



T3000 Flight Instrument User Manual



T3000PSP / NAV_UM

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About This Document

Welcome to the Microair T3000 Flight Instrument, the latest innovation in avionics from Microair Avionics.

The T3000 Flight Instruments are available for use with either the T3000PSP or T3000NAV (Navigation) Sensor Module installation. Note: For USA certified aircraft customers, the T3000PSP is to be fitted as a non-required system (NORSEE).

The T3000PSP system includes a single pitot static probe and one remote instrument display. Optional additional remote displays can be installed. The system has been designed to provide comprehensive air, heading and attitude data, via an Air Data Computer (ADC) and Attitude and Heading Reference System (AHRS). For NORSEE certified customers it acts as a reliable backup to your primary instruments. The T3000PSP provides comprehensive air data information, including attitude, indicated air speed, true air speed, vertical speed, outside air temperature, and angle of attack. The system also includes an optional 12V or 24V automatic heating and anti-icing function.

The T3000 Navigation Sensor module is designed to provide the pilot with the full suite of primary instruments. Containing a GPS Position Source, the nav module provides comprehensive air data information such as airspeed, Altitude and Outside Air Temperature via a triple redundant air data computer and Attitude and Heading Reference system, including magnetometers and inertial sensors.

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DOCUMENT REVISION STATUS

Revision	Date	Approver	Change
0	10 Mar 2026	SC	Initial Issue

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1.0 INTRODUCTION

Congratulations on your purchase of the Microair product – the T3000 Pitot Static Probe system OR the T3000 skySuite Navigate Sensor module. Included with these products is an **Instrument Display and you may have also purchased optional additional Remote Instruments**. They are the very latest in avionics technology and have been designed as robust flight instruments. This manual describes how to get the most from your Flight Instruments and the T3000 PSP system operationally.

NOTE FOR CERTIFIED AIRCRAFT – T3000PSP NORSEE PURCHASE:

The installation of the Microair Digital Pitot Static Probe is supplemental **only** and may be installed only when used with a **NORSEE** approved system. It is not intended to replace, modify, or serve as a substitute for any existing, approved, or required certificated aircraft system. The Microair Digital Pitot Static Probe does not provide operational credit, and no regulatory or performance credit may be claimed from its installation.

1.1 FUNCTIONALITY

The T3000 Flight Instruments offers robust Air Data, Attitude, Heading Reference System (AHRS), and GNSS position source functionalities, including:

- Indicated Airspeed
- True Air Speed
- Outside Air Temperature
- Angle of Attack (Only available for T3000PSP)
- Altitude
- Altitude Alert
- Vertical Speed
- Attitude (pitch and roll)
- Gyro and accelerometer data
- Magnetic Heading
- Turn Rate and Balance
- Rate One Turn Bank Angle
- GNSS receiver / GPS Position (only available on Nav Sensor Module)
- Clock (GMT, Local and Timer)

2.0 DISPLAY LAYOUT

The Microair skySuite product has a 3.1” diameter instrument display with a 2.1” active touch screen. This display is mounted using the standard 2 ¼ inch instrument hole. The mounting is by 4 x M4 machine screws, located through the panel and screwed into threaded holes in each corner of the T3000 Flight Instrument base. (Please refer to the Installation Manual for correct installation and display configuration procedures.)

The T3000 architecture allows for multiple displays to be connected and provides user interaction in the following ways:

TOUCH	The 2.1" DA provides a capacitive touch screen enabling direct interaction with the graphics of the display. Herein touch areas are referenced to LCD screen resolution from the top left corner.
ROTATION	The outer body of the display (rotary bezel encoder) can be rotated, Herin rotation in a clockwise manner will be designated as RR for Rotate Right. Likewise, rotation in a counter-clockwise direction will be designated as RL for Rotate Left.
PRESS	The body of the Display ca be depressed. Herein a short press of less than 1.5 seconds shall be designated as SP for short press and a press for greater than 2 seconds shall be designated as LP for long press.

3.0 DISPLAY NAVIGATION

The T3000 Flight Instrument architecture has been designed for simple and effective navigation of its menus using a combination of the touchscreen display, rotary bezel encoder (for scrolling and/or adjusting), and push button bezel (for selecting and confirming).



