TETRA radio
Funktel FT4/FT5 S

(UHF/VHF)

Operating manual

funktel

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The right to make technical changes and to alter availability without notice is reserved.

Notes:

We reserve the right to modify this operating manual at any time and without prior announcement. Delivered operating manuals are not subject to a revision service by us and will not be updated when modifications are implemented.

Errors and misprints excepted.

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Instructions for use

This chapter contains information regarding the use of the operating manual.

Before commissioning

Before commissioning, *read and take note of*

Safety Note 6188133000 and this Operating Manual 6187133000

for your radio set and familiarise yourself with the basic functions, settings and application options.

Equipment and type designation

The funktel FT4/FT5 radio set is available in many versions.

The type designation on the type plate provides detailed information about the features of your radio set.

Attention: Explosion-proof version

The funktel FT4 radio set is also available in explosion-proof versions.

To ensure safe handling, it is imperative that you read and follow Ex Safety note 5010920007 for your radio set and the Ex Safety note 5010920006 for the FT4 1700 V Ex C battery before entering an area at risk of an explosion with an explosion-proof radio set.

To ensure proper use, take note of the associated declarations of conformity with the EU regulations in respect of the radio sets and the components used in each case.

Designation of the Type FT4 radio sets with explosion protection (Ex), in the standard or Secury version:

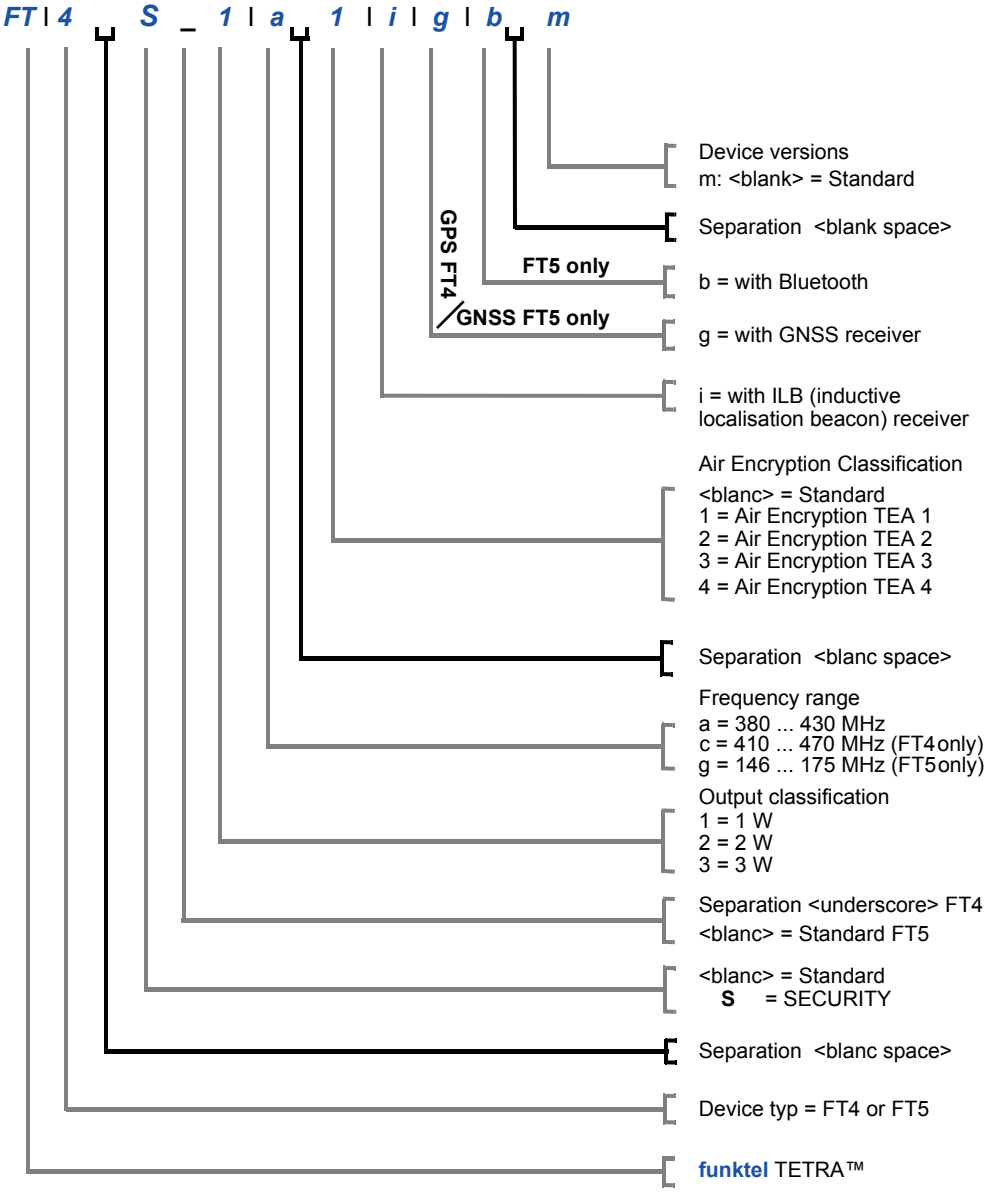
Ex marking

Standard version => FT4 Ex **C**
Secury version (personal emergency signal device) => FT4 S Ex **C**

The designations regarding the equipment features of the radio set follow the type of device with an Ex designation. See the graphic presentation of the FT4/FT5 device versions on page 8

FT4/FT5 device models

Equipment and type designation of the type plate: Example <FT4 S_1a ig>



Technical terms and abbreviations

Overview

Term	Description
AIE	Air Interface Encryption: air interface encryption
Announcement Talk	Announcement talk: Group call with high priority. Calls with a high priority take precedence over calls with low priority. An established connection is interrupted if required in case the radio set receives a call with higher priority.
ATG	Announcement Talk Group: Talk group with the highest priority. A call to this group enables broadcasting to all talk groups linked with that group.
BetrSichV	German Ordinance on Industrial Safety and Health: Ordinance concerning safety and health protection when furnishing work equipment and its use for work, safety when operating systems that require supervision and on the organisation of in-house industrial safety measures in the Federal Republic of Germany.
BG	Berufsgenossenschaft = (Federal German) Employers' Liability Insurance Association
Bluetooth	Bluetooth (BT) is an industry standard for the radio transmission of data of any type. Depending on the types of devices, TETRA handsets are equipped with this technology and use it to link (pair) audio devices and/or to receive BT localisation beacon signals for localisation purposes.
BOS	Authorities and organisations fulfilling security tasks
DGNA	Dynamic Group Number Assignment: The radio set is assigned new group call numbers by radio.
DGUV	The *“Deutsche Gesetzliche Unfallversicherung e. V.”* (German Social Accident Insurance) is the umbrella organisation of the industrial injury insurance associations and accident insurance companies in Germany.
DMO	Direct Mode: Direct connection with other subscribers without the TETRA infrastructure.
E2EE	End-to-End Encryption
GNSS	Global Navigation Satellite System = a system for determining a location and for terrestrial and airborne navigation by the reception of signals from navigation satellites. Well-known systems include GPS (USA), GLONASS (Russian Federation), Galileo (EU) and Beidou (People’s Republic of China).

