



TT31 Mode S Transponder Operating Manual



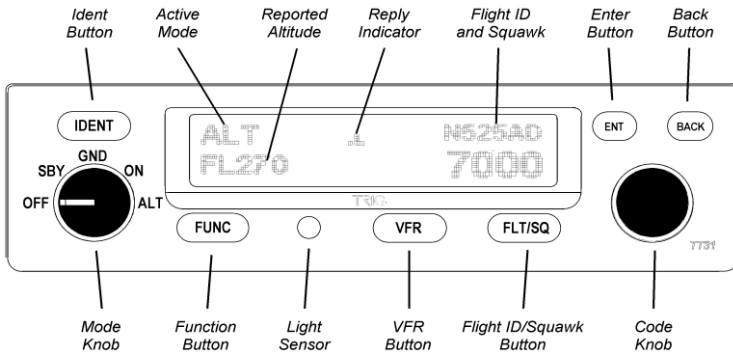
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Front Panel



Display

The display shows the operating mode of the transponder, the reported pressure altitude, and the current squawk code and Flight ID. The reply indicator is active when the transponder replies to interrogations.

The pressure altitude is displayed as a Flight Level, which is the pressure altitude in hundreds of feet. When non-standard atmospheric conditions apply, this may not match the altimeter indicated altitude, but will be correctly displayed by the ATC radar.

Mode Selector Knob

The left hand knob controls the power to the transponder and the operating mode.

- OFF Power is removed from the transponder.
- SBY The transponder is on, but will not reply to any interrogations.
- GND The transponder will respond to Mode S ground interrogations from surface movement radar.
- ON The transponder will respond to all interrogations, but altitude reporting is suppressed.
- ALT The transponder will respond to all interrogations.

When airborne, the transponder should always be set to ALT unless otherwise directed by Air Traffic Control. When you are taxiing on the ground, the transponder should be set to GND mode. If your installation includes a squat switch or is configured with an automatic air/ground system it will switch automatically and you do not need to manually select the GND position.

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Push Buttons

- IDENT** Press the IDENT button when ATC instructs you to “Ident” or “Squawk Ident”. This activates the SPI pulse in the transponder replies for 18 seconds. IDENT will appear in the display.
- FUNC** Pressing the FUNC button provides access to the flight timer, stopwatch, ADS-B monitor (depending on installation) and altitude monitor function.
- VFR** Pressing the VFR button sets the transponder to the pre-programmed conspicuity code. Pressing the button again restores the previous squawk code.
- FLT/SQ** Pressing FLT/SQ alternates the primary display between squawk code and Flight ID.
- ENT** The ENT button enters a digit in the code selector.
- BACK** The BACK button goes back to the previous digit in the code selector.

Code Selector Knob

The right hand knob is used to set squawk codes and the Flight ID. The FLT/SQ button selects which will be updated. Turning the knob will highlight the first digit on the display, and the digit can be changed as required. Press the ENT button to advance to the next digit. When ENT is pressed on the last digit, the new squawk code or Flight ID will replace the previous value. If the code entry is not completed within 7 seconds, the changes are ignored and the previous code restored.

1200	VFR code in the USA
7000	VFR code commonly used in Europe
7500	Hijack code
7600	Loss of communications
7700	Emergency code

The Flight ID should correspond to the aircraft call sign entered on your flight plan. If no flight plan is active, the aircraft registration should be used as your Flight ID. Use only letters and digits. If the Flight ID is less than 8 characters long, entering a blank character will end it.

Flight Timer

The Flight Timer records the time for which the transponder has been powered on and operating in flight mode – either ON or ALT. Press the FUNC button to display the Flight Timer.

Stopwatch

The stopwatch can be used as a convenient timer. Press the FUNC button to display the stopwatch. Pressing ENT will reset and start the timer. Pressing ENT again will stop the timer.

Altitude Monitor

The Altitude Monitor activates an audio annunciator or annunciator light (depending on installation) when the aircraft pressure altitude differs from the selected altitude by more than 200 feet. Press the FUNC button to display the altitude monitor enable screen. Pressing ENT toggles the altitude monitor at the current altitude.

When altitude monitoring is in use, a small deviation pointer appears adjacent to the altitude display on the transponder.

ADS-B Monitor

The ADS-B Monitor is only available on installations that include an ADS-B position source. The ADS-B Monitor provides a display of the position information that is being transmitted in ADS-B position reports. This can provide confirmation that the correct information is being transmitted, particularly where the GPS source is remote from the transponder.

In the event that valid position information is NOT available from the GPS, the latitude and longitude display will be replaced by dashes; if no valid latitude and longitude is shown then ADS-B position information is NOT being transmitted.

Loss of ADS-B position information will also result in a WARNING message being displayed.

Warning Messages

If the transponder detects a problem, the screen will indicate WARNING and a brief statement of the problem. Depending on the nature of the problem, your transponder may not be replying to interrogations. Note the message on the screen and pass that information to your avionics maintenance organisation. Press ENT to clear the message; if the fault is still present the message will reappear.

Fault Annunciation

If the transponder detects an internal failure, the screen will indicate FAULT and a brief statement of the problem. No replies will be made to interrogations when a fault is detected.

Some FAULT indications can be recovered by switching the transponder off and back on again, although in all cases a FAULT code implies that there is a fault with the transponder or the installation. Note the FAULT message at the

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bottom of the screen and pass that information to your avionics maintenance organisation.

Configuration Mode

The system is configured when it is first installed by your avionics supplier. Configuration items include the Mode S aircraft address, the interface to the other aircraft systems, the aircraft category, and the pre-programmed values for VFR squawk code. To view or change these settings you must use Configuration Mode.

Do not use Configuration Mode in flight. Check with your avionics installer before changing the configuration.

To enter configuration mode, hold down the FUNC button whilst switching on the transponder. Configuration items can be changed using the Code Knob and the ENT and BACK buttons. Pressing FUNC advances to the next configuration item.

When configuration is complete, switch the transponder off. When it is switched back on the transponder will use the new configuration.

Low Temperature Operation

The TT31 is certified to operate correctly down to -20C, but at low temperatures the display may be impaired. On a cold day you may need to wait for the cockpit to warm up to ensure normal operation.