3.1 FACE NAVIGATION

The T3000 Flight Instrument supports multiple display “faces”, allowing users to easily switch between faces using of two methods:

3.1.1 SWIPE NAVIGATION

Swipe Navigation provides an intuitive way to move between function faces. Users simply swipe across the touchscreen left, right, up, or down to switch views.

NOTE: Swipe functionality can be enabled or disabled via the Instrument Settings. Refer to T3000 PSP/NAV Installation Manual for more information.



3.1.2 BEZEL NAVIGATION

Bezel navigation is used to assist with changing the parameters on Primary and Secondary faces when they are present eg QNH setting on the Altitude Face. It is also used when moving between icons in the setup menu. Bezel navigation is supported via push or via a RR or RL turn.



3.2 DISPLAY POPUP MENU

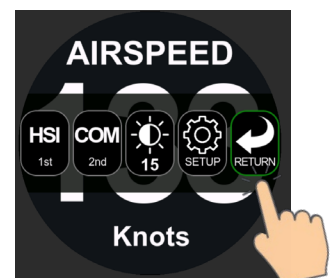
Users can access the Popup Menu by pressing and holding the Button Bezel until it appears.

NOTE: The currently selected option will be highlighted with a **green border**.

Touch the icon or push in the button bezel to select the desired function.

This shortcut menu provides the following options:

(See Next Page)

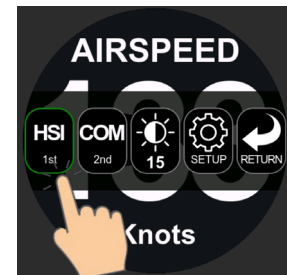


PRIMARY	1st Icon	Access the programmed Primary face.
SECONDARY	2nd Icon	Access the programmed Secondary face.
BRIGHTNESS	Sun Icon	Access the Brightness Adjustment settings. Refer to section 3.4 BRIGHTNESS CONTROL for detailed information.
SETUP	Gear Icon	Opens the Settings Menu to access Instrument, Interfaces, and Pilot PIN configuration. Refer to the T3000 PSP NAV Installation Manual for detailed information.
RETURN	Return Arrow Icon	Exit the pop-up menu.

3.3 DISPLAY ASSIGNMENT

Each display can be programmed with a **Primary Face (1st)** and **Secondary Face (2nd)**. To select a face, do the following:

- From the Popup Menu, use either the touchscreen or rotate the Bezel Encoder to highlight the desired option, Primary Face or Secondary Face.
- Confirm the selection by tapping the touchscreen OR pressing the Button Bezel.



NOTE: You can complete the action entirely using the touchscreen or entirely using the Bezel Control. Mixing input methods is optional.

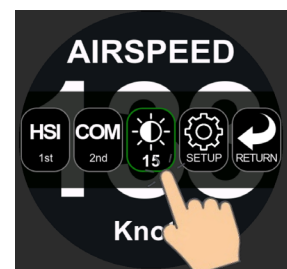
The setup of the Primary and Secondary faces is done in the Setup Menu (Gear Icon). See section 3.5

3.4 BRIGHTNESS CONTROL

Display brightness can be adjusted to suit the user's preference and optimize visibility. From the Popup Menu, select the Brightness option (Sun Icon) by either pressing the Button Bezel or tapping the touchscreen to activate brightness adjustment mode.

The Bezel Encoder can be RR to increase brightness or RL to decrease brightness.

If multiple displays are used, all others will synchronize with the adjusted setting.

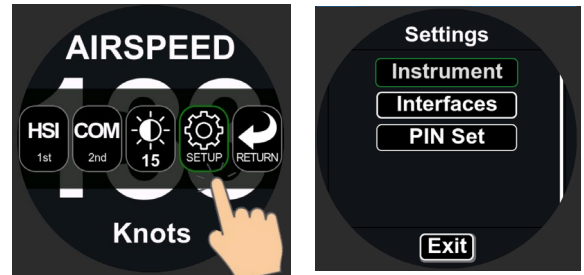


3.5 SETTINGS MENU

The display faces on the T3000 Flight Instrument can be configured to user preferences for customising the different information available.

