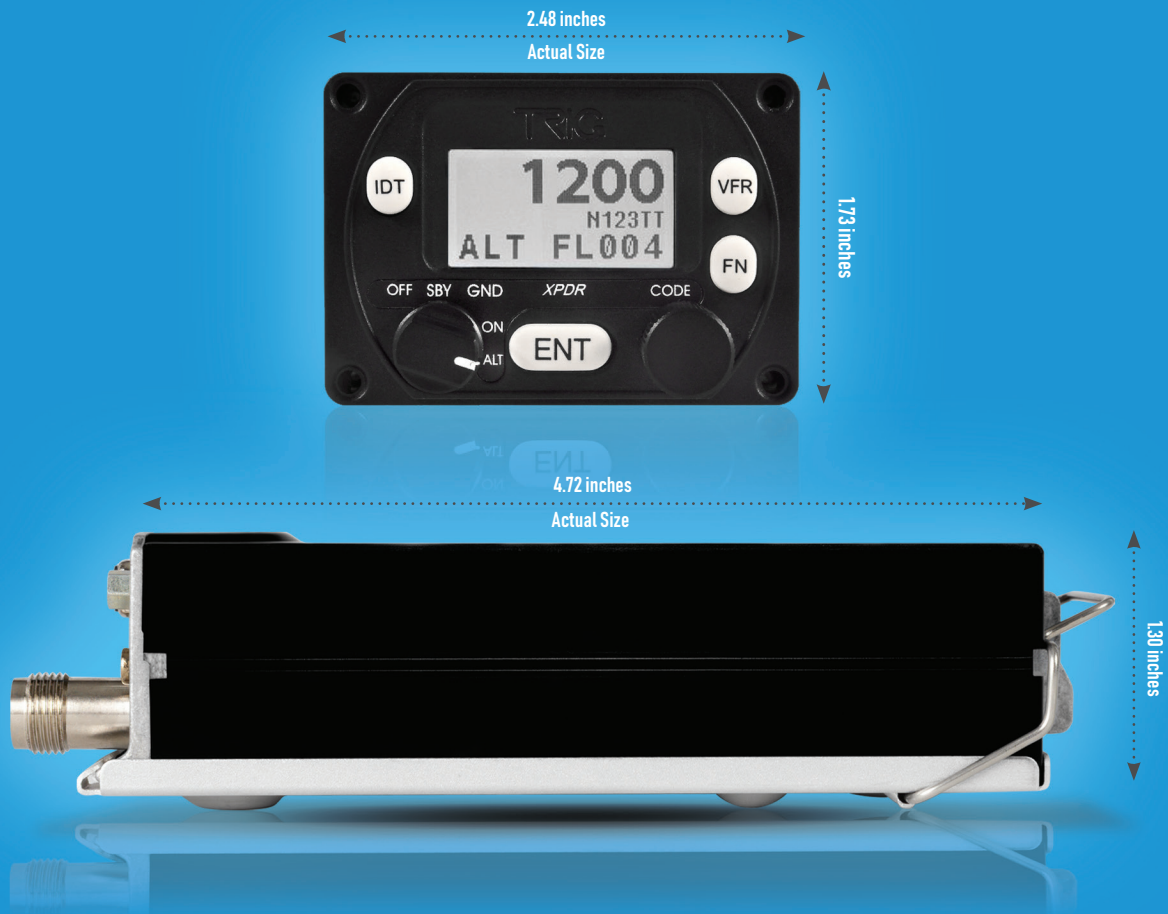


THE TT23 AND TT23G MODE S TRANSPONDER



5 Reasons To Buy

- Smallest, lightest solution
- Now available with built-in GPS
- 1090ES ADS-B Out
- Low power consumption, battery operable
- Built-in altitude encoder

Smaller, Lighter, GPS, ADS-B Out, Certified

Simple to install, simple to use – The TT23 series is the next generation of Trig's compact Transponder line.

The new design features a smaller and lighter transceiver than its predecessors, while still boasting a nominal power output of 250 watts.

