ElettraSuite PUMA T3 Plus2 Ex

Safe communications in dangerous environments
as Petrochemicals and Oil & Gas Industries

tetra solutions

peripheral terminals and accessories

ADAPTANET
IP solution

ELETTRA SUITE

SELEX
Communications
A Finmeccanica Company

II 2 G Ex ib IIC T1/T2/T3/T4
II 3 D Ex tD A22 T85°C IP54

The **ElettraSuite PUMA T3 Plus2 Ex** terminal provides high performance communications, offering comprehensive user safety and class leading ATEX specifications. These support use in environments containing potentially explosive gas and dust.

The TETRA system is now widely used in the mining, oil & gas and other industries. In many cases, the environment will be hazardous due to the presence of explosive dust gases. A TETRA terminal which can be used with confidence in these environments is essential. Other agencies, such as fire and rescue, customs or border enforcement agents, can also be required to operate in hazardous areas. SELEX Communications has developed and tested the **PUMA T3 Plus2 Ex** to meet the needs of professional operators in a wide environments risks, together with a range of ATEX compatible accessories. Compliant to stringent requirement for safe in hazardous environments, the equipment is ready to fulfil the *II 2 G Ex ib IIC T1/T2/T3/T4 and II 3 D Ex tD A22 T85°C IP54* certify by TÜV Sud-Italia with number TÜV IT 10 ATEX 029 X.

FUNCTIONS AND FEATURES

Best for data applications

The PUMA T3 Plus2 Ex, 4 slot data transmission provides maximum TETRA data rate capacity and supports a wide range of data applications. These include file transfer, database interrogation and image transmission to increase the timeliness and efficiency of your operation. Simultaneous voice and data transmission can be carried out using different timeslots.

Easy migration from analogue to digital

Many organisations and businesses can't afford to completely replace their existing infrastructure. The PUMA T3 Plus2 Ex is unique in the market in its ability to operate in both analogue and digital modes. This enables a smooth and planned migration, without disruption and guaranteed interoperability with legacy technology. Features supported in conventional analogue mode include:
- Channel spacing of 12.5 kHz and 25 kHz.
- CTCSS tone squelch.
- Selective calls according to the CCIR and ZVEI standards.
- Simplex or semi-duplex operation.

Communicate in security!

Eavesdroppers are always a potential threat. In order to protect the critical speech/data communications and communicate in security, the PUMA T3 Plus2 Ex in TETRA mode supports a high level of security. It adopts the *Authentication, End-to-End (E2E) encryption and Air-Interface dynamic key encryption.* End-to-End supports specific user algorithms.

OIL AND GAS INDUSTRIES

In upstream activities (exploration, extraction and production), communications are vital to co-ordinate all the processes. In addition, in downstream operations, transportation (pipeline), tank farms, refinery and distributions are environments where user operations must be safeguarded, especially at the end of the process where the loss of substances in distribution phase is possible.

FIRE & RESCUE

At the incident scene, co-ordination of resources is critical for a safe, successful outcome. The PUMA T3 Plus-2Ex delivers comprehensive communications, with best-in-class audio and class-leading ATEX certification for safe use in gas and dust environments.
The integrated GPS receiver and multislot capabilities harness the integrated data capabilities to enhance access to information.

Key features

- Integrated GPS for location
- IP Packet data transmissions
- Easy accessories connections for audio or data communications (wired or wireless)
- Designed for used with gloves
- Top safety with man-down switch

Applications

- Onshore and offshore plants
- Oil and Gas pipeline
- Tank farms and refinery
- Petrochemicals

Key features

- Best-in-class audio
- Simplified keypad with large buttons
- Comprehensive user safety features

Applications

- Dealing with fire incidents (also dangerous materials) e.g. Fire Brigades
- Dealing with accidents fuel, gas and other explosive substances, e.g. emergency squads.

Safety first!

