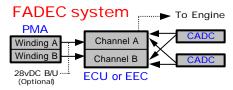
FADEC / Ignition Panel

FADEC

The FADEC system utilizes dual channel ECU (GE) or EEC (P&W) units, each having two CADC inputs. Cross-talk between channels allows for normal operation with the failure of one ECU or EEC channel. Each ECU or EEC is self-powered by an N2 driven PMA (Permanent Magnel Alternator). The PMA has dual windings, each powering an individual ECU or EEC channel. 28vDC power is also available on all GE, and some P&W powered MD-11s, from its respective DC bus in the event of a failure of both PMA windings. The failure of both EEC/ECU channels, or the failure of both windings of the PMA (if not equipped with 28v backup power), will cause an automatically controlled engine shutdown to occur.



ALTN – FADEC uses two CADC inputs to each EEC or ECU channel. The loss of one CADC input to an ECU or EEC channel has no affect on normal operation. When both CADC inputs to an EEC or ECU channel have been lost, FADEC automatically switches to the other EEC or ECU channel. If both CADC channels have been lost to both EEC or ECU channels, SELECT and ALTN will illuminate. When this condition exists, the FADEC uses the last CADC input it sensed to calculate thrust. When ALTN is pressed, SELECT will extinguish and ALTN will remain illuminated. Alternate mode of the FADEC utilizes an internal. fixed schedule to determine thrust level for the selected throttle position. This internal schedule may cause thrust to increase, but will never cause thrust to decrease. With P&W engines, autothrottles are not available when operating in the ALTN mode.

* Pushing throttles through overboost bar will also cause FADEC to revert to ALTN mode.

Ignition Pwr Sources

Ign A is powered by L emergency bus, and is required for dispatch. Ign B is powered by R emergency bus.

("A" Odd flt #/"B" even flt #)

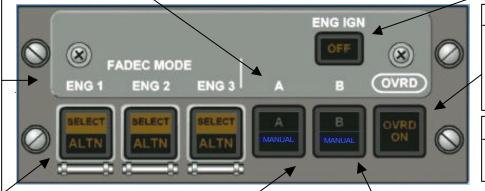
FADEC Functions

- Engine acceleration to idle speed during start
- Acceleration and deceleration limiting
- Automatic control of available thrust
- Minimum / Approach Idle speeds during descent
- Compressor airflow control
- Thrust control as a function of throttle position and thrust reverser lever
- Protection from exceeding N1, N2, internal pressures, and max thrust lmts

ENG IGN

OFF (Illum).

-No ignition source is selected and no power is being supplied to the ignitors



OVRD Switch

Pressing switch powers both ignitors on all engines and bypasses auto ignition control. OVRD ON Illuminated when on.

Memory Item

All engine flameout Eng Ign ovrd – OVRD ON ADG - Deploy

ENGINE IGNITION SWITCH (A & B)

A (or **B**) – Switch selects ignition in the Auto mode. A (or **B**) Illuminates when ignition A (or **B**) is selected. **Selecting Ign A or B will**:

- -Extinguish the ENG IGN OFF light
- Supply 28v DC power to each engine start switch
- Arm ingitor A or B
- Command APU to 100%
- Prepares EAD for display of start indications
- Configures fuel system for engine start
- Arms the engine driven hydraulic pump test
- Packs shut off (packs turn back on if engine not started within 2 mins after selecting). Packs turn back on after engine is started.

MANUAL (illuminated)

Auto ignition control has failed, and the engine ignition that is selected (either A or B) is commanded on continuously until the pilot chooses to assume on / off control manually.

Continuous Ignition (Auto mode)

Automatically on for **start, takeoff** (On when > 70° throttle resolver angle; Off when slats retracted), **landing** (On when slats, flaps or gear extended; Off 1 minute after ground shift) and 60 seconds after **engine A/I** is turned on.