Now available with built-in GPS for the first time, the TT23G model offers a fully integrated ADS-B Out solution, ideally suited for use in light sport, gliders and GA aircraft where panel space, weight, and simplified installation are paramount.

The TT23 is a fully certified Class 1, Mode S transponder with ADS-B Out, suitable for both VFR and IFR flight. Its compact form factor is ideal for aircraft with limited panel space.

Available in Two Versions

The **TT23G** has a built-in GPS receiver – the ideal choice for pilots seeking an integrated ADS-B Out solution. The TT23G is perfect for experimental and light sport aircraft that need to meet the requirements for ADS-B Out in the United States. In other markets where ADS-B is voluntary, the TT23G is a perfect solution for enhancing conspicuity and safety.

The **TT23** can also be used as an ADS-B out solution when connected to a compatible external GPS. There will be an STC available to integrate with popular third-party navigators, as well as the Trig TN70 remote position source. For those that do not intend to equip with ADS-B out, the TT23 model is a high-quality, modern transponder with easy configuration options that make it suitable for a broad range of GA applications.

Compact Installation

The TT23 transponder is a two part, space-efficient solution, with a separate control head and transponder box. Well-known for its compact size, the TC20 control head fits into a 57mm round hole, with the option of using an even smaller compact mount hole. When fitted, the depth of the controller is only 54mm, and connected to a wiring harness the depth is still only 85mm. The separate transponder box can be mounted anywhere within the airframe. The TC20 also has a built-in altitude encoder, saving additional room and weight.

Support

We provide a two year worldwide warranty through our Approved Trig Dealer network.

How To Buy

We always recommend that you buy your Trig products through an Approved Trig Dealer. To find a dealer go to trig-avionics.com

Key Features

Compact and Lightweight Design: Transponder box is more than 15% (50g / 1.7oz) lighter than its predecessor. The TT23 is ideal for aircraft with limited panel space and weight constraints.

ADS-B Out Capable: The TT23 series supports ADS-B Out, enhancing situational awareness and meeting future airspace requirements.

Available with Built-In GPS: No need for an external GPS for ADS-B Out capability with the TT23G model.

Certified Performance: The TT23 series is certified for IFR and VFR flight, meeting EASA ETSO and FAA TSO standards, ensuring compliance with international aviation regulations.

Integrated Altitude Encoder: TT23 models include an integrated altitude encoder, simplifying installation and reducing the need for additional equipment.

User-Friendly Interface: Equipped with a clear, bright display and intuitive controls, the TT23 series ensures ease of operation in various lighting conditions.



TT23		TT23G
Type	Transponder Class 1 Mode S level 2els ADS-B Class B1S	
Certification	ETSO C88a, C112e, 2C112b, C166b TSO C88b, C112c, approved for IFR and VFR flight	ETSO C88a, C112e, 2C112b, C166b, C199 TSO C88b, C112c, approved for IFR and VFR flight
Compliance	ED-73E, ED-14G, DO-160G, DO-260B, DO-178C, DO-178B, DO-254 Level C	
Supply voltage (DC)	11-33 V	
Typical consumption (at 14v)	idle: 0.15 A active: 0.28 A	idle: 0.15A active: 0.34 A
Nominal Transmitter power	250 W at connector	
Operating temperature	For the controller -20°C to +55°C / For the transponder -40°C to +70°C	
Cooling requirement	No fan required	
Weight (hardware back box)	300 g / 0.66 lbs	315g / 0.69 lbs
Weight (TC20 control head)	90g / 0.19 lbs	
Dimensions (mm)	Controller: H 44 x W 63 x L 54 mm / Transponder in tray: H 37 x W 64 x L 149 mm	
Dimensions (inches)	Controller: H 1.8 x W 2.4 x L 2.1 inches / Transponder in tray: H 1.5 x W 2.6 x L 5.9 inches	

TRIG TY91 AND TY92 – VHF RADIOS



5 reasons to buy

- Compact and light weight
- Fits in the tightest panel space
- Dual watch and two place intercom
- Nine programmable memories
- Can be battery operated

The TY91 and TY92 radios provide sport and general aviation pilots with a compact, fully certified VHF radio.