To access the Settings Menu:

- From the Popup Menu, select SETUP (Gear Icon) by either pressing the Bezel Encoder or tapping the touchscreen.
- Navigate through the available settings by either touching the screen or rotating the Bezel Encoder to highlight the desired option.



This is where you can setup your Primary or Secondary Faces

Refer to the T3000 PSP NAV Installation Manual for further details on each setting.

4.0 CONTROL AND FUNCTIONS FACES

The controls available to the user will depend on the active face on the T3000 Flight Instrument Display. This section describes the available display faces and their applicable control functions (if any).

NOTE FOR T3000PSP CUSTOMERS: The **T3000PSP** will operate as a conventional pitot static probe when first installed and powered up. Information from the PSP will display immediately after installation and power up self-test.

The **T3000PSP** has many other features which can be programmed. Microair recommends that the full setup procedure is carried out **prior to first flight**. Refer to the **T3000 PSP NAV Installation Manual** for full details on how to install your *PSP* and/or *NAV* system.

4.1 FAULT FLAGS

Where data is not available or there is a fault with the data input detected by the system, the affected information will be displayed with a large red X across the display face with an error message displayed prominently in white text. For example: NO ALTITUDE – see example

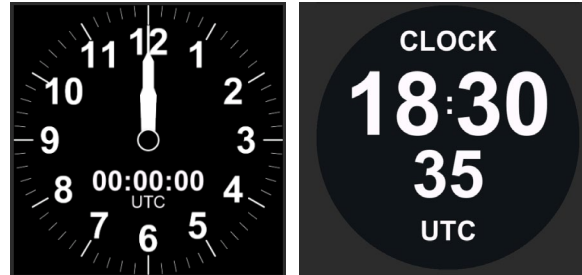


4.2 CLOCK & DIGITAL FACE

The T3000 Flight Instrument Display presents a 3-hand analogue clock (always displaying UTC) alongside a digital time display in a 24-hour format.

The digital display can be toggled between Time and Timer modes with a short press in the following sequence:

1. UTC
2. Local time
3. Timer



Tapping on the timer window (when the timer is running) will reset the timer.

When in local time mode, the local time offset can be adjusted by rotating the encoder either left or right. The label under the time will read UTC+xx or -xx if in local time mode or UTC if in UTC mode.

The label will read TIMER when the timer is running.

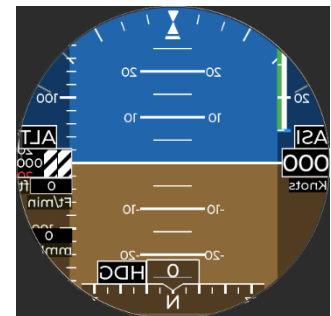
NOTE: If a NAV system is not installed, a prompt appears to set the time.

4.3 ARTIFICIAL HORIZON

The T3000 Flight Instrument Display presents a standard blue/brown attitude indicator.

It displays roll graduations at 10°, 20°, 30°, 45°, and 60° along with rate one turn guidance dependent on the current air speed. Pitch indications are shown using 10° major and 5° minor graduations.

Flight balance is indicated by a skid indicator on the roll lubber line.



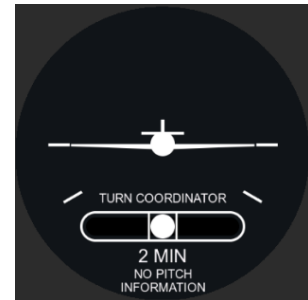
NOTE: There is no user interaction with this face.

4.4 TURN COORDINATOR

The T3000 Flight Instrument Display presents a standard rotating aircraft and balance ball.

The scale is for a rate 1 turn (180° per minute). The ball shows relative gravity in relation to the center of the aircraft symbol.

NOTE: There is no user interaction with this face.



