

# TP9461 Intrinsically Safe

SPECIFICATIONS



## Designed for maximum safety in the field and enhanced usability

Intrinsically Safe Tait P25 portables are engineered to operate safely in hazardous environments, keeping your people safe while they get the job done.

With analog, 12.5kHz P25 Phase 1 FDMA conventional/trunked and 6.25kHz equivalent P25 Phase 2 TDMA trunked and LSM (CQPSK) decode capability in a single device, you can transition to a more spectrally efficient solution in a time frame that suits you.

The TP9400 portable enables first responder effectiveness and safety with internal GPS, IP67 protection and AES encryption.



### KEY FEATURES

- User safety ensured with globally recognized Intrinsically Safe rating and internationally recognised blue color for intrinsic safety.
- Manage migration risk with a multi-mode portable – analog, P25 Phase 1 conventional/trunked and P25 Phase 2 for enhanced interoperability
- P25 standards compliance for greater choice and interoperability
- AES encryption, voice and data, pre-set status messages and internal GPS for safe and efficient operations
- Engineered for demanding environments with IP67 rating and new watershedding grille



# TP9461 Intrinsically Safe

## SPECIFICATIONS

### FEATURES AND BENEFITS

#### Delivers on the P25 standards

Benefit from the spectral efficiency, multi-vendor interoperability, security, migration and data capability demanded by the P25 standards.

The TP9400 provides:

- TIA-102 P25 CAP tested providing multi-vendor interoperability.
- 12.5kHz P25 Phase 1 FDMA and 6.25kHz equivalent P25 Phase 2 TDMA capable.
- P25 Phase 2 Product compliances satisfy FCC 2015 and 2017 ultra narrowbanding mandates.

#### Designed for demanding environments

- Designed with users to ensure effective every-day operation.
- Exceeds relevant MIL-STD-810G.
- IP67 sealing protects to one meter of water for 30 minutes.
- Water shedding grille assists voice clarity and volume in wet environments.
- Shock absorbing impact-protected corners.
- Large four-line LCD with icons to display key parameters.
- Four programmable function keys and three-way selector.

#### End user safety is ensured with globally recognized Intrinsically Safe ratings systems

The TP9400 portable is designed and tested to meet global IS standards, ensuring safe operation in hazardous environments.

- The battery circuitry is fully encapsulated.
- The radio circuit has a stored energy limitation, which prevents internal sparking or overheating in the unlikely event of a circuit failure.

- Component and conductor spacing and protective coatings prevent short circuits caused by dust or atmospheric contamination.

#### Internationally recognized IS color

The TP9400 IS model is made in the internationally recognized blue color for Intrinsically Safe portables, ensuring instant recognition in the field.

#### High-performing voice communications

Robust design delivers clear, mission critical voice communications.

- Analog, P25 Phase 1 conventional/trunked and P25 Phase 2.
- Automatic dual mode between analog and P25 Phase 1 conventional.
- Unique microphone design coupled with AMBE+2 enhanced vocoder reduces background noise in demanding environments.
- Voting ensures priority selection of the channel with optimum receive quality.
- Dynamic regrouping and supergroup operation for mission critical workforce management.
- Increased channel capacity with up to 2000 channels.
- Scanning modes include: priority, dual priority, editable, zone, and background scan.
- Range of analog signalling functionality, i.e MDC1200 encode and decode, Two Tone decode, PL (CTCSS), DPL (DCS), and 5-Tone Selcall.

#### Improve workforce safety

- Programmable emergency key is easily accessible and highly visible on the radio.
- Man Down and Lone Worker as standard.

- Inbuilt GPS provides location services over a conventional and trunked network.
- Radio inhibit and uninhibit to allow management of misplaced or stolen radios.
- Supports end-to-end encryption, including AES.
- Trunked failsoft reverts to conventional operation during trunked network failure.

#### Effective operation with voice and data

- Support for a variety of simulcast modes such as LSM and C4FM.
- Pre-set status messaging.
- P25 data such as emergency GPS location.
- Conventional and trunked IP data.
- Location services over a conventional and trunked network.

#### Efficient, security-focused management

The TP9400 management facilities and applications allow you to efficiently manage your radio fleet.

- Over-the-air Rekeying (OTAR).
- Key Fill Device (KFD) for quick, reliable encryption key programming.
- Tait Advanced System Key (TASK) allows administrators to authorize and restrict subscriber units on their network.

#### Complete package with accessories portfolio

- Intrinsically Safe audio accessories including speaker- microphones, headsets and earpieces.
- Intrinsically Safe Li-ion battery.
- Intrinsically Safe compatible charger.