These radios perfectly compliment our TT21 and TT22, the world's smallest and lightest general aviation Mode S and 1090 MHz ES ADS-B Out transponders.

Small and Flexible

The Trig TY91 and TY92 take up minimal space and weight. The use of a control head and separate radio hardware unit provides more installation options, especially when space is at a premium.

The control head can be conveniently mounted in a standard 2^{1/4}" round hole or even smaller compact mount. Installation is straight forward, and once fitted the depth of the radio control head is less than 1^{1/2}" deep. In practice this means that the Trig TY91 and TY92 control head can be installed in an aircraft panel where a larger 'single box' radio would not fit. Operation of the radio is simple and frequency selection rapid. The TY91 and TY92 can be set at 25 kHz and 8.33 kHz steps making them suitable for use in Europe.

TRIG

Which model is right for me?

Light sport, ultra light, glider and balloon pilots will fit the Trig TY91 radio, this lower powered 6 watt model is ideal for the majority of GA users.

The Trig TY92 has a higher nominal power output of 16 watts, suitable for longer range transmission and for aircraft that have a 28 volt power supply. Easily installed outwith the main avionics stack the TY92 makes a perfect back up radio in larger GA aircraft.

Features

The Trig TY91 and TY92 offer pilots the following features:

- Low size and weight, with flexibility of installation options.

- Simple operation via positive controls can be easily operated whilst wearing gloves.
- Dual watch function, allowing the monitoring of a standby frequency.
- Includes a two place intercom.
- Includes a built in speaker amplifier, allowing pilots the option of headset free operation.
- 9 programmable memories.
- Crisp display, visible in all lighting conditions.
- Fully certified.

Support

We provide a two year worldwide warranty through our Approved Trig Dealer network.

How to buy

We always recommend that you buy your Trig products through an Approved Trig Dealer. To find a dealer go to www.trig-avionics.com



	TY91	TY92
Type	8.33 kHz/25 kHz VHF transceiver. Receiver – Class C, Class E. Transmitter – Class 4, Class 6	8.33 kHz/25 kHz VHF transceiver. Receiver – Class C, Class E. Transmitter – Class 3, Class 5
Certification	ETSO-2C169a, ETSO-2C128, TSO-C169a, TSO-C128a.	
Compliance	ED-23C, ED-67, DO-186B, DO-178B Level B, DO-160F, DO-254 Level C	
Supply Voltage (DC)	11-33 V	22-33 V
Typical Current Consumption	(at 14V) receive: 200 mA transmit: 2A	(at 28V) receive: 130 mA transmit: 2.5A
Nominal Transmitter Power	6 W	16 W
Operating Temperature	for the radio unit -40 °C to + 70 °C for the controller -20 °C to +70 °C	
Cooling Requirement	No fan required	
Weight	1.01 lbs	
Dimensions (mm)	controller: H 1.73 x W 2.48 x D 1.37 inches (Depth 3 inches with D-Type connector fitted). radio unit: H 1.88 x W 2.59 x L 6.29 inches (inc. socket).	