Overview (cont'd)

Term	Description
Group scanning	The radio set may include several scan lists. If one of the scan lists is marked as "selected" and if the scan function is activated, your radio set will monitor the radio traffic in all associated groups. Consequently, you can listen to several important channels without switching over. This feature is referred to as "Group scanning". The scan lists are saved in the radio set by means of programming.
Group	A group unites several subscribers who communicate directly with one another. Calls to a group reach all subscribers within this group at the same time. Other subscribers cannot hear these group calls. Group calls are possible even when not all subscribers of this group can be reached, e.g. because a radio set is switched off.
GSSI	Group Short Subscriber Identity: Call number of a group in the TETRA network
IOS	Inductive tracking beacon: By receiving the identification code of a tracking beacon, the personal emergency signal centre can determine the possible location of the radio set.
ISSI	Individual Short Subscriber Identity: Individual, unambiguous subscriber number of a terminal on the TETRA network.
Late entry	You can participate in an already set-up group call even when you have not received the beginning of that group call. This feature is referred to as "Late entry". You can also use this feature when dialling from another group or when changing the radio cell.
LIP	Local Information Protocol: Local Information Protocol
Local Site Trunking.	Fallback mode: This mode comes into operation whenever an infrastructure failure occurs but the local base station is still functioning.
MCC	Mobile Country Code: Country code
MNC	Mobile Network Code: Mobile radio network code
MNI	Mobile Network Identity
PABX	Private Automatic Branch Exchange: Private telephone system
PES	Personal emergency signal system
PED	Personal emergency signal device, special version of the radio set with personal security functions.
PEC	Personal emergency signal control centre

Overview (cont'd)

Term	Description
PSTN	Public Switched Telephone Network: Public telephone network
PTT	Push to talk, i.e. push before talking (PTT key)
REG	The TETRA radio set registers with a TMO infrastructure (registration).
Call priority	The radio set evaluates the call priority of each individual group call if it is either a member of this group or has selected this group as "selected group" or scans this group. When several calls are made at the same time, you can only hear the call with the highest priority.
SDS	Short Data Service TETRA short data service
SSI	Short Subscriber Identity: SSI is the collective term for TETRA subscriber numbers (subscriber identities).
TA	The TETRA radio set looks for carrier frequency entries in an internal list that are to be used for radio operation. It compares these entries with the signals of the received TMO infrastructure and attempts to register with the infrastructure found on the best suited frequency.
TEA	TETRA Encryption Algorithm: Encryption algorithm of the TETRA system. Further classifications are defined in the standards according to ETSI TR 101 053-1 to ETSI TR 101 053-4.
TETRA	Terrestrial Trunked Radio
TMO	Trunked Mode: Connections with other subscribers via the TETRA infrastructure.
TS	The TETRA radio set scans the pre-set frequency range for carrier frequencies that are suitable for radio operation. It assesses the carrier frequencies found and attempts to register with the TMO infrastructure on the best suited frequency.

Symbols and special fonts

Symbols and special fonts emphasize important information.

DANGER

This is a safety instruction!
Safety information should help you to recognise hazards and to avoid negative consequences.
➔ An arrow indicates a precaution you have to take in order to avoid the hazard.

Perform the following steps: Start of a procedure

1. First work step to be carried out.
2. Second work step to be carried out.

➔ Work step to be carried out (without any following work steps).

✓ **End of procedure instructions.**

Wildcard for variable values, e. g. synonym for a number: [Call number]

Key on the radio set: key ‹#› , function ‹Select›

Menu items in the radio set display: SETTINGS menu

Sequence of menu items in the display that are to be performed consecutively, e. g. when navigating: MENU > SETTINGS > LANGUAGES

TIP
This is a tip. Tips contain additional useful information.

Design and function

This chapter enables you to familiarise yourself with the controls, displays and connections of the radio set.

Components of the radio sets

The use of the radio set requires at least the following components:

- funktel FT4/FT5 radio set
- Antenna
- Interchangeable battery
- Charger with the plug-in power supply unit
- Tear-off pin with carrying strap (lanyard)
- Safety information

If needed, you can order the following optional accessories. Ask your specialist retailer for more information.

- microSD card (for storing application-related data and settings) for FT4/FT5
- Micro SIM card (for future upgrades) for FT4/FT5
- Mini SIM card “standard SIM card” (for future upgrades and encryption data) for FT4 only
- Leather carry case with trigger contact for loss detection „only FT5“ (Loss alarm, to monitor the radio in a specific carry case).

The part numbers and the exact type designations of the individual components can be found in our sales and accessories lists. Contact your dealer.

NOTE

microSD card:

Funktel GmbH cannot guarantee the fault-free functioning of any commercially available microSD cards of various specifications in its products! It is therefore recommended that only microSD cards that are available from Funktel under part numbers 5900273689 and 5900273690 be used.

FT4 control elements

Control elements of the FT4 radio set

FT5 control elements

Control elements of the FT5 radio set

FT4 / FT5 control elements

Legend (Section 1 of 5)

No.	Designation	Function
1	Volume/Group call	Setting of volume, selection of a group, disabling of rotary switch. The following functions are possible: ▪ Press the button briefly to switch between volume setting and group dialling. ▪ Turn the control knob for setting the volume or selecting the desired group. ▪ Press the control knob briefly to confirm the selected group. This function can be parametrised by means of the TETRA Configurator. Caution, risk of accidental operation. ▪ Long press the control knob to disable or re-enable its function as a rotary switch. Note: The volume setting for an individual half-duplex and full duplex call can only be set individually for the respective call type. The earpiece volume for a full duplex call can only be set during a call.
2	Alarm	If the radio set is logged into the personal emergency signal centre: Triggering of a personal alarm (will-dependent alarm). Decide for yourself if you wish to trigger Alarm 1 or Alarm 2: ▪ Alarm 1: Press key for more than 1 second. ▪ Alarm 2: Press key briefly three times. If the radio set is not logged in at the personal emergency signal control centre: Triggering a TETRA emergency call: Long press the button to trigger the TETRA emergency call.

