



Garmin C90B King Air STC Components

Current as of 30 May, 2007

GARMIN.

The Garmin G1000 retrofit avionics suite for the C90B King Air is the most highly integrated avionics upgrade available for eligible airframes.

The system has dual AHRS, Air Data, Navigation, Display and Audio technology coupled with numerous safety enhancing features like TAWS-B Terrain awareness and warning (with obstacles), dual WAAS GPS units capable of vertical and lateral guidance to near ILS minimums, Garmin SafeTaxi and Garmin FliteCharts for additional situational awareness as well as Airborne and Datalink Weather – all standard.

Add in the awesome capabilities and proven reliability of the Garmin GFC 700 automatic flight control system, and you get to experience the first and best flying autopilot in General Aviation of the 21st Century.

For those long flights, the included XM Radio provides a low cost alternative for in-flight entertainment.

Something unseen but having additional positive impact is the use of a high-speed, ethernet-based databus that reduces the overall wire count, saving precious time during installation and helping to save over 40lbs in the average install, putting more useful load back into the airframe.

Since speed and efficiency is always paramount, the G1000 system supports the factory standard PT6-21 engines and the Blackhawk PT6-135A upgrade.

If you have a C90B King Air, what are you waiting for? Experience a new level of avionics performance and find another way to love your trusty King Air!

Garmin Abbreviations

GDU = Garmin Display Unit

GIA = Garmin Integrated Avionics Unit

GEA = Garmin Engine and Airframe Interface Adapter

GDC = Garmin Air Data computer (ADC)

GRS = Garmin Attitude & Heading Reference System (AHRS)

GMU = Garmin Magnetometer Unit

GMA = Garmin Marker Beacon Receiver and Audio System

GTX = Garmin Transponder

GDL = Garmin Data Link Receiver

GWX = Garmin Weather Radar

GFC = Garmin Flight Control

GSA = Garmin Servo Actuator

GSM = Garmin Servo Mount

GCU = Garmin Control Unit

GMC = Garmin Mode Controller

Primary and Multifunction Displays

- GDU 1040A = 10.4"
- GDU 1500 = 15"
- TFT LCD Technology with anti-reflective coatings
- 1024 x 768 pixels resolution
- High-Speed Data Bus (HSDB)
- Own dedicated processor
- Integrated graphics accelerator
- Extra processing power to meet future requirements and to allow expansion system capabilities