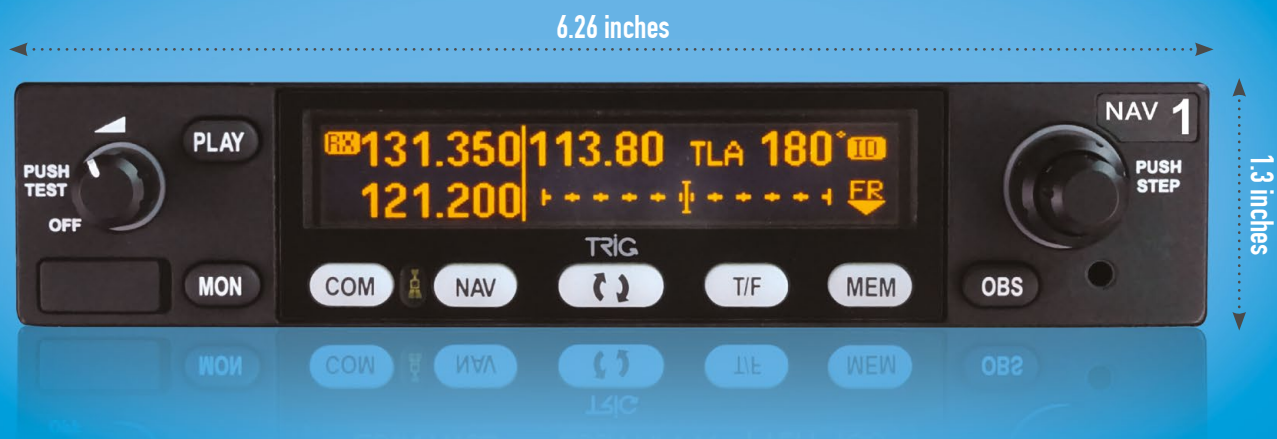


Trig Avionics Limited

Heriot Watt Research Park, Edinburgh EH14 4AP, UK
Tel: +44 (0)131 449 8810 enquiries@trig-avionics.com
Fax: +44 (0)131 449 8811 www.trig-avionics.com



THE TX56A AND TX57A NAV/COM



5 reasons to buy

- Slimline – only 1.3” high
- 760 channel spacing – ETSO approved
- Nav – VOR / ILS receiver – monitor 2 x VORs
- Nav – Built in VOR/LOC Converter
- Com – 2 place stereo intercom / stereo music

Trig's TX56A and TX57A Nav/Com units provide the ideal platform to update legacy avionics or equip your new aircraft. Slimline and highly efficient both Nav/Com models are housed within a superbly engineered case. At only 1.3” high each unit saves valuable space yet contains an impressive selection of practical features for any pilot.

You might be a VFR pilot wanting VOR navigational back up, a flight school seeking an easy to use training platform or a serious VFR/IFR operator looking for reliable digital capabilities. Trig's 'better by design' approach has created a Nav/Com that meets all these requirements - it will enhance your navigation and communication throughout all phases of flight.

Ease of installation

The TX56A and TX57A's low profile design requires no external cooling fans. Each unit is designed to easily replace legacy equipment, which includes popular; KX155A and SL 30 models.

TRIG

Features that matter

The TX56A has a 10 watt Com radio, suited for most general aviation use. The TX57A has a more powerful 16 watt Com radio, where a higher transmission output is required.

Each unit has an easy to read display showing both navigation and communication frequencies and identifiers. Maximum clarity is achieved by giving prominence to the active Nav or Com mode. The unique ‘Push Step’ knob allows the fastest tuning across voice channels, ensuring you can focus on flying whilst communicating. The Dual Watch feature allows you to monitor two Com or Nav frequencies at the same time - it’s like having a second radio. The Com functions include the ability to select most recently memorised database frequencies or those displayed on a compatible active GPS track. The radio also features Trig’s ‘Say Again’ technology - a single button press replays the last radio transmission. The Com also features a built in two place intercom with inputs for stereo music and auxiliary audio warnings.

The Nav receiver is optimised to provide stress free operation. Both the TX56A and TX57A will decode Morse, identifying VORs or ILS. The Nav receiver can monitor a second VOR which significantly enhances route navigation. This means that a standby VOR radial can be displayed in addition to the primary VOR - allowing the pilot to quickly calculate an accurate position fix.

The unit display features a graphical CDI (course deviation indicator) This allows the pilot to navigate without an external CDI. The TX56A also provides support for various display options, using a range of external cockpit instruments.

Support

We provide a two year worldwide warranty through our Approved Trig Dealer network.

How to buy

We always recommend that you buy your Trig products through an Approved Trig Dealer, further information can be found at www.trig-avionics.com

Automatic centring of the CDI needle displays a direct bearing to a selected VOR for ease of navigation whilst the to/from button allows you to display the inbound or outbound radial.

Integration benefits

Trig Nav/Com’s benefit from having a built in VOR/LOC converter and can also support a composite output. This ensures the widest compatibility with installed indicators. The TX56A and TX57A can also tune a remote DME in addition to supporting digital EFIS and PFD indicators.