Legend (Section 2 of 5)

No.	Designation	Function
3	Function key 1 Part I	Function key 1 can be configured so that if a warning alarm is not programmed for this key, one of the functions described below can be preset. ***Warning alarm function*** For this function, the radio set *must* be logged in at the personal emergency call control centre: ▪ Triggering a warning alarm. Decide for yourself if you wish to trigger Warning alarm 1 or Warning alarm 2: ▪ Warning alarm 1: Press key for more than 1 second. ▪ Warning alarm 2: Press key briefly three times. ***Configurable function key assignment*** For the following configurable functions, the radio set must *not* be logged in at the personal emergency signal control centre. In order to execute a preset function, press the function key. Depending on the programming of the radio set, one of the functions is possible: ▪ No function. ▪ Toggling between TMO/DMO operating mode. Changing the operating mode is possible only when the radio set is *not* logged in at a personal emergency signal control centre. ▪ Group dialling, confirming a group selected by means of the rotary switch or menu. ▪ To switch the screen saver on/off. ▪ Upward cursor movement. ▪ Downward cursor movement. ▪ To transmit the GPS/LIP position ▪ Group call from the “All groups” list. This key function can be configured independently of a selected (active) group. See Group Calls (P.68). ▪ PTT call from the “Subscriber list”; sets up a permanently predefined half duplex voice connection with an SSI subscriber.

Legend (Section 3 of 5)

No.	Designation	Function
3	Function key 1 Part II	▪ Call from the “Subscriber list”; sets up a permanently predefined full duplex voice connection with an SSI subscriber. ▪ Send Message; sends a permanently predefined SDS or status SDS to a subscriber SSI or a group GSSI. ▪ Go to the “Organizer” menu; opens the “Organizer” menu. ▪ Go to the “Security” menu; opens the “Safety” sub-menu.: ▪ Go to the “Group Folder” menu; opens the “Group Folder” submenu. ▪ Go to the “All groups” menu; opens the “All groups” submenu.: ▪ Go to the “Scan list” menu; opens the “Scan list” sub-menu.: ▪ Go to the “Rotary” group menu; opens the selected “Rotary group folder”.
4	Function key 2 (FT4 only)	Execution of a pre-set function: Press the key to execute the function. Depending on the programming of the radio set, it is possible to select the setting of the key function: ▪ The options are selected in exactly the same way as for Function key 1.
5	Function key 3 (FT4 only)	Execution of a pre-set function: Press the key to execute the function. Depending on the programming of the radio set, it is possible to select the setting of the key function: ▪ The options are selected in exactly the same way as for Function key 1.
6	PTT (transmit key)	Starting and controlling an individual call (direct through) or a group call: ▪ Long press key for setting up a connection and talking while the connection is active. ▪ Release key to hear other subscribers.
7	Left Menu Key	Execution of the menu function shown in the footer at the bottom left edge of the display: Press the key for executing the function displayed directly above the key.

Legend (Section 4 of 5)

No.	Designation	Function
8	Right Menu Key	Executing the menu function shown in the footer at the bottom right edge of the display: Press the key for executing the function displayed directly above the key.
9	Cursor keys / Navigation rocker	Changing the selection marking on the display. Press cursor keys to move the select marking or the cursor to the left, right, up or down.
10	Pick up	The following functions are possible, depending on the operating situation: ▪ Starting or accepting an individual call in duplex mode (full duplex voice connection) ▪ To show the SELECTED NUMBERS list (automatic redialling list) in the display.
11	Hang up	The following functions are possible, depending on the operating situation: ▪ Switching on the radio set. **Note:** The keystroke behaviour to switch on can be configured for a short (default setting) or long key press. ▪ Terminating the voice connection. ▪ Switching off the radio set. ▪ Displaying the idle display. In addition, this key enables the performance of the following functions: ▪ Cancelling the connection setup. ▪ Rejecting an incoming voice call.
12	Numeric keypad 1 to 9, 0	The following functions are possible, depending on the operating situation: ▪ Entering digits and letters; the ‹1› key also allows for special characters.

Legend (Section 5 of 5)

No.	Designation	Function
13	Characters Star key => *	The following functions are possible, depending on the operating situation: ▪ Entering the * character. ▪ Muting the microphone. ▪ Activating and deactivating the keylock (together with the ‹left menu key› [7]).
14	Characters Hash => # (Hashtag)	The following functions are possible, depending on the operating situation: ▪ Entering the # character. ▪ Switching between capitalisation, non-capitalisation and digits.

Connections

Connections on the radio set

Legend

No.	Designation	Function
15	Antenna	Socket for connecting the screw-on antenna.
16	Belt clip	Affixes the radio set, e. g. to clothing.
17	Side connector	Interface for connecting an optional system-compatible accessory, e. g. headphones/headset. When not in use, the interface is covered up with a special screw-on side connector cover.

Legend (cont'd)

No.	Designation	Function
18	Battery lock	FT4: ▪ To unlock the battery, pull both the side-mounted catches downwards simultaneously. FT5: ▪ To unlock the battery, push the catch (18) located at the bottom of the device sideways. The direction in which it must be pushed is indicated by means of a triangle ▷ on the catch.
19	Contact strip / Bottom connector (FT4 with antenna connection only)	Contacts at the bottom of the device for connecting an external antenna (e. g. for car adapters), a data interface, and the charger.
20	Tear-off contact	Triggers an alarm as soon as the plug is pulled out of its holder and the programmed delay has elapsed.
21	Loss sensor (FT5 only)	The loss sensor at the bottom of the device monitors the radio set in the carry case. When it is removed, the sensor contact between the device and the case is interrupted, whereby the loss alarm is triggered. This requires the use of carry cases provided for this function in the range of Funktel accessories.

Signal tones

Using signal tones, the radio set signals, among others, the following operating conditions and events:

- Calls and received messages
- Pre-alarms
- Alarms
- Pressed keys
- Acknowledgements
- Warning alarms

TIP

The settings of your radio set are individually programmed by the radio set operator. If you have any questions, please contact the responsible system administrator for your communication facilities.

Illuminated indicators

The radio set signals certain operating conditions by means of illuminated indicators.

Left Signal LED

Legend (cont.)

No.	Designation	Function
22	Left-hand signal LED 	The left-hand signal LED indicates the status relating to the TETRA radio connection.

Operating conditions of the left-hand signal LED on the radio set

Meaning of signals

Colour	Status	Meaning
off		The radio set is switched off.
red	flashing quickly (once per second)	The radio set is searching the radio network of the TETRA infrastructure.
	lit	No TETRA network, or TETRA deactivated (a programmable behaviour of the radio set in the charger).
green	flashing slowly	Idle status, the radio network is available.
	flashing quickly	The connection is now set up: no voice communication.
	lit	The connection is set up: Voice connection or data transmission is active.
orange	flashing slowly	The radio set is connected with the TETRA infrastructure. The connection has been set up in “Local-Site Trunking” mode.
	flashing	Connections in direct mode (DMO) are not possible at the moment. The selected channel is busy.
	lit	The connection is set up: Unit transmitting (TMO/DMO).