GDU 1040A Primary Flight Display

Bezel Mounted Controls

Attitude

Nav/Com Tuning

Airspeed

Map Inset

HSI

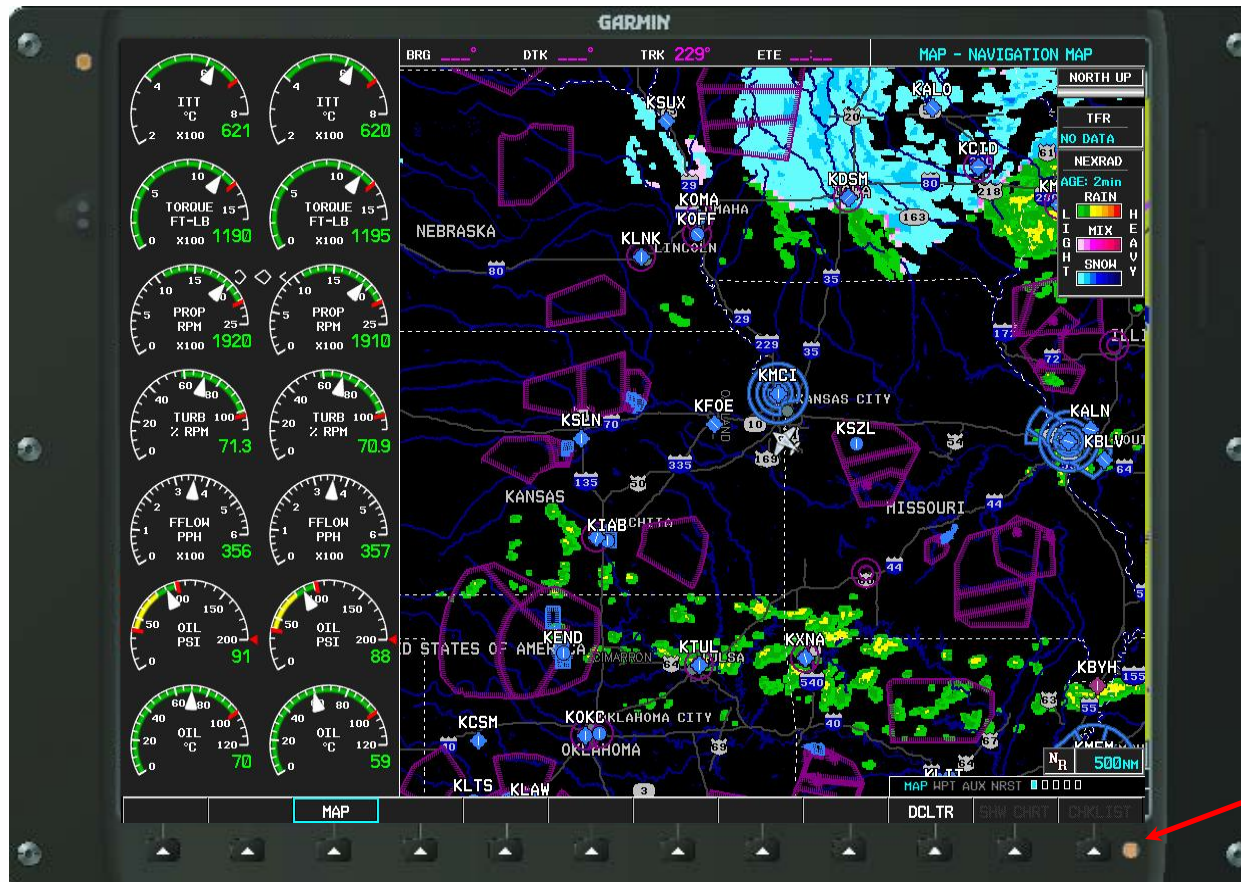
Altitude and Vertical Speed

FMS Controls



GDU 1500 Multifunction Display

Integrated Engine Information System



- MFD Displays:
- Topographic Data
- Airways (Victor and Jet)
- TAWS-B Class Terrain Warnings
- Traffic
- Real-Time and Datalink Weather

Softkey Buttons

GMA 1347D Digital Audio Panel



- **Digital audio is used for the Garmin NAVs and COMs**
- **Emergency analog operation that bypasses the GMA 1347D**
- **Voice Synthesis / Call-outs stored in the audio panel - eliminates need for additional hardware**
- **Integrated Marker Beacon Receiver**
- **Reversionary Mode button manually forces PFD data to display on MFD in case display failure is not automatically detected**

GRS 77 Attitude Heading & Reference System

Rapid alignment during taxi

- Typically aligns in less than 1 min.!

In-Air Dynamic Restarts

- Bank angles up to 20 degrees!

Robust

- Inherent redundancy / integrity
- Solid state design replaces less reliable mechanical gyros
- Allows for significant reduction in direct operating costs and maintenance expense



GMU 44 Magnetometer

- Provides magnetic heading information
- Communicates directly to GRS 77 AHRS
- Senses magnetic field in three axis format (horizontal and vertical axis)
- Very sensitive for greater precision



GDC 74B Air Data Computer

→ Range

- Altitude -1,400 ft to 55,000 ft
- IAS up to 430 kts
- Operates -55°C to +70°C

→ Inputs include pitot, static and outside air temperature

→ Accuracy supports RVSM

→ Reliable, low maintenance, solid state design



GEA 71 Engine/Airframe Interface

Extensive input capabilities

- Engine data
- Oil temp/pressure
- Electrical system data
- Cabin Pressure

Communicates with both GIA 63s

- Brings in not only engine data, but airframe data as well



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GIA 63W Integrated Avionics Unit