The ability to integrate the Nav/Com with a suitable GPS (Garmin protocol) allows the automatic display of frequencies along a flight route. Finally, a customizable database can be loaded via the handy USB port, this can contain over 200 of your Com and over 200 Nav frequencies and identifiers.

TI106 CDI - Course Deviation Indicator

Trig’s TI106 is a 3” Course Deviation Indicator, ideally matched for the TX56A and TX57A. Using the latest generation of indicator technology, solid state actuators provide smooth and dependable navigational indications. Use of LED technology for both flags and backlighting provides a superior display compared to older legacy indicators. The TI106 will support most existing Nav/Com equipment, making it a suitable replacement CDI across general aviation.



TI106

	TX56A Nav/Com	TX57A Nav/Com	TI106 - CDI
Type:	Certified – 8.33 and 25 kHz	Certified – 8.33 and 25 kHz	Certified
Certification	ETSO 2C128, 2C169a, 2C34f, ETSO 2C36f, 2C40c TSO-C128a, C169a, C34e, TSO-C36e, C40c		ETSO C34e, C36e, 2C40c TSO-C34e, C36e, C40c
Compliance	ED-23C, ED-67, DO-186B, DO-178B Level B, DO-160G, DO-254 Level C		DO-160B/G
Supply Voltage [DC]	11 – 33 V	22 – 33 V	12 - 32 VDC
Typical Current Consumption in receive mode	at 14V – 265 mA	at 28V – 140 mA	0.2 Amps
Nominal Transmitter Power	10 W	16 W	N/A
Operating Temperature	-20°C to +55°C		-55°C to +70°C
Cooling Requirement	No fan required		N/A
Weight	2.42lbs		1.13lbs
Front Panel Dimensions	H 1.3” x W 6.26”		3” diameter
Product Dimensions (in tray)	H 1.3” x W 6.26” x L 10.63”		H 3.25” x W 3.25” x L 4.75”



Trig Avionics Limited

Heriot Watt Research Park, Edinburgh EH14 4AP, UK
Tel: +44 (0)131 449 8810 enquiries@trig-avionics.com
Fax: +44 (0)131 449 8811 www.trig-avionics.com

THE TT31 1090ES ADS-B OUT TRANSPONDER



5 reasons to buy

- Retrofit - 'plug and play' installation
- Great functionality and performance
- 2020 ADS-B, FAA STC approved, mandate ready today!
- TIS traffic capabilities
- Low power consumption

Replacing your old transponder or updating your aircraft avionics? If so, the TT31 should be your conventional panel mount transponder of choice. Fixed wing and rotary pilots around the world have selected the TT31 for its superior features, great value and superb support.

The TT31 is the easiest upgrade to the popular KT76A, KT76C and KT78A, with plug and play Mode S capability - this transponder gets to work straight out of the box.

2020 ADS-B Compliance Today

As a fully capable 1090 MHz Extended Squitter ADS-B Out transponder, the TT31 is TSO approved by the FAA to C166b. This makes the TT31 compliant with the latest ADS-B requirements and ensures that it is fit for the future.

The TT31 is compatible with many popular GPS position sources including Garmin GNS 400W / 500W series navigators and the Trig TN70. This makes installation flexibility the best in class.

The TT31 also provides data link support for TIS traffic. Connecting a suitable panel or remote display will show the position of local and conflicting aircraft traffic - this information is sent from TIS ground stations (where available).

The TT31-low power, high performance

The transponder has a bright and easy to read backlit display. Operation is simple via a conventional rotary knob, enabling rapid selection of Squawk code and Flight ID. The TT31 comes with additional features that include a stop watch, flight timer and altitude alarm.

TRIG

The TT31 is truly efficient using half the power of most legacy transponders. It needs no warm up time and is ready to work as soon as you strap in. The reliability of aircraft avionics can be adversely affected by excessive heat, the TT31's low power consumption produces less heat in your avionics stack and significantly reduces loading on your aircraft's electrical system. This efficiency has no impact on performance; as a consequence fitting a TT31 actually enhances the reliability of your entire avionics system.

Flexible Installation

The TT31 is a great new or retro-fit solution; it operates at 240 watts from either a supply voltage of 14 or 28 volts. Installation is straightforward without any special configuration or dropper resistors.