Operating conditions of the right-hand signal LED on the radio set

Meaning of the signals

No.	Designation	Function
23	Right-hand signal LED 	The right-hand signal LED takes priority in signalling an alarm condition (pre-alarm/ alarm) when in the personal alarm signal mode or the charging status while the battery is being charged.

Right-hand signal LED in Personal Emergency Signal mode

Meaning of the signals in Personal Emergency Signal mode

Colour	Status	Meaning
off		The radio set is in idle mode. There are currently no active personal emergency signal events.
red	flashing slowly	A pre-alarm was triggered.
	lit	An alarm was triggered.
green	lit	There is an active alarm. This alarm can be reset on the radio set.
yellow	lit	There is an active technical alarm or disturbance.

Right-hand signal LED of the charging status indication

When the radio set is in Normal mode and in the charger, the right-hand signal LED signals the charging status while the battery is being charged (configuration-dependent). Alarm signalling always takes priority ; see preceding table
=> Meaning of the signals in Personal Emergency Signal mode.

- This requires charger settings on the radio set that can be configured for each type of charger in the TETRA Configurator.
- The charging status LED display is activated in the Configurator by means of the “Display off” and “Audio off” parameters.

Right-hand signal LED in charging mode

Signalling in the charging mode

Colour	Status	Meaning
red	flashing slowly	The radio set is in the charger. The battery is being charged.
green	flashing slowly	The radio set is in the charger. The battery is fully charged.

Display

When the radio set is ON, the display shows the operating status and, depending on the operating situation, menus with functions.

Header line

The header at the upper display edge shows the time and important system status indicators. The following symbols are displayed, depending on the operating status:

Header in the display

Meaning of the displayed information

Symbol	Meaning
14:29	Current time in 24h format.
	Battery charging status. Further information is to be found in Section “Signalling the charging status“ (P.53).
	Signal profile: User-defined signalling This function is set individually in the TETRA Configurator and can, for example, be used for particularly quiet or loud environments.
	Signal profile: Normal Signalling takes place at normal volume.
	Signal profile: Loud Signalling takes place at increased volume.
	Signal profile: Mute Signalling is switched off, calls are not signalled acoustically.

Meaning of the displayed information (cont'd)

Symbol	Meaning
	The radio set is logged into the TETRA infrastructure.
	The radio set is not logged into the TETRA infrastructure or set to the DMO connection type.
	Network field strength level.
	Unread message with standard priority.
	Missed call with standard priority.
	Radio set is locked. To unlock the unit, the PIN must be entered.
	The keylock is activated.
	Local Site Trunking.
	Bluetooth is activated (FT5 only).

Footer

The footer at the bottom edge of the display shows functions that you can activate with the ‹left menu key› (7) and ‹right menu key› (8). The following symbols are displayed, depending on the operating situation:

Footer in the display (example)

Meaning of the displayed information

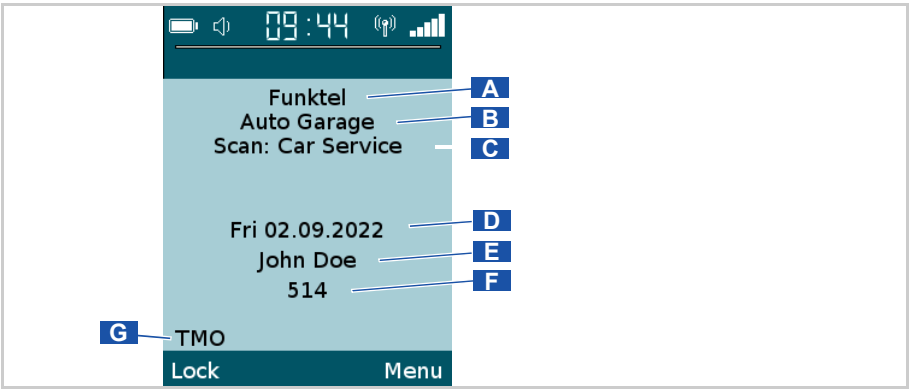
Symbol	Meaning
Lock	To execute this function, press the ‹left menu key› (7). The designation and function of this field vary, depending on the operating situation.
Menu	To execute this function, press the ‹right menu key› (8). The designation and function of this field vary, depending on the operating situation.
	Indicates the personal emergency signal mode if the radio set is logged into the personal emergency signal centre. Additional information is to be found in Chapter “Personal Emergency Signal (PES) Functions“ > “Logging in to the personal emergency signal centre“ (P. 129).
	Signals the Security-L mode with simplified emergency signal functions; the personal emergency signal control centre is not required.
	GPS/GNSS active, no signal reception
	GPS/GNSS active, searching for position data.

Meaning of the displayed information (cont'd)

Symbol	Meaning
	GPS/GNSS active, with position data.
	GPS/GNSS switched off, device is in the charger. Deactivation of the GPS/GNSS function can be configured in the TETRA Configurator in the charger settings.

Idle display

The idle display always appears on the display when the screen saver is deactivated. Alternatively, press the ‹Hang up› (11) key briefly to display the idle display.



Idle display

Meaning of the displayed information

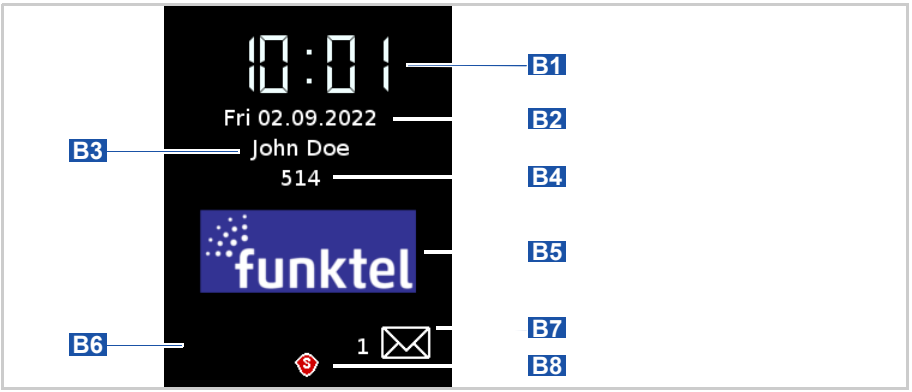
No.	Designation/function
A	Name of TETRA infrastructure your radio set is logged into. Other information is displayed as an option. The infrastructure name is a parameter in the radio set.
B	Name of the group or number (GSSI) at which the radio set can be reached in the TETRA infrastructure.
C	Shows the Group Scanning feature and the name of the active scan group.
D	Shows the day of the week with date. The date display can be configured as an option.
E	Designation or name of user to whom the radio set was issued. This name is permanently linked to the call number of the radio set (ISSI).