Communications hub for the system

- Primary communications path for AHRS and Air Data information
- Interfaces with Traffic, ADF, DME, etc.
- Flight Director Computer

Technology

- Com and Nav components are from the proven GNS 430/530 family
 - 16 W, 8.33 kHz / 25 kHz Spacing VHF COM
 - VOR/Localizer
 - Glide Slope receiver
 - 15 channel WAAS GPS receiver



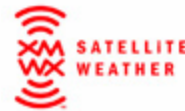
GTX 33D/33 Mode S Transponder

- **Technology derived from Garmin's GTX 330 Transponders**
- **Communicates with both GIA 63 units**
- **Standard Garmin Transponder features**
 - Auto ALT mode as speed exceeds 30kts
 - Solid State electronics require no warm-up time and longer service life
- **GTX 33/33D Mode S Transponder**
 - Traffic Information Service (TIS) Traffic displays on PFD Inset and MFD as map overlay and on dedicated traffic page



GDL-69A Datalink

- Space based broadcast over XM Satellite Radio satellites
- Outstanding weather data
- 16+ WX types
 - Go to <http://www.xmradio.com/weather/aviation.xmc> for more information on available weather data packages
- GDL-69A is standard and offers 160+ Channels of digital Infotainment



GCU 475 Controller

- **Connected directly to MFD**
- **Improved cockpit ergonomics**
- **Simple operation and rapid data entry capabilities**
- **Controls functions of MFD**
 - All flight planning functions
 - Direct-To and Flight Plan data entry
 - Map
 - Pan, highlight and select features all on the map for easier access to MFD data



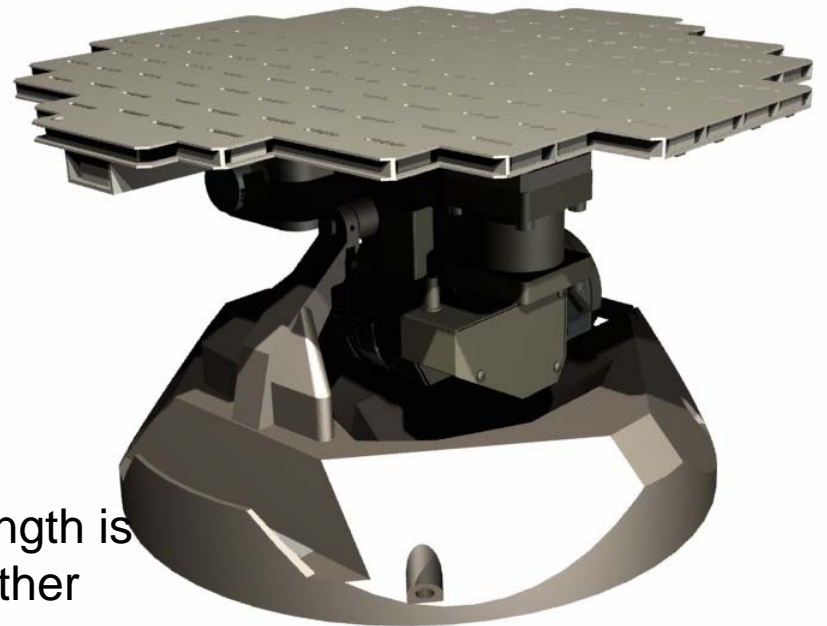
GMC 710 AFCS Mode Controller



- **Connected directly to the PFDs**
- **Controls functions of Flight Director and Autopilot**
- **Key operating modes**
 - Flight Level Change (Constant Airspeed Altitude Change)
 - Vertical Speed Altitude Change
 - Half-Bank mode
 - Couple Vertical Navigation
 - Altitude Pre-Select
 - Yaw Damper