The TT31 can use either a parallel or serial altitude encoder and can even act as a serializer for your GPS baro-aiding input.

Support

We provide a two year worldwide warranty through our Approved Trig Dealer network. Approved Trig Service Centres are located in Europe, the U.S. and South East Asia providing you with prompt and high quality technical support.

How to buy

We always recommend that you buy your Trig products through an Approved Trig Dealer, further information can be found at www.trig-avionics.com

The TT31 conventional panel mount transponder - the class leader

- Class leading performance with the easiest transponder upgrade path for legacy units.
- The TT31 is the ideal basis for building your aircraft's ADS-B system. To receive a full ADS-B In service you must first have a certified ADS-B Out signal, the TT31 generates a compliant 1090ES ADS-B Out.
- Comprehensive and free FAA STC program to make ADS-B installation straight forward.
- Fitting a TT31 Mode S transponder increases your visibility to other airspace users, enhancing your flight safety.



TT31 1090ES ADS-B Out Transponder	
Type	Transponder Class 1 Mode S Level 2 els ADS-B Class B1S
Certification	ETSO C166A, 2C112B and TSO C112, C166b
Compliance	ED-73B, DO-160E, DO-178B Level B, D0181C, DO-260B, DO-254 Level C
Supply Voltage (DC)	10 – 33 V
Typical Current Consumption (at 14V)	idle: 0.22 A active: 0.45 A
Nominal Transmitter Power	240 W at connector
Operating Temperature	-20°C to +55°C
Cooling Requirement	No fan required
Weight	2.8 lbs
Dimensions	In tray - H 1.57 x W 6.30 x L 9.4 inches

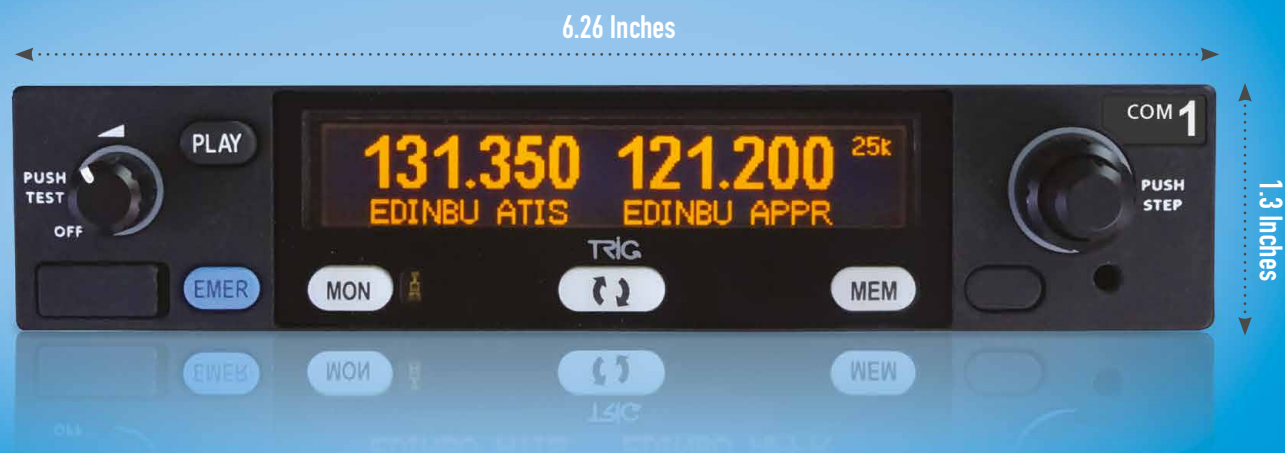


Trig Avionics Limited

Heriot Watt Research Park, Edinburgh EH14 4AP, UK
Tel: +44 131 449 8810 enquiries@trig-avionics.com
Fax: +44 131 449 8811 www.trig-avionics.com



THE TY96A AND TY97A AVIATION RADIOS



5 reasons to buy

- Slimline – only 1.3” high
- 25 kHz - ETSO and TSO approved
- Stereo music / two place intercom
- Configurable airfield database
- ‘Say Again’ and Emergency button

Both the TY96A and TY97A aviation radios define a new standard in 25 kHz radio design. Combining great quality and performance each radio is housed within a superbly engineered unit, slimline and light. At only 1.3” high the radio saves valuable stack space, but retains innovative and practical features. These radios are perfectly suited to the needs of experienced and novice pilots alike.