Meaning of the displayed information (cont'd)

No.	Designation/function
F	Call number (ISSI) at which the radio set can be reached individually in the TETRA infrastructure.
G	TETRA mode presently used by the radio set for connections, see also section “TETRA basics“ > “TETRA connection types“ (P.57). Possible display values include: ▪ TMO (Trunked Mode Operation) ▪ TMO TXI (TMO with activated Transmit Inhibit) “any transmission processes inhibited“. ▪ DMO (Direct Mode Operation) ▪ DMO TXI (DMO with activated Transmit Inhibit) “any transmission processes inhibited“. ▪ TA (TETRA Activation) ▪ TS (TETRA Scanning) ▪ REG (Registration) ▪ LOG (Log file) indicates that an event log file is being read from the radio set. ▪ CFE (ConFiguration Error) indicates that there is an error in the configuration (e.g. TMO carrier lacking).

Screen saver

The screen saver is activated automatically when the radio set is on and you have not pressed a key for a certain amount of time.



Screen saver on the display

Legend

No.	Designation/function
B1	Current time.
B2	Shows the day of the week with date. The date display can be configured as an option.
B3	Designation or name of user to whom the radio set was issued. This name is permanently linked to the call number of the radio set (ISSI).
B4	Call number (ISSI) at which the radio set can be reached in the TETRA infrastructure.
B5	Logo file. The Funktel standard logo is changeable and can be replaced with a customized graphic if necessary.
B6	Number of missed calls.
B7	Number of unread messages.
B8	Indicates the personal emergency signal mode if the radio set is logged into the personal emergency signal centre. Additional information is to be found in Chapter “Personal Emergency Signal (PES) Functions“ > “Logging in to the personal emergency signal centre“ (P.129).

TIP

The waiting time until the screen saver is automatically activated was programmed individually by the operator. If you have any questions, please contact the responsible system administrator for your communication facilities.

Menu

Your radio set makes numerous functions available to you in the menu:

- The menu is shown in the display when the ‹right menu key› (8) is pressed, starting from the idle display. Deactivated menus are greyed out.
- Depending on the features of your radio set, only some of the functions and options will be available to you. If necessary, consult your specialist dealer.
- Many functions of your radio set can be configured with the aid of the “TETRA Configurator” tool and can be activated or deactivated.
- The following descriptions clarify the structure of the main menu with all subordinate menu items and functions of TETRA radio sets of the FT4/FT5 Series.

NOTE

The family of FT4/FT5 TETRA radio sets is available in many versions. The menu is displayed in various ways in accordance with the range of functions of the versions.

The menu items shown in each case, together with the functions and operating options available for selection, are determined by the particular features and the parameters that have been specified for the radio set.

If functions are missing from the menu, or if they cannot be selected, activated or deactivated, despite the radio set being of the appropriate type and having the required features, they may be disabled in the configuration. In this case, consult your system administrator.

Main menu

The main menu is the table of contents of the menu system. From here, you can access further menus sorted by subjects which, in turn, contain the individual functions.

Main menu in the display

Legend

Symbol	Designation	Function
	Secury	This menu contains functions connected with the personal emergency signal functions. Additional information is to be found in Section "SECURY" (P. 34).
	Setup	This menu contains functions which allow you to adapt the settings of your radio set individually. Additional information is to be found in Section "SETUP" (P. 35).
	Calls	This menu contains functions connected with voice calls. Additional information is to be found in Section "CALLS" (P. 40).
	Messages	This menu contains functions connected with messaging and SDS text messages. Additional information is to be found in Section "MESSAGES" (P. 40).

Legend (cont'd)

Symbol	Designation	Function
	Organizer	This menu contains functions you can use for your personal organisation. Additional information is to be found in Section “PERSONAL ORGANIZER“ (P.41).
	Addresses:	This menu contains functions connected with subscriber and group lists. Additional information is to be found in Section “ADDRESSES“ (P.41).

TIP

Please refer to Section “Navigating the menu“ (P.64) to learn how to navigate through the menu and how to select a menu item.

Secury

Functions in menu

Designation	Function
Registration	Starts the procedure for logging into the personal emergency signal centre including a sensor test if the radio set is programmed for manual registration (log-in) and deregistration (log-off).
Log out	Logs the logged-in radio set out of the personal emergency signal centre if the radio set is programmed for manual log-on and log-off.
Sensor test	Starts a sensor test. If the radio set is logged into the personal emergency signal centre, you should perform the sensor test regularly.
Sensor settings	Displays the settings of the programmed sensors. Sensors can be activated or de-activated, depending on the Secury configuration of the radio set. See “General settings/(14.15)” in the operating manual of the TETRA Configurator.

Functions in menu (cont'd)

Designation	Function
Show beacon position (ILB and Bluetooth [FT5 only])	Shows the current location determined by receipt of an identifier from the localisation beacon based on "I" inductive and "B" Bluetooth technology. Beacon identifiers are displayed with a date and timestamp continuously. **Note:** The position of the beacon can only be displayed when logged in while in Security mode.
Bluetooth beacon Weak battery notification (Empty Battery)	In addition to the location identifier, the FT5 also receives and assesses the current battery status of a Bluetooth beacon. In the event of insufficient battery voltage, the FT5 signals a battery warning (Empty Battery) in a pop-up window with the location identifier of the relevant beacon. A red "" low bat symbol under the "Show beacon position" menu item indicates that the batteries of a Bluetooth beacon are weak. **Note:** The receipt and signalling of battery warnings require the appropriate configuration of the Bluetooth beacons and the radio sets. If necessary, consult your system administrator.
Show GNSS position	Shows the current location based on the receipt of navigation satellite signals.

Setup

Functions in menu

Designation		Function
PIN lock	Device lock	Locks the mobile device by entering a personal identification number. This function can safeguard the handset from use by unauthorised persons. A four-digit PIN, which is specified in the Security submenu, must be entered to activate and cancel locking. To unlock, press the left menu key (7).

Functions in menu (cont'd)

Designation		Function
Keypad	Key tone	Selects the type (beep or click) of audible feedback of keystrokes and switches the key actuation tone on or off. If the key actuation tone is switched on, each key operation is confirmed acoustically.
	Key illumination	Switches the key illumination on or off. The key illumination goes on and off in parallel with the LCD illumination when in an enabled condition. The keys remain unlit when in an disabled condition.
Signal profile		Displays the available signal volume profiles. Changing the pre-set profile modifies several settings at the same time and enables signalling to be adapted to environments with different loudness levels. You can switch the vibration signal on and off along with every signal profile.
Display	Illuminance	Adjusts the brightness of the display.
	Illumination duration	Sets the time after which the display illumination is reduced.
	Colour scheme	Displays the available colour profiles for the display. You can adapt the colour appearance of the display by changing the pre-set profile.