GWX 68 Weather Radar

- **Color, digital pulsed radar 12 inch antenna**
- **6.5 kilowatts**
- **30 degrees stabilization of pitch/roll**
 - Digitally provided via AHRS
- **Excellent range (320nm)**
- **Adjustable scanning profiles**
- **Weather Attenuated Color Highlight (WATCH)**
 - Helps pilot determine when return strength is insufficient to penetrate additional weather
- **Weather Alert Mode**



GFC 700 Automatic Flight Control System

- **Fully integrated with G1000**
- **Brushless Motor**
 - Ensures long servo motor life and lower cost of ownership
- **Servo Actuator is easily removed from Servo Mount without needing to de-rig the control cables**
 - Reduces maintenance downtime
- **Attitude/heading based**
- **WAAS GPS Roll Steering inputs**
 - Smooth course intercepts
- **Over-speed protection**
- **Airspeed Scheduled**
 - Helps ensure a smooth ride
- **Fail-Passive**



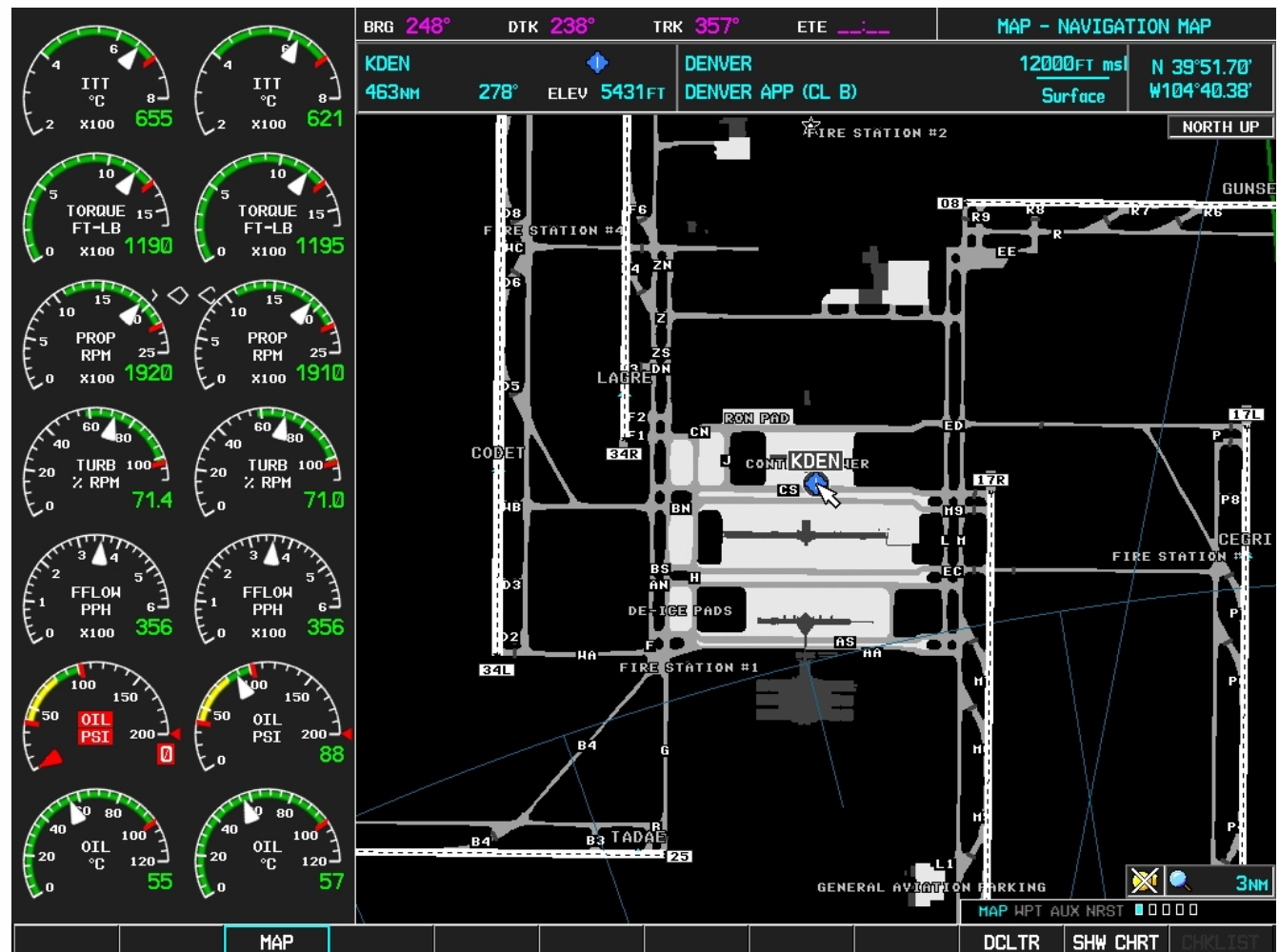
GSA 81/80 Servo Actuator and GSM 85A Servo Mount