For SELEX Communications, the safety of the operator is the first priority. Reflecting this imperative, the PUMA T3 Plus2 Ex is equipped with an internal *"man-down"* switch. This allows for detection of the angle between the longitudinal axis of the radio and the vertical axis. The radio can be configured to send a message or to automatically launch a predefined call in the event of a man-down detection.

Efficient management of resources

The PUMA T3 Plus2 Ex radio incorporates the latest high sensitivity *GPS* technology. This offers an accuracy of a few metres for tracing of worker or operational crew.
In order to optimise resources, the device periodically sends accurate position data to ensure assistance in all situations. The transmission protocol for the location data over the air-interface accords with the *ETSI LIP standard.*

Intelligibility in noisy environment

The radio provides best-in-class audio (1W audio output power) that maintains audio performance in the typical noisy environments where specialist users from industry or public safety operate.

Ergonomic and easily usable in any situation

The PUMA T3 Plus2 Ex offers *excellent ergonomic use*, unlike most TETRA handhelds on the market. The functional keypad, with wide spacing between keys, allows operation using gloves.

The high resolution *colour graphical display* ensures excellent visibility in all lighting conditions, especially when the ambient is full of fog or smoke (i.e., for fire-fighters in case of fire in closed environment or in forests). An easy and intuitive navigation menus allows rapidly to all TETRA functions and other customising settings (i.e., font size).
Thanks to three types of connections, the PUMA T3 Plus 2 Ex supports the use of a wide range of audio and data accessories. These are:
- A built-in *Bluetooth® technology* for wireless connection of commercial voice and data devices.
- A standard *USB type B socket* (right side of the equipment) for travel charger and data cable connection.
- A traditional rugged *IP54 protected connector* (handheld bottom) for connection of high quality accessories (can also be used throughout the PUMA T3 Plus series).

SELECTION OF THE MAIN TETRA FEATURES SUPPORTED

- Types of calls: individual, group, broadcast, priority and emergency (pre-emptive)
- Short Data Service (status/text messages)
- Up to 4 time slots transmission data calls
- Single and multi slot Circuit and IP Packet Data services
- PABX, PSTN, PDN interconnections
- Direct Mode Operation (also with Repeater and Gateway)
- Security: End-to-End Encryption and Dynamic key "Air interface Encryption"
- Location Services

- TETRA Supplementary Services
- Man-down switch

Data storage capacity

- 1472 TMO/DMO talking groups
- 1000 static entries in the phone directory
- 200 phone book entries
- 10 predefined or user defined text messages
- 72 predefined status messages
- 20 recent individual calls
- 10 recent received messages.

ACCESSORIES

- Chargers
  - Single and multiple chargers with EU, UK, USA and Schuco plug's
  - Travel charger
  - Car charger
  - USB charger
- Audio accessories
  - Mini lightweight audio kit
  - Neckband headset
  - Throat microphone and speaker
  - Speaker microphone with remote earbud
  - Large PTT
- Cables
  - Data kit and programming cable kit
  - Security data injection kit
  - USB 2.0 - RS232 adapter cable
- Carry case
  - Leather carry case
  - Leather carry case with swivel for shoulder belt
  - Leather belt loop with clip and swivel
  - Leather belt loop with swivel
- 1/4 wave antenna for extended range