# TP9461 Intrinsically Safe

## SPECIFICATIONS



### GENERAL

Frequency stability	±0.5ppm (-22°F to 140°F / -30°C to 60°C)
Channels/zones	1,000 – 2,000 channels/50 – 100 zones
Talk groups	50 talk groups, up to 1,000 members total (2,000 members optional enhancement with software license)
Scan groups	300 with up to 50 members each, maximum of 2,000 members total
Dimensions (DxWxH) - With Li-Ion 2300 mAh battery	1.77 x 2.56 x 5.35in (45 x 65 x 136mm) excluding knobs
Weight - With Li-Ion 2300 mAh battery	13.93oz (395g) – no antenna, 15.17oz (430g) with IS battery and antenna
Radio Operating temperature range	-20°C to 60°C (-4°F to 140°F) †
Water and dust protection	IP67 & IP65
ESD rating	+/- 4kV contact discharge and +/-8kV air discharge
Frequency increment/channel step	2.5/3.125/5/6.25kHz
Signalling options (Analog)	MDC1200, encode and decode, Two tone decode, PL (CTCSS), DPL (DCS), Selcall (5 - tone)
Vocoder type	AMBE +2™
Packet Data	½ Rate, ¾ Rate, Full rate, Single Slot

† Subject to Compliance, Ambient Temperature: T4 -20°C < Ta < +50°C, T3 -20°C < Ta < +60°C

TRANSMITTER	VHF	UHF	700/800MHZ
Frequency range	136-174 MHz	320-380 MHz (G1) 380-470 MHz (HB) 450-520 MHz (H7)	762-870 MHz
Output power (IIA)	5W, 3W, 2W, 1W	4W, 2.5W, 2W, 1W	2.5W, 2W, 1W
Output power (IIC)	1W	1W	1W
Modulation limiting			
12.5/15kHz channel	±2.5kHz	±2.5kHz	±2.5kHz
25/30kHz channel <sup>1</sup>	±5kHz	±5kHz	±5kHz
FM hum and noise (analog)			
12.5kHz channel	-45dB	-40dB	-40dB
25kHz channel <sup>1</sup>	-48dB	-45dB	-45dB
Radiated and conducted emissions	-75dBc	-72dBc	-70dBc
Audio response (analog)	+1/-3dB	+1/-3dB	+1/-3dB
Audio distortion (analog)	1.5% @ 1kHz, 60% deviation		

RECEIVER	VHF	UHF	700/800MHZ
Frequency range	136-174MHz	320-380 MHz (G1) 380-470 MHz (H5) 450-520 MHz (H7)	762-776MHz 851-870MHz
Analog Sensitivity 12dB SINAD	0.22µV (-120dBm)	0.22µV (-120dBm)	0.22µV (-120dBm)
Digital Sensitivity (P25) 5% BER	0.22µV (-120dBm)	0.22µV (-120dBm)	0.22µV (-120dBm)
Intermodulation rejection (P25) TIA-102	75dB	75dB	75dB
Adjacent channel rejection			
12.5kHz (P25) TIA-102	60dB	60dB	60dB
25kHz TIA-603 (2-tone)	73dB	70dB	70dB
Spurious response rejection (P25)	75dB	80dB	70dB
Residual audio noise ratio (P25) TIA-102	45dB	45dB	45dB
Audio distortion (rated audio)	1.5%	1.5%	1.5%
FM hum and noise			
12.5kHz channel	-45dB	-40dB	-40dB
25kHz channel <sup>1</sup>	-48dB	-45dB	-45dB
Rated audio	0.5 watt	0.5 watt	0.5 watt

\* Wideband operation subject to FCC regulations

<sup>1</sup> Wideband operation is not available in the USA in some bands

### CHARGER AND BATTERY

Charger options (Li-Ion)	IS compatible desktop single charger
Battery shift life (P25 Phase 2, standard config)	Li-Ion 2300 mAh 15 hours (5/5/90)
Battery shift life (Analog mode, standard config)	Li-Ion 2300 mAh 11.5 hours (5/5/90)

# TP9461 Intrinsically Safe

## SPECIFICATIONS



### MILITARY STANDARDS 810C, D, E, F AND G

Applicable MIL-STD	Method	Procedure	Applicable MIL-STD	Method	Procedure
Low pressure	500.5	2	Humidity	507.5	2
High temperature	501.5	1,2	Salt fog	509.5	1
Low temperature	502.5	1,2	Sand & Dust	510.5	1,2
Temperature shock	503.5	1	Immersion	512.5	1
Solar radiation	505.5	1	Vibration	514.6	1
Rain	506.5	1,3	Shock	516.6	1,4,5,6