Features that matter

The TY96A is a 10 Watt model, suited for most general aviation use. The TY97A is a more powerful 16 Watt model, where a higher transmission output is required.

The display is clear and bright, showing both primary and secondary frequencies along with ICAO or custom set airfield identifiers. A ‘Push Step’ knob allows the fastest change from 50 kHz to 25 kHz steps - so you can tune the radio quickly without compromising your look-out. The Dual Watch feature allows two frequencies to be monitored at the same time - it’s like having two radios in one.

TRIG

Both radios have a ‘Say Again’ feature. A single button press replays the last radio transmission. It’s ideal for student pilots, but every pilot can get distracted, so it avoids the embarrassment of asking air traffic to repeat a message. A one touch Emergency Button automatically sets 121.5 MHz, along with mic and volume levels. This ensures a successful transmission in what can be a stressful situation.

Integration benefits

Each radio has a built in two place intercom with auxiliary inputs for stereo music and audio warnings. Each radio can also integrate with a GPS (SL40 protocol) to automatically display frequencies as they are required along the flight route. Finally, an airfield database can be loaded via the handy USB port. This database can contain over 200 of your preferred frequencies and identifiers.

Support

We provide a two year worldwide warranty through our Approved Trig Dealer network.

How to buy

We always recommend that you buy your Trig products through an Approved Trig Dealer, further information can be found at www.trig-avionics.com

Ease of installation

The radio’s low profile design requires no external cooling fans. The radios compact size and features make it a great choice for both forward and retro-fit installations. Each radio is designed to easily replace legacy radios, these include popular; KY 196A, KY 197A and SL 40 models.

The TY96A and TY97A – slimline aviation radios

- 25 kHz certified stack radio – only 1.3” high.
- Features that matter – Push Step, Dual Watch, ‘Say Again’ and Emergency button.



	TY96A	TY97A
Type	Certified – 25 kHz	
Certification	ETSO 2C128, 2C169a TSO-C128a TSO-C169a	
Compliance	ED-23C, ED-67, DO-186B, DO-178B Level B, DO-160G, DO-254 Level C	
Supply Voltage (DC)	11 – 33 V	22 – 33 V
Typical Current Consumption in receive mode	at 14V – 175 mA	at 28V – 250 mA
Nominal Transmitter Power	10 Watt	16 Watt
Operating Temperature	-20°C to + 55°C	
Cooling Requirement	No fan required	
Weight	2.09 lbs	
Total Dimensions	H 1.3” x W 6.26” x L 10.63”	
Installed depth in tray	9.05” long	



Trig Avionics Limited

Heriot Watt Research Park, Edinburgh EH14 4AP, UK
Tel: +44 (0)131 449 8810 enquiries@trig-avionics.com
Fax: +44 (0)131 449 8811 www.trig-avionics.com

THE TMA44 AND TMA45 AUDIO PANELS



5 reasons to buy

- Great value – companion product for Trig radios
- Superior design interface, easy to operate
- Bluetooth option – support for stereo music and phone (TMA45)
- Includes Marker Beacon Indicator
- Industry leading TDNR – digital noise reduction (TMA45)

TMA44 and TMA45 are the ideal audio panels to enhance your stack. The control of your navigation, communication and entertainment will be simplified as each model benefits from Trig's 'Better by Design' philosophy. The result - a logical and high quality interface that's easier to use, with features pilots and passengers will really appreciate.