Functions in menu (cont'd)

Designation		Function
Bluetooth (FT5 only)	2.4 GHz radio	A connection with a BT audio device (headset) as well as a connection to an external PTT key can be set up in the Bluetooth settings: ▪ To switch **Bluetooth** on and off Note: The switch function affects BT audio and BT localisation reception (P.125) jointly and the functions are switched on and off in totality. ▪ **Search...** for a BT audio device (pairing) ▪ To switch **Bluetooth PTT** on/off on the case of an external PTT key (Push-to-Talk/press to speak) Note: The BT-PTT connection must be set up in the Configurator. ▪ **Connected with:** -Display showing the connected (paired) BT audio device (headset) -In addition, shows the charging status of the battery in symbolic form, provided that the headset supports this function. Note: If a headset is connected (paired) actively and the BT module is switched off and then on again by means of the menu, it may take some time before the headset pairs with the device once more. The BT icon is only displayed in blue in the header once a connection has been set up successfully.
Disable Languages		Changes the language setting of the display.
Date & Time		Sets the date and time. Note: The “Date display” can be configured, see Idle display (P.29) and Screen saver (P.31).
Disable Networks		Changes the pre-set connection type (TMO or DMO). So long as the radio set is logged into a personal emergency signal centre, the connection type TMO is permanently set.

Functions in menu (cont'd)

Designation	Function
Device info	Displays the following information: ▪ Version (release, device type and part number with index, Secury/sensor/DSP/ stack/GPS firmware and GPS hardware of the radio set) ▪ Network data (MCC, MNC, network name, individual call number of radio set ISSI) ▪ Extended data if enabled (hardware test, IOP test mode, RSSI values, see FT4/FT5 configuration manual) ▪ Battery status (shows the battery type, charge level, capacity, voltage and charging cycles) ▪ Inductive localisation beacon (ILB) test mode displays. - “without Security registration (login)” the data of an “ILB beacon” that have been received. - “with Security registration (login)” the data of a “Bluetooth beacon” that have been received as well as the voltage of the batteries in use there.

Functions in menu (cont'd)

Designation		Function
Security	Database ▪ Flash/internal ▪ SD card	Shows the active memory location (storage) of the configuration data of the radio set. Selection and display of the internal database (Flash) as well as external databases (max. 4) on SD cards. To change this, highlight the preferred database with the aid of the cursor keys/navigation rocker (9) and select by means of the right menu key (8). If a PIN has been specified in the active database, this is requested before the switch is made. Once the PIN has been entered, the radio set boots up with the new selection. The databases can be secured individually by means of different PIN codes. Notes: ▪ Switching the databases is not possible in Secury mode. ▪ It is possible to block the switching of databases in the Security menu; all databases are then hidden.
	Change PIN	The PIN to lock the radio set and to provide access to configuration databases, internal Flash or external SD cards can be changed. The default PIN is **“0000”** and new numbers can be specified individually in the menu of the radio set under Security in “Change PIN”. The length of the PIN is specified as 4 characters (**0-9, *, #)**.
	PIN & screen saver	This function locks the radio set automatically when the screen saver is used. The PIN is requested in order to deactivate.
	Transmit Inhibit	This function prevents any transmission processes by the radio set and is indicated in the header by means of a half red antenna. A special TXI message can be sent to a target address when the transmit inhibit function is switched on/off. Note: This function is only displayed after activation in the TETRA Configurator.

Calls

Functions in menu

Designation	Function
Missed calls	Displays names or call numbers (SSI) of subscribers whose individual calls have not been accepted.
Received calls	Displays names or call numbers (ISSI) of subscribers whose individual calls have been accepted.
Dialled numbers	Displays the last dialled call numbers (ISSI) or the associated names of the subscribers.
Delete	Opens the submenu to delete the lists of missed calls, received calls and dialled numbers.

Messages

Functions in menu

Designation	Function
Mailbox	Displays the list of SDS and SDS Status text messages that the radio set has received.
New message	Opens the SDS EDITOR window. You can edit, transmit and delete SDS text messages here.
Transmitted	Displays the list of sent SDS templates and the text messages you have created with the SDS editor.
SDS Templates	Opens the TEMPLATES window containing a list with pre-defined SDS text messages. When selecting an SDS text message, you can edit and transmit the text message in the SDS editor or send it directly without further editing.
Status templates	Displays the list of status messages. Status messages are pre-edited and unchangeable text blocks. When sending, only the status numbers are transmitted. This makes the transmission time very short. To achieve successful communication, the assignment of status numbers and texts must be programmed identically on your radio set and the receiving unit and have the same meaning.

Functions in menu (cont'd)

Designation	Function
Message folder	Displays the list of SDS and SDS Status text messages that you have moved from the mailbox into the message folder (and saved).
Delete	Deletes the contents of the message lists. To delete the content, select a list and confirm the delete process.

Personal organizer

Functions in menu

Designation	Function
Organizer	You can have an organizer displayed here.

Addresses

Functions in menu

Designation	Function
Sorted Groups	Shows a list of group folders into which the groups are sorted. From this list, select the group with which you wish to communicate in the half-duplex call operating mode (simplex communication using the PTT button) (group call).
All Groups	Contains the list of available groups: When programming the radio set, you can transfer groups from this list to the "Group folder" list.
Scan Lists	Contains the scan lists into which multiple groups have been compiled when radio sets were programmed. When a scan list is selected and activated, the radio set monitors the radio traffic in all associated groups. Otherwise, the radio set will only receive calls from the selected group.

Functions in menu (cont'd)

Designation	Function
Disable Subscriber List	Contains the list of call numbers (ISSI) of the available subscribers. Here you can select a subscriber to whom a half or full duplex individual call is to be made.

Information

Synchronising the TETRA radio with subscriber list from the local network (central phone book):

The entries in the phone book (subscriber list) can be stored locally in the TETRA infrastructure and managed there. There is also the option of using the funktel “Phone Book Updater FT4/FT5” for automatic synchronisation of phone book entries on TETRA handsets. This has read access to the central file and uses it as the basis for updating the phone book of the radios.

Components required:

The “Phone Book Updater” may be used on a PC without keyboard or mouse, requiring only a screen to display the status as well as a Desktop Station for communication with the TETRA radio.

Note:

The program version of the “Phone Book Updater” that matches the current firmware version of the TETRA handset must always be used. Only versions of the device firmware that match the “Phone Book Updater” software package are compatible.

