

# ATR 72-500

## FlightGear Flight Simulator

### Autopilot Reference Guide

#### Introduction

The ATR 72-500 features a realistic autopilot system that is mostly complete. This document explains how it works and how to use it.

The ATR's autopilot system can be thought as being made up of “modes.” These are separated into 2 categories, lateral and vertical. The only exception is the approach hold mode, which is both a lateral and vertical mode.

Lateral modes:

- ◆ Heading hold mode
- ◆ VOR1 track mode *or* route manager/GPS track (when activated)
- ◆ VOR1 backcourse mode (*not implemented*)
- ◆ Approach hold mode

Vertical modes:

- ◆ IAS hold mode (controls speed with pitch, not an autothrottle)
- ◆ Vertical speed hold mode
- ◆ Altitude hold mode
- ◆ Approach hold mode

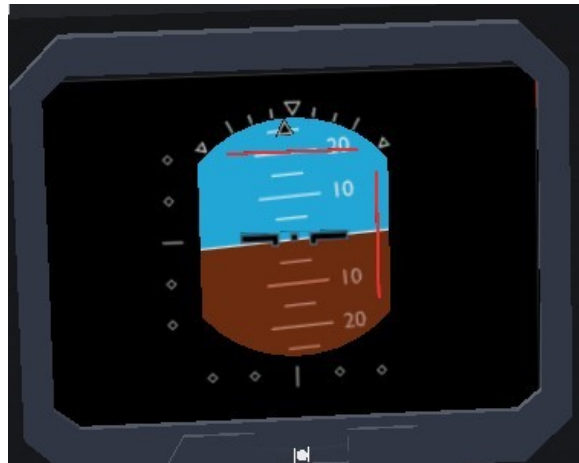
The autopilot also has 2 basic modes for each category that are activated when no other modes are selected:

- ◆ Wing leveler (lateral)
- ◆ Pitch hold mode (vertical)

The autopilot must be engaged before it takes control of the aircraft. When engaged, the basic modes (wing leveler and pitch hold) are activated and the autopilot sets the aircraft's current pitch as the target pitch to fly.

The ATR 72 also includes a *flight director*. The flight director, when turned on using the switch on the glareshield or through other means, is a set of red bars that appear

on the electronic attitude indicator. The horizontal bar indicates the proper pitch to fly at to maintain the vertical settings entered on the autopilot, and the vertical bar indicates likewise for the lateral settings.



The autopilot is controlled via the *Mode Control Panel* (MCP), or the autopilot settings dialog within FlightGear. The MCP can be found in the cockpit on the middle of the glareshield. Some shortcut keys are also available.

## The MCP



- 1** NAV1 course adjustment knob – adjusts the NAV1 radial
- 2** Heading bug adjustment knob – adjusts the autopilot heading bug
- 3** Heading mode button – selects/deselects the heading hold mode on the autopilot
- 4** NAV mode button – selects/deselects the NAV hold mode on the autopilot
- 5** Approach mode button – selects/deselects the approach hold mode on the autopilot

- 6** Bank button – switches the bank limit between high (27°) and low (15°)
- 7** Standby button – switches all modes off, leaving the basic modes to take over
- 8** IAS button – selects/deselects the IAS hold mode on the autopilot
- 9** Vertical speed button – selects/deselects the vertical speed hold mode on the autopilot
- 10** Altitude button – selects/deselects the altitude hold mode on the autopilot
- 11** Pitch wheel – adjusts various settings for vertical modes; see below for more information
- 12** Autopilot engage button – engages/disengages the autopilot
- 13** Yaw damper button – engages/disengages the yaw damper
- 14** Altitude adjustment knob – adjusts the autopilot altitude setting
- 15** NAV2 course adjustment knob – adjusts the NAV2 radial
- 16** NAV1 frequency adjuster – adjusts the NAV1 frequency
- 17** Information window – shows information and settings from the autopilot
- 18** NAV2 frequency adjuster – adjusts the NAV2 frequency

## The settings dialog

- 1** Autopilot checkbox – engages/disengages the autopilot
- 2** Yaw damper checkbox – engages/disengages the yaw damper
- 3** Flight director checkbox – engages/disengages the flight director
- 4** Heading mode button – selects/deselects the heading hold mode on the autopilot
- 5** NAV mode button – selects/deselects the NAV hold mode on the autopilot
- 6** Approach mode button – selects/deselects the approach hold mode on the autopilot
- 7** Backcourse button – *not implemented*
- 8** Heading bug setting – adjusts the autopilot heading bug
- 9** Bank limit button – switches bank limit between high (27°) and low (15°)
- 10** IAS hold button – selects/deselects the IAS hold mode on the autopilot
- 11** Vertical speed hold button – selects/deselects the vertical speed hold mode on the autopilot
- 12** Altitude hold button – selects/deselects the altitude hold mode on the autopilot
- 13** Pitch setting – adjusts the autopilot pitch setting
- 14** IAS setting – adjusts the autopilot IAS setting



- 15** Vertical speed setting – adjusts the vertical speed setting
- 16** Altitude setting – adjusts the altitude setting
- 17** Close button – closes the dialog
- 18** Standby button – switches all modes off, leaving the basic modes to take over

## Autopilot shortcut keys

|              |   |
|--------------|---|
| Ctrl-A       | selects/deselects the altitude hold mode on the autopilot |
| Ctrl-G       | selects/deselects the approach hold mode on the autopilot |
| Ctrl-F       | engages/disengages the flight director                    |
| Ctrl-H or F6 | selects/deselects the heading hold mode on the autopilot  |
| Ctrl-N       | selects/deselects the NAV hold on the autopilot           |
| Ctrl-Y       | engages/disengages the yaw damper                         |
| Ctrl-Z       | engages/disengages the autopilot                          |
| F11          | opens the autopilot settings dialog                       |

## The pitch wheel

The pitch wheel on the mode control panel controls settings for vertical autopilot modes. What specific setting it controls depends on the vertical mode currently activated.

- ◆ Pitch hold (basic mode) – adjusts the target pitch
- ◆ IAS hold – adjusts the target IAS speed
- ◆ Vertical speed hold – adjusts the target vertical speed

## Using the route manager and GPS

To use FlightGear's route manager or GPS, select the NAV hold and the altitude hold modes on the autopilot. Then activate the route manager or turn on the GPS. Once the autopilot is engaged, the ATR will fly toward the waypoint(s) you entered at the altitude you set for each waypoint.

## Flying an ILS approach

To fly an ILS approach on the ATR 72, navigate toward the beginning of the glideslope and select the approach hold mode on the autopilot. The ATR will line up on the glideslope, both laterally and vertically. Note that the autopilot is not equipped for autoland capability, so be sure to disengage the autopilot just before you land!