TECHNICAL DATA

Functional modes:	• TETRA: Dual-mode trunking or direct, DMO with Repeater 1A and GW • Conventional FM
Frequency bands	380 to 430, 410 to 470
Channel spacing:	12,5 kHz (FM mode), 25 kHz (TETRA/FM)
Duplex spacing:	10 MHz
Modulation:	P/4 DQPSK
Radio specifications:	• ETSI EN 300 394-1, ETSI EN 300 086-1, ETSI EN 300 113-1 and CEPT T/R 2401 Annex II, • TETRA: - Direct mode: compliant to ETSI EN 300-396-3/4/5 　　　　　　- Trunking mode: compliant to ETSI EN 300 392-2 (4 slots to 1W transm. power) • FM: ETSI EN 300 113-2 and ETSI EN 300 086-2
Bluetooth® performance:	ETSI EN 300 328
Output power:	• TETRA: Class 4 (1W) (compliant to ETSI EN 300-394-1) • FM: 1W (compliant to ETSI EN 300 086-1)
Receiver class:	Class A+B (compliant to ETSI EN 300 392-2)
RX static sensitivity:	-112 dBm (typical -114 dBm)
RX dynamic sensitivity:	-103 dBm (typical -105 dBm)
Transmission type:	TETRA; 4-slot data transmission and FM continuous transmission
Dimensions & weight:	(HxWxD) 151x62x40 mm, 340 g. (with battery pack, without antenna)
Power supply:	Li-Ion 2300 mAh, 3.7V
Battery autonomy:	13 h @ 5/35/60 duty cycle (TETRA TMO)[2], 9 h @ 5/15/80 duty cycle (FM protocol).
Power audio:	1W @ 4 Ohm in loudspeaker mode
Intrinsic safety:	CENELEC EN 60079-0 and CENELEC EN 60079-11 (ATEX)
ATEX certification:	no. **TÜV IT 10 ATEX 029 X • II 2 G Ex ib IIC T1/T2/T3/T4 and II 3 D Ex tD A22 T85°C IP54**
Electrical specifications:	ETSI EN 300 392-2
EMC specifications:	ETSI EN 301 489-18 (TETRA), ETSI EN 301 489-5 (FM), and ETSI EN 301 489-17 (Bluetooth)
EC marked:	R&TTE directive 1999/5/EC
SAR value:	According to CENELEC EN 62209-1
Data terminal interface:	TETRA Peripheral Equipment I/F (ETSI EN 300 392-5)

(1) available on request
(2) note that the battery duration depends on received signal strength, volume level, use of the display and the backlit keypad.

Environmental conditions	
Climatic condition:	ETSI EN 300 019-1-7 class 7.3 and 7.3i (-25°C to +70°C)
Vibration:	ETSI EN 300 019-1-7 class 7M3 and MIL STD 810 E/F - Method 514.4/5.
Shock:	ETSI EN 300 019-1-7 class 7M3 and MIL STD 810 E/F - Method 516.4/5 Free fall 1 meter height on concrete surface
Dust and rain protection:	CENELEC EN 60529 class IP54
Storage temperature:	ETSI EN 300 019-1-1, Class 1.3 (humidity max. 93%)
Transportation temperature:	ETSI EN 300 019-1-2, Class 2.3 (humidity max. 93%)
Radio conformance testing spec.:	ETSI EN 300 394-1 (-25° to +55 °C)

Security	
SIM card	Integrated
Security support:	Air Interface Encryption, End-to-End Encryption
AIE algorithms:	TEA1, TEA2, TEA3
E2EE algorithms:	AES export/128, custom algorithm (IDEA, AES256, Customer developed up to 256)
AIE security classes:	Class1, Class2 (SCK), Class3 (DCK)

User devices	
Keyboard:	with 12 number keys (0-9 numbers plus * and # keys) western, 3 keys for functions navigation and 2 keys for acceptance/refuse calls (green/red colour). Available on request Chinese, Arabic and Cyrillic languages
Buttons:	ON/OFF, enhanced emergency button, PTT, auxiliary button for configurable functions
Rotary knobs:	One for group selection and audio volume
Display and LED's:	• Colour graphic display compliant with Schengen document SCH 44. Resolution of 128x80 RGB pixels with over 65,000 colours • Two LED's indicates the transmitting and/or receiving status
Connectors:	• SMA/M type for antennas and other in back side for connection to external antenna • one 12 pins connector for professional accessories (IP54) • one mini USB type B for data downloading, audio accessories and battery charge
Internal GPS:	• GPS antenna embedded in TETRA antenna • Protocol: ETSI LIP • 20 channels • -155 dBm acquisition sensitivity • -159 dBm tracking sensitivity • position accuracy 5m

SELEX Communications