.

OPTIONS
- Higher output level
- 50 ohm IF impedance
- 10 MHz reference frequency
- Remote RS422, RS232, or IEEE-488 interface

FEATURES
- Enhanced AFC operation
- Low noise/low spurious output
- Tunable input (5 kHz step size)
- Extensive remote capability (RS485)
- Large graphic display
- Simple setup
RECEIVER SPECIFICATIONS

Input characteristics
- Frequency: 50–90 MHz tunable in 5 kHz steps
- Level: -50 to 0 dBm
- Return loss: 20 dB nominal
- Impedance: 75 ohms (50 ohms optional)

Output characteristics
- Frequency: 5 MHz
- Level: 0 ±3 dBm (+10 dBm optional)
- Return loss: 20 dB nominal
- Impedance: 50 ohms
- Tracking ratio: -1:1 (other ratios optional)
- Frequency correction: INMARSAT Aero
- Frequency step size: 1 Hz minimum, 10 Hz maximum
- Frequency rate of change: 15 Hz/second maximum
- Phase during frequency step: Phase continuous
- Spurious: -70 dBc, 10 Hz to 10 kHz, -65 dBc, 10 kHz at 1 MHz
- Phase noise: -80 dBc/Hz at 10 Hz, -90 dBc/Hz at 100 Hz, -100 dBc/Hz at 3 kHz
- Residual noise from the input: No residual noise from the input
- Monitor port: -20 dBc nominal

Acquisition/tracking characteristics
- Pilot type: CW
- Frequency range: ±55 kHz
- Frequency rate of change: ±1 kHz/minute
- Carrier-to-noise ratio: 40 dB (38 dB typical) for acquisition, 40 dB (30 dB typical) for tracking
- Acquisition time: 15 seconds typical
- Adjacent channel rejection: Modulated carriers may be +10 dBc
- Pilot loss/hold time: A lost pilot is indicated on the front panel, After 1 hour of continuously lost pilot, a mute command is issued via a rear panel contact closure, A lost pilot does not interrupt the output signal, Pilot reacquisition occurs during the hold time
- Loop bandwidth: Not applicable – see Technical Note 25T021

Reference characteristics
- Frequency: 5 MHz (10 MHz optional)
- Level: 0 ±3 dBm
- Impedance: 50 ohms

OPTIONS

11. Increased output power: +10 dBm.
15. 50 ohm IF impedance.
17. Remote control.
   A. RS422.
   B. RS485 (supplied as standard).
   C. RS232.
   F. IEEE-488.
24. 10 MHz reference frequency.
INMARSAT C-BAND AFC UPCONVERTER SUBSYSTEM, SIMPLIFIED BLOCK DIAGRAM

INMARSAT C-BAND AFC DOWNCONVERTER SUBSYSTEM, SIMPLIFIED BLOCK DIAGRAM
INMARSAT PILOT RECEIVER

PRIMARY POWER REQUIREMENTS
Voltage .................................................. 100, 120, 220, 230/240 VAC +10%, -13% (rear selectable), 250 VAC maximum
Frequency ............................................. 47–63 Hz
Power consumption............................... 75 W typical

SUMMARY ALARM
Contact closure/open for DC voltage and/or component alarm

CONVERTER MUTE CONTROL
Contact closure/open for mute/unmute of RF converters

PHYSICAL
Weight ................................................... 25 pounds nominal
Overall dimensions................................ 19” x 5.25” panel height x 22” maximum (chassis depth 20”)
Rear panel connectors
  IF input ............................................... BNC female
  AFC output ......................................... BNC female
  AFC output monitor ............................ SMA female
  Reference input ................................... BNC female
  Remote interface ................................. DEM-9S for RS485 and RS422,
                                             DB-25P for RS232,
                                             IEEE-488 receptacle for GPIB
  Summary alarm.................................. DE-9P
  Redundancy alarm ............................. DE-9P
  Mute control output ............................ DEM-9S

ENVIRONMENTAL
Operating
  Ambient temperature.......................... 0 to 50°C
  Relative humidity .............................. Up to 95% at 30°C
  Atmosphere pressure ......................... Up to 10,000 feet
Nonoperating
  Ambient temperature.......................... -50 to +70°C
  Relative humidity .............................. Up to 95% at 40°C
  Atmospheric pressure ....................... Up to 40,000 feet
  Shock and vibration......................... Normal handling by commercial carriers

TECHNICAL NOTES
25T020 Enhanced Automatic Frequency Control for INMARSAT Earth Stations
25T021 Phase-Locked Vs Digital Pilot Receivers: Pilot Receiver Loop Bandwidth
25T023 Local/Remote Control Description of INMARSAT Receiver