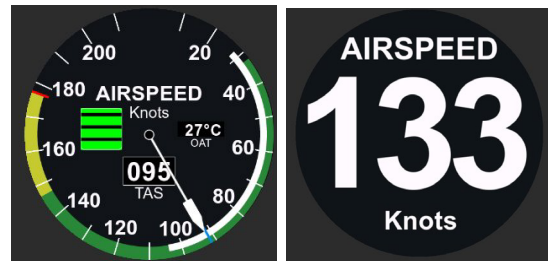
4.5 AIR SPEED INDICATOR & DIGITAL FACE

The T3000 Flight Instrument Display presents a standard pointer for IAS/CAS, along with a digital measurement of Outside Air Temperature (OAT) and True Air Speed (TAS).

Using the settings menu, the various speeds (Vne, Vno, Vfe, Vs1, Vs0, Vyse) are input and determine the position of the color bands and arcs.

AoA parameters are defined and set in the T3000 PSP NAV Installation Manual.

A digital airspeed face is provided as an alternative and features TAS in appropriate coloring dependent on the programmed arcs.

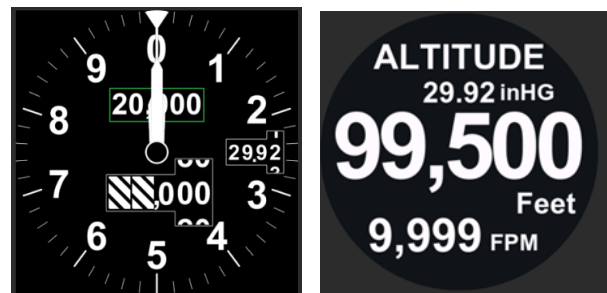


NOTE: There is no user interaction with this face.

4.6 ALTIMETER & DIGITAL FACE

The T3000 Flight Instrument Display presents a standard 3 pointer altimeter along with a digital face of altitude in a rolling drum format.

For altitude measurement below 10,000' the drums show the stand \ \ \ ground symbol.



For negative altitudes the digital read out is replaced by red digital display showing “NEGXXX”. The maximum negative is -999ft.

The Pressure Reference is shown in either inHg or hPa (mB) as selected in the setup.

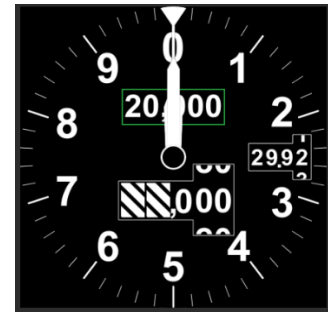
The selected altitude is shown with white characters when not within 50' of the assigned altitude. Green characters are shown when within range of the selected altitude.

A digital face is available as an alternative as shown above.

A short press toggles the current selection between the pressure reference and the selected altitude as shown by a green border around the box.

Rotation of the encoder adjusts either the selected altitude or pressure reference, depending upon which is selected at the time.

The user can also change the current selection by tapping on the selected altitude window or the pressure reference window.

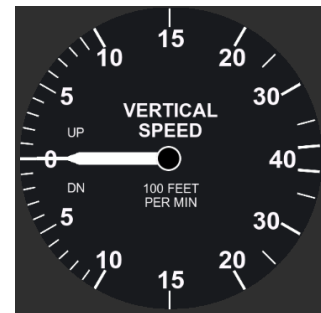


4.7 VERTICAL SPEED INDICATOR FACE

The T3000 Flight Instrument Display presents a standard pointer for vertical speed.

The scale is not linear with different scales from 0 to 2,000', from 2,000' to 3,500' and from 3,500' to 4,000'. Rates in excess of 4,000 fpm are shown as 4,000 fpm.

NOTE: There is no user interaction with this face.



4.8 DIRECTIONAL GYRO FACE

The T3000 Flight Instrument Display presents a standard compass card with a major pointer at the top center to indicate aircraft heading and then minor pointers at 45' to aid in heading selection.

The selected heading can be adjusted by rotating the bezel.



4.9 HORIZONTAL SITUATION INDICATOR FACE

The Directional Gyro can also show a Course Deviation Indicator and because the course rotates with changes in heading it becomes a Horizontal Situation Indicator (HSI).