C90B STC Major Component List and Quantities

<u>Component</u>	<u>Quantity</u>
→ GDU 1040A PFD	2
→ GDU 1500 MFD	1
→ GMA 1347D	2
→ GRS 77	2
→ GDC 74B	2
→ GIA 63W	2
→ GMC 710	1
→ GCU 475	1
→ GSA 80/81, GSM 85	4

Garmin SafeTaxi

- Detailed airport diagrams with aircraft position overlay included as part of the land map database to enhance situational awareness
- Covers over 620 airports in the United States
- Included as a standard feature with 6 months of free updates via the Garmin web site



SafeTaxi

Garmin FliteCharts

- A new, low cost alternative to bringing approach charts into the cockpit
- Same NACO approach plates you keep in the cockpit
- Includes Approaches, SIDs (DP), STARS
- Puts approach data on the MFD for simplified approach briefing
- Not Geo-referenced (no own-ship position overlay on the chart – a feature exclusive to the Jeppesen Chartview Option)
- First cycle is preloaded for delivery and a 6-month free subscription is standard

The screenshot displays the Garmin FliteCharts interface with the following components:

- Engine Gauges (Left):** A grid of 12 gauges showing engine parameters:
 - ITT °C: 655 (left), 621 (right)
 - TORQUE FT-LB: 1190 (left), 1195 (right)
 - PROP RPM: 1920 (left), 1910 (right)
 - TURB 1/2 RPM: 71.4 (left), 70.9 (right)
 - FFLOW PPH: 356 (left), 356 (right)
 - OIL PSI: 0 (left), 88 (right)
 - OIL °C: 55 (left), 57 (right)
- Flight Information Panel (Top):**
 - BRG 248°, DTK 238°, TRK 357°, ETE
 - LOC 110.5, APP CRS 008°, TDZE 1011, Aft Elev 1026
 - ILS RWY 01L, KANSAS CITY INTL (MCI)
 - ATIS 128.625, KANSAS CITY APP CON 120.95 318.1, INTERNATIONAL TOWER 128.2 264.25, GND CON 121.8, CLNC DEL 135.7
- Radar Chart (Center):** A circular radar chart showing ILS RWY 01L with various navigation aids, frequencies, and terrain elevations. Key features include:
 - LOCIZER 110.5, LOC 110.5
 - LOM - DOTTE 382 DO
 - NAVIGATION 134.0 MHz, Chan B?
 - ELEV 1026, TDZ/CL Rvys 11, 18, 15% and 17%
- Approach Information Panel (Right):**
 - AIRPORT: KNCI PUBLIC, KANSAS CITY INTL, KANSAS CITY MO
 - APPROACH: ILS RWY 01L
 - SCALE: NOT TO SCALE
- Bottom Panel:**
 - Buttons: CHRT OPT, CHRT, INFO, DP, STAR, APR, WX, MAP, WPT, AUX, NRST, GO BACK, CHKLST