TMA45 Superior

The TMA45 is our fully featured panel, perfect for aircraft owners who don't wish to compromise. If you are looking for great quality audio, stereo music and mobile phone support via Bluetooth this panel provides it all. Hosting 2-6 seats the TMA45 has all the functionality of the TMA44 but adds industry leading Trig Digital Noise Reduction (TDNR). By automatically selecting the optimum level of squelch and mic threshold TDNR reduces cockpit noise. This improves your audio environment; it aids pilot concentration and combats fatigue. Our Superior panel also features Trig Active Mute (TAM) this further removes unwanted background noise from radio static, producing class leading audio quality.

By creating a more comfortable audio environment you are best placed to enjoy the TMA45's stereo music entertainment and mobile phone connectivity. Integrated Bluetooth allows two portable electronic devices to be connected providing stereo music and communication options.

The TMA45 gives total flexibility to adjust audio inputs to best suit your needs – it's the preferred solution for discerning pilots who want to stay connected.

TRIG

TMA44 Standard

The TMA44 suits aircraft owners looking for a great value panel that covers aviation requirements. This mono panel supports 2-4 seats with independent control of crew and passenger audio. Two additional unswitched inputs are included for audio alerts, such as stall or undercarriage warnings. The option of playing music via two custom inputs is enhanced by the TMA44’s ‘smooth fade’ feature. This automatically adjusts music levels to ensure vital radio information is always clearly received.

The TMA44 equips you for navigation and IFR flight, with switched inputs for; Nav 1, Nav 2, ADF, Aux and DME. An illuminated marker beacon for ILS approaches adds visual cues to marker audio tones. All switchgear has a positive feel, with adjustable panel illumination for a great user experience day or night.

Support

We provide a two year worldwide warranty through our Approved Trig Dealer network.

How to buy

We always recommend that you buy your Trig products through an Approved Trig Dealer, further information can be found at www.trig-avionics.com

Easy Installation

The TMA44 deploys an industry standard 44 pin connector allowing a simple retro-fit with older audio panels. The TMA45 has two connectors and is a plug and play retrofit for the GMA340. Both units are designed to fit into a standard avionics rack.

The TMA44 and TMA45 – audio panels

- Trig ‘Better by Design’ – simple to use, high quality interface.
- Comprehensive audio features for VFR and IFR flight included.
- Compatible with many third party Radio and Nav/Com products.



Feature / Performance	TMA44 – Standard	TMA45 – Superior
Audio Panel	2-4 seats - mono	2-6 seats - stereo
TSO Compliance - TSO-C50c, TSO-C35d	✓	✓
Independent control for pilot, crew, passengers	✓	✓
Switched inputs for Nav 1, Nav 2, ADF, Aux, DME	✓	-
Switched inputs for Nav 1, Nav 2, ADF, DME and TEL	-	✓
Unswitched – for audio warnings	2	4
Marker Beacon Indicator with visual idents for IFR / ILS	✓	✓
Adjustable illumination - photocell and/or via lighting bus	✓	✓
Music ‘Smooth Fade’ feature	✓	✓
Trig Digital Noise Reduction (TDNR) enhances VOX audio	X	✓
Trig Active Mute (TAM) removes cockpit noise/ reduces radio static	X	✓
Bluetooth support for stereo music and mobile connectivity	X	✓
Front panel jack socket (for portable electronic device)	X	✓
Mic frequency response – 3 dB	350 Hz - 6000Hz	300 Hz - 6000Hz
Music frequency response – 3 dB	200 Hz – 15 kHz	20 Hz – 20 kHz
Headphone impedance	150 – 1000 Ω	
Headphone output – each headset (no clipping)	45 mW	38 mW
Speaker output – 14 Volt DC / 28 Volt DC	3 Watts / 10 Watts	
Supply voltage	11 – 33 Volts DC	
Temperature range – operating	-20 ° C to + 55 ° C	
– storage	-40 ° C to + 85° C	
Weight	1.3lb	
Physical dimensions W 6.25” x H 1.3” x D 7.75”	W 6.25” x H 1.3” x D 7.75”	
Two year warranty and lifetime support	✓	✓



Trig Avionics Limited

Heriot Watt Research Park, Edinburgh EH14 4AP, UK
Tel: +44 (0)131 449 8810 enquiries@trig-avionics.com
Fax: +44 (0)131 449 8811 www.trig-avionics.com