REGULATORY DATA	USA	CANADA	EUROPE	AUSTRALIA/NEW ZEALAND
VHF (136-174MHz)	CFR 47	RSS-119	EN300-086, EN300-113, EN300-219, EN300-489, EN60950	AS/NZ4295
UHF (320-380MHz)	NA	NA	EN300-086, EN300-113, EN300-219, EN300-489, EN60950	NA
UHF (380-470MHz)	CFR 47	RSS-119	EN300-086, EN300-113, EN300-219, EN300-489, EN60950	AS/NZ4295
UHF (450-520MHz)	NA	NA	NA	AS/NZ4295
800 MHz	CFR 47	RSS-119	NA	NA

IS COMPLIANCE *	OUTPUT POWER	USA	CANADA	EUROPE	AUSTRALIA/NZ
VHF (136-174MHz)	1-5 W	Class I Zone 1, AEx ib IIA T4...T3 Gb Class I Div 2, Group A, B, C, D Class II, Div 2, Group E, F, G Class III, Div 1	Ex ib IIA T4...T3 Gb Class I Div 2, Group A, B, C, D Class II, Div 2, Group E, F, G Class III, Div 1	II 2 G Ex ib IIA T4...T3 Gb	Ex ib IIA T4...T3 Gb
	1 W	Class I Zone 1, AEx ib IIC T4...T3 Gb Class I Div 2, Group A, B, C, D Class II, Div 2, Group E, F, G Class III, Div 1	Ex ib IIC T4...T3 Gb Class I Div 2, Group A, B, C, D Class II, Div 2, Group E, F, G Class III, Div 1	II 2 G Ex ib IIC T4...T3 Gb	Ex ib IIC T4...T3 Gb
UHF (320-380MHz)	1-4 W			II 2 G Ex ib IIA T4...T3 Gb	
	1 W			II 2 G Ex ib IIC T4...T3 Gb	
UHF (380-470MHz)	1-4 W	Class I Zone 1, AEx ib IIA T4...T3 Gb Class I Div 2, Group A, B, C, D Class II, Div 2, Group E, F, G Class III, Div 1	Ex ib IIA T4...T3 Gb Class I Div 2, Group A, B, C, D Class II, Div 2, Group E, F, G Class III, Div 1	II 2 G Ex ib IIA T4...T3 Gb	Ex ib IIA T4...T3 Gb
	1 W	Class I Zone 1, AEx ib IIC T4...T3 Gb Class I Div 2, Group A, B, C, D Class II, Div 2, Group E, F, G Class III, Div 1	Ex ib IIC T4...T3 Gb Class I Div 2, Group A, B, C, D Class II, Div 2, Group E, F, G Class III, Div 1	II 2 G Ex ib IIC T4...T3 Gb	Ex ib IIC T4...T3 Gb
UHF (450-520MHz)	1-4 W				Ex ib IIA T4...T3 Gb
	1 W				Ex ib IIC T4...T3 Gb
800MHz	1-2.5 W	Class I Zone 1, AEx ib IIA T4...T3 Gb Class I Div 2, Group A, B, C, D Class II, Div 2, Group E, F, G Class III, Div 1	Ex ib IIA T4...T3 Gb Class I Div 2, Group A, B, C, D Class II, Div 2, Group E, F, G Class III, Div 1		Ex ib IIA T4...T3 Gb
	1 W	Class I Zone 1, AEx ib IIC T4...T3 Gb Class I Div 2, Group A, B, C, D Class II, Div 2, Group E, F, G Class III, Div 1	Ex ib IIC T4...T3 Gb Class I Div 2, Group A, B, C, D Class II, Div 2, Group E, F, G Class III, Div 1		Ex ib IIC T4...T3 Gb

\* Ambient Temperature: T4 -20°C < Ta < +50°C, T3 -20°C < Ta < +60°C

### TAIT P25 PHASE 2 SOLUTION

Backed up by our proven radio network expertise, the TP9400 portable is part of our larger P25 Phase 2 offering. This solution consists of subscriber units, infrastructure, applications, services and integration with third party interfaces to ensure that your organization can reap all the benefits of the spectrally-efficient P25 standard.

Specifications are subject to change without notice and shall not form part of any contract. They are issued for guidance purposes only. All specifications shown are typical. For further information please check with your nearest Tait office or authorized dealer.

The word "Tait" and the Tait logo are trademarks of Tait Limited.

Tait Limited facilities are certified for ISO 9001:2008 (Quality Management System), ISO 14001:2004 (Environmental Management System) and ISO 18001:2007 (Occupational Health and Safety Management System) for aspects associated with the design, manufacture and distribution of radio communications and control equipment, systems and services. In addition, all our Regional Head Offices are certified to ISO 9001:2008.



Management System  
94/9/EG  
IECEx-Scheme  
Valid until:  
2018-08-26  
www.tuv.com  
ID 9105085382