TIP

If local subscriber data are changed on or new data are added to your TETRA system, they can be updated by means of the “Phone Book Updater”. If necessary, consult the system administrator of your communication facilities.

First steps

This chapter describes how to put the radio set into operation.

Programming

Before using the radio set in daily operations for the first time, it must be programmed with all required operational data and the desired function options and parameters.

The programming procedure requires a configuration tool, consisting of a PC and a configuration program. Consult your specialist dealer.

The data to be programmed take into account the operating conditions as well as individual requests from the operator/user. They are stored in the radio set.

If required, the settings can be saved on a microSD card.

Putting the radio set into operation

Prerequisite:

- ☑ A frequency must have been assigned for TETRA operation.
- ☑ The radio set must be programmed.
- ☑ The trunking mode (TMO) must be activated if the radio set is to be used within a TETRA infrastructure.

Perform the following steps:

1. Carefully place the antenna on the antenna socket of the radio set.

Step 1: The FT4 is shown here

Note:

Use the appropriate type of antenna (UHF or VHF) for your devices, with the version matching the preset radio frequency. If necessary, consult your system administrator.

2. Fasten the antenna hand-tight by turning it clockwise.

Step 2: The FT4 is shown here

3. Insert memory cards (where available and specified for use) into the card slot with the contacts facing down.

The illustration shows the handset with two card slots; a microSD card is inserted at the top while the lower slot is intended for use with a micro-SIM card.

Step 3.1: The FT5 is shown here

The figure shows the radio set with the maximum number of features (three card slots). From left to right: mini-SIM card (standard SIM), microSD card, micro-SIM card.

Step 3.2: The FT4 is shown here

4. Guide the battery lugs carefully into the recesses in the radio set.

Illustration of FT4

Illustration of FT5

Step 4:

5. Carefully push the battery into the radio set until the battery lock engages.
   The latch (18) must engage fully.

Illustration of FT4

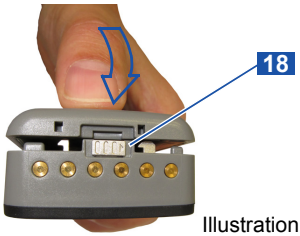


Illustration of FT5

Step 5:

6. Charge the battery before switching the unit on for the first time.

✓ **Done. After charging the battery, the radio set is ready for operation.**

TIP

After the unit is switched on, the display may show a prompt concerning a missing card. In this case, you can only use your radio set if a microSD card is inserted. Check to ensure that all cards required for operation are inserted, see work step 3.

NOTE

microSD card:

Funktel GmbH cannot guarantee the fault-free functioning of any commercially available microSD cards of various specifications in its products! It is therefore recommended that only microSD cards that are available from Funktel under part numbers 5900273689 and 5900273690 be used.

Charging the battery

Always charge batteries with system-compatible chargers supplied by Funktel. These are optimally suited for the radio set and the battery. Always use the chargers outside of hazardous areas (explosive atmospheres).

Charging the FT4 battery with a Desktop Charger II FT4/ Desktop Station FT4

The Desktop Charger II FT4 and Desktop Station FT4 chargers charge both the battery in the radio set and a spare battery. When the radio set and the spare battery are connected with the charger at the same time, the battery in the radio set is charged first. After this, the charging process of the spare battery starts.
The charging time for an empty battery is roughly 5 to 8 hours.

Charging the FT5 battery with a Desktop Charger FT5/ Desktop Station FT5 and

Battery Charger FT5

The FT5 Desktop Station and the FT5 Desktop Charger charge the battery in the radio set while the battery can be charged individually in the FT5 Battery Charger.
The charging time for an empty battery is roughly 5 to 8 hours.

TIP
In addition, the radio set can be configured with the Configurator tool by means of the Desktop Station FT4 / Desktop Station FT5.

Connect the charger to the power supply

Perform the following steps:

1. Connect the plug-in power supply unit with the charger.
2. Plug the plug-in power supply unit into a suitable power outlet.

Done.

Placing the FT4/FT5 radio set into the charger

Perform the following steps:

1. Place the radio set with its bottom into the charger.

Illustration of FT4

Illustration of FT5

2. Push the radio set carefully all the way to the bottom of the charger, until the “FT4 only” lock (a) engages.

Illustration of FT4

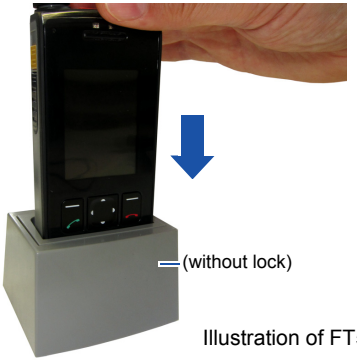


Illustration of FT5

The charging process starts.

The charging status of the battery is shown on the radio set display, see section “Signalling the charging status“ (P. 53).

Done.

Removing the FT4 radio set from the charger

Perform the following steps:

1. Press the unlocking knobs (a) of the charger together simultaneously.

Illustration of FT4

2. Remove the radio set carefully from the charger.

Illustration of FT4

Done.

Inserting the spare FT4/FT5 battery in the charging slot

Perform the following steps:

1. Insert the battery bottom-first into the charging slot.

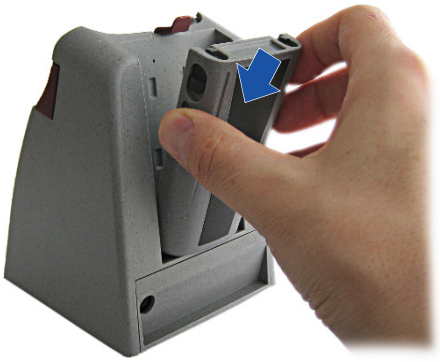


Illustration of FT4

Illustration of FT5

2. a) Carefully press the FT4 battery into the charging slot until the lock engages.

   b) Insert the standard FT5 battery (1950mAh) carefully in the forward area of the charging slot. The side-mounted brackets guide and hold the battery against the charging contacts. The rear area of the charging slot is intended for an FT5 battery (4000mAh) of greater capacity.

Illustration
Desktop Charger II FT4

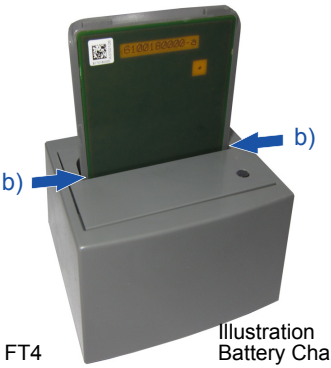


Illustration
Battery Charger FT5

   The charging process starts.

   The charging status of the battery is indicated by the indicator light at the front of the charger, see Section “Desktop Charger indicator light” (Page 50-51).

Done.

