Genesys Digital Radio

The Genesys Digital Radio is a family of remote-mount, software-definable radios. They feature combined VOR/localizer/glideslope and marker beacon navigation and VHF communication with a frequency range of 118-136 MHz or 118-156 MHz and 25 or 8.33 kHz channelization with transmit power of 16 or 25 watts. Embedded UHF 225-400 MHz communication is available as an option. The radio is designed to interface to a host controller/display that has the capability to control the navigation and communications functions via RS-232, or ARINC-429 serial interfaces.

Features of the radio include:

- Utilizes 28VDC aircraft power and complies with MIL-STD-704E
- Automatic selection of VOR or LOC mode of operation by channel frequency
- Automatic pairing of LOC (Localizer) and GS (Glide Slope)
- Reception and decoding of the VOR or LOC signals
- Reception and decoding of the GS signals
- Reception and decoding of the marker beacon signals
- OBS input via bus for operation of analog CDI in VOR operation
- Drives analog instrument panel CDI & VDI and/or auto pilot
- LOC enabled annunciator output for autopilot gain control
- Internal Glide Slope and ILS/VOR RF diplexer
- Selection of COM and VOR/ILS channels via RS-232, ARINC 429, or RS-422 bus
- Two PTT inputs for VHF or UHF transmit selection
- Dual VHF and UHF full time reception
- Support for two microphone inputs, two audio outputs, and separate sidetone output
- The COM subsystem functions as either:
  - Class D Receiver with a Class 3 Transmitter (25 KHz channel spacing)
  - Class E Receiver with a Class 5 Transmitter (8.333 KHz channel spacing).
- The VHF COM transceiver operates in the RF frequency range of 118.000 to 155.975 MHz
- The UHF COM operates in the RF frequency range of 225 to 400 MHz
- Separate guard selectable for 121.5 or 243 MHz operation
- DME tuning via ARINC 429 output

Models and Part Numbers

<table>
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<tr>
<th>Part Numbers</th>
<th>Models</th>
<th>VHF 118-136M</th>
<th>VHF 118-156M</th>
<th>UHF 225-400M</th>
<th>121.5 Guard</th>
<th>243 Guard</th>
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### Specifications

**Dimensions:**  
- Width: 2.22” (56.39mm)  
- Height: 7.10” (180.34mm)  
- Depth: 11.60” (294.64mm)  
- Weight: 5.5 lbs (2.49 kg) (w/single tray)

RTCA/DO-160G:  
- RTCA/DO-178C: Level-A

MIL-STD: 704E, 810G

**A/C power:**  
- 5.6 amps typical TX @ 28 VDC  
- 10 amps maximum TX @ 18 VDC  
- 0.8 amp typical RX @ 28 VDC

**Control Buses:**  
- 2 each ARINC 429 RX, 1 ea. ARINC 429 TX  
- 2 each RS-232

**Antenna Connectors:**  
- 1 each 50 Ohm BNC VOR/ILS/GS diplexed  
- 1 each 50 Ohm BNC UHF/VHF COM with guard receiver  
- 1 each 50 Ohm BNC Marker Receiver

**Discrete Inputs:**  
- On/off control, on when pulled low  
- Emergency tune when low, programmable to 121.5 or 243 MHz.
  - TX interlock pad, 10 dB  
- 2 PTT, 1 UHF TX, 1 VHF TX or programmable.  
- ARINC SDI programming COM1 to COM 3

**Built in test:**  
- Supplied with PBIT and CBIT

**VOR/ILS Receiver:**  
- 108 to 117.975 MHz, voice and navigation modulation

**Main COM Receiver:**  
- 118 to 155.975 MHz, AM and 225 to 400 MHz, AM or FM

**Guard Receiver:**  
- 121.5 or 243 MHz selectable on shared antenna port

**Preset channels:**  
- Up to 100, dependent on external control head or EFIS

**Channelization:**  
- 8.33 kHz or 25 kHz as allowed by band

**FM Immunity:**  
- Compliant to EUROCAE ED-23B

**TX power:**  
- >16 Watts Standard, 25 Watts Optional

**Antenna fault:**  
- Fully protected transmitter for broken antennas

**Audio loads:**  
- 150 to 600 Ohm loads permitted, factory set for 100 mW into 150 Ohm load

**AM modulation:**  
- >85% with 0.25 to 3.0 Vrms audio input, ALC

**TX Modulation:**  
- Audio Flat -3 to +1 dB from 0.3 to 2.5 KHz

**Audio outputs:**  
- Main RX audio 10 to 100 mW bench adjustable  
- Sidetone audio 10 to 100 mW bench adjustable

**RX Performance:**  
- Class D Receiver compliant with 25 KHz channel spacing  
- Class E Receiver compliant with 8.333 KHz channel spacing

**Rx sensitivity:**  
- -105 dBm typical, 6dB SINAD

**RX squelch:**  
- S/N squelch bench adjustable, CLIMAX compatible  
- Carrier override squelch bench adjustable

**TX interlock:**  
- 10 dB attenuation via external discrete

**Export:**  
- Non-ITAR, ECCN 7A994

**TSO’s**

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<th>TSO</th>
<th>Equipment Description</th>
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<tr>
<td>TSO-C34e</td>
<td>ILS GS Rx equipment operating in RF range 329.15 - 335.0 MHz</td>
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<tr>
<td>TSO-C36e</td>
<td>ILS LOC Rx equipment operating in RF range 108 - 112 MHz</td>
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<tr>
<td>TSO-C40c</td>
<td>VOR Rx equipment operating in RF range 108 - 117.95 MHz</td>
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<tr>
<td>TSO-C35d</td>
<td>Marker Receiver Equipment Cat A and EUROCAE 1/WG 7/70</td>
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<tr>
<td>TSO-C169</td>
<td>VHF Radio Communications Transceiver Equipment Operating in the RF range 117.975 to 137.000 MHz</td>
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<tr>
<td>TSO-C128</td>
<td>Devices that prevent blocked channels used in two-way radio communications due to unintentional transmissions</td>
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*Pending FCC approval*