The user can turn on/off the Course Deviation Indicators on the instrument settings page.



5.0 ADDITIONAL DISPLAY FACES AVAILABLE WITH T3000 SKYSUTE PRODUCTS

5.1 ANGLE OF ATTACK CONTROL FACE (WHEN A T3000PSP IS PURCHASED)

The AoA face, and the AoA display of the ASI face, provide the pilot with an indication of the Angle of Attack (the angle between the wings chord and the local airflow) in a quick to glance and read display.

When properly aligned for the aircraft (refer installation manual) then the display moves progressively from black to green to yellow and finally red as the buffer to an aerodynamic stall decreases. This can increase the pilot's awareness during both low and high speed manoeuvres and during approach and landing.



5.2 MASTER CAUTION FACE (WHEN A T3000PSP OR T3000ESI IS PURCHASED)

The T3000 Master Caution face alerts the pilot to warnings and cautions based on configurable aircraft parameters.

- Integration: The system sets "Warning Active" or "Caution Active" bits on the IEB for aural or visual alerts in other T3000 components.
- Event Logging: All events are logged with start/end times.



6.0 FIRMWARE UPDATES

The T3000 can be updated to the latest available firmware using the T3000skySuite application available for both iPhone and Android devices.

The App can be used to configure settings and inflight to adjust operational parameters.

The App will improve over time. Please ensure you always have the latest version installed.

6.1 DOWNLOAD THE MOBILE APP

Ensure you are connected to the internet. Follow the following links to download the app or search for Microair Avionics T3000.



7.0 FREQUENTLY ASKED QUESTIONS

The following questions are common to most users and may help you understand the operation of the T3000 Flight Instrument, some of these are explained in the user manual but may have been missed by the reader:

This section will be populated as questions are received. Please reach out to us at support.microair.aero with any question or suggestion.

8.0 LIMITED WARRANTY

The warranty period for any Microair Avionics manufactured article is dependent on Condition of the article at time of sale and the Purchase Date.

For **New Articles** the warranty period commences from Date of Purchase and is valid for 12 months or the minimum period defined by applicable consumer law, whichever is the longer. In the absence of original Proof of Purchase, the warranty will be valid for 12 months from Date of Factory Shipment as determined by Microair Avionics.

For **Factory Reconditioned Articles** offered for sale, the warranty period commences from Date of Purchase and is valid for 12 months.

For **Factory Exchanged Articles** the warranty period commences from the Date of Purchase of the original article and is valid for the remainder of the original warranty period.

For **Repaired Articles** the warranty period commences from the date of Factory Shipment and is valid for 6 months for the original defect only.

Microair Avionics will, at its sole discretion, repair or replace any components, which fail in normal use. Such repairs or replacement will be made at no charge to the customer for parts or labour. The customer shall be responsible for any transportation costs for return of this product to Microair Pty Ltd or an approved Microair Service Centre.

This warranty does not cover failures due to abuse, misuse, accident, unauthorised alteration, or repairs carried out by parties other than Microair Avionics or an approved Microair Avionics Service Centre. This warranty does not cover failures where the product has not been installed or operated, in accordance with the provisions of the User and Installation manual(s).

It shall be at Microair Avionics sole discretion to decide if a defect is a result of material or workmanship failure.

THE WARRANTIES AND REMEDIES CONTAINED HEREIN ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING ANY LIABILITY ARISING UNDER WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, STATUARY OR OTHERWISE. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, WHICH MAY VARY FROM STATE TO STATE, AND COUNTRY TO COUNTRY.

IN NO EVENT SHALL MICROAIR AVIONICS PTY LTD BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM THE USE, MISUSE OR INABILITY TO USE THIS PRODUCT OR FROM DEFECTS IN THE PRODUCT.

Please see additional warranty information continued the next page.

Microair Avionics may at its discretion, refer product returns for repair or service, to a service facility closest to you. Microair Avionics reserves the right to repair or replace the product or software or offer a full refund of the purchase price at its sole discretion.

To obtain warranty service, please email or call Microair Avionics in Australia. Domestic or International Return instructions are available on our website. Please follow these instructions carefully.

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