Removing the spare FT4 battery from the charger

Perform the following steps:

1. Carefully push the unlocking element on the charger upwards.

Illustration of FT4

2. Remove the FT4 battery carefully from the charging slot.

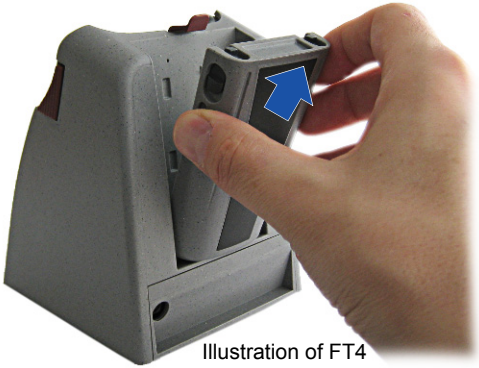


Illustration of FT4

Done.

✓**The battery is fully charged when the indicator light is green.**

This charger charges the battery in the radio set. This charger is perfect for travelling due to its compact design. The charging time required for a depleted battery is approx. 5 to 8 hours.

Perform the following steps:

1. Hook the holding clip of the charger into the recess in the radio set.

2. Carefully push the charger towards the radio set until the unlocking tab hooks into the recess on the radio set.

3. Plug the plug-in power supply unit into a suitable power outlet.

   The charging process starts.

   The charging status of the battery is shown on the radio set display, see section “Signalling the charging status“ (P. 53).

✓**The battery is now charged.**

Signalling the charging status

The battery charging status is displayed by the following symbols on the display of the radio set.

Battery charging status: Symbols in the radio set display

Symbol	Battery status
	The battery is fully charged.
	The battery is discharged. The bright bar indicates the available capacity.
	The battery is discharged.
	The radio set is in the charger. Battery is being charged.
	The radio set is in the charger. The battery is fully charged.
	The radio set has identified a faulty battery.

The charging status can also be indicated by the indicator light of the radio set in the system charger, see chapter “Design and function“ > “Operating conditions of the right-hand signal LED on the radio set“ (P. 24).

Indicator light of the Desktop Charger II FT4

The indicator light on the charger indicates the charging status of the spare battery.

Indicator light of the Desktop Charger II FT4"

Meaning of the FT4 charger indicator light

Colour	Status	Meaning
off		The charger is not connected to mains.
yellow	lit	The spare battery is not inserted.
red	flashing	The spare battery is defective or is not properly inserted.
	lit	The spare battery is being charged. If the radio set is in the charger, the charging process of the spare battery starts as soon as the battery in the radio set is fully charged.
green	lit	The spare battery is fully charged. This indicator is independent of the charging status of the radio set in the charging set.

Indicator light of the FT5 battery charger

The indicator light on the charger indicates the charging status of the spare battery.

Indicator light FT5 battery charger

Meaning of the indicator light of the FT5 charger

Colour	Status	Meaning
off		The charger is not connected to mains.
red, blue, green, white	flashing	Indicates the initialisation of the FT5 battery charger when connecting to the mains (no battery inserted).
blue	lit	Readiness to operate (no battery inserted).
red	lit	The battery is being charged.
red, yellow	flashing	The battery is in a state of deep discharge, thus longer charging time (red, red, yellow, yellow)
green	lit	The battery is fully charged.

Error signalling of the FT5 charger

Colour	Status	Meaning
red, yellow	flashing	The battery is defective or not inserted correctly and cannot be charged fully (red, red, red, yellow).
red	flashing	Temperature error: The temperature falls outside of the valid range of 10° to 45° Celsius.

Note:
Should your battery be defective, contact your support department or the Funktel customer service department.

Setting and detection of charger types

Individual charger settings for each of the charger/station (tabletop charger), multicharger, system charger and car charger types can be defined in the radio set.

Each charger has a code by which the radio set recognises the type of charger. When the radio set is inserted in a charging device, the settings defined for the respective type of charger are detected and can be used for the charging process.

System chargers can be used, for example, in lockers that require a different type of charging behaviour to that required in a tabletop charger at a work station. The radio set then picks out the charging behaviour based on the appropriate identification and setting of the type of charger.

For further information regarding charging process signalling, see Operating conditions of the right-hand signal LED on the radio set (P.24).

TETRA basics

In this chapter, you can familiarise yourself with the basics and functions of the TETRA system.

Safety information

If the radio set is not logged in at the personal emergency signal (PES) control centre, a TETRA emergency call cannot be transmitted if radio contact is unavailable due to insufficient radio coverage. Transmit the TETRA emergency call once again as soon as radio contact is re-established.

Prerequisite:

☑ A TETRA emergency call is configured on the radio set!

TETRA connection types

Due to the TETRA transmission technology, your radio set can set up different connections with other subscribers. The following TETRA connection types are possible, depending on the situation and the application:

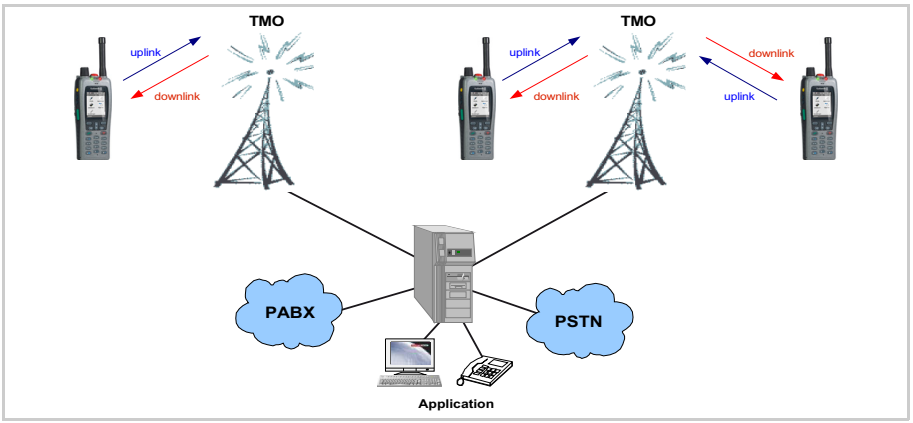
- Trunking mode (TMO) (P.58)
- Direct mode (DMO) (P.60)

Trunking mode (TMO)

The trunking mode is a connection type for which all terminal units use a common TETRA infrastructure. All terminal units that can be reached are registered on the TETRA network.

Description

In trunking mode, your radio set sets up all connections from or to other subscribers and other applications through the TETRA infrastructure.



Trunking mode (TMO) Schematic representation of possible calls and connections

In trunking mode, voice and data calls can be made simultaneously.

Information

The TETRA SwMI (Switching and management infrastructure) performs the switching and controls the sequence of the transmission process. The system as well as its configuration determine the requirements that must be satisfied in order to enable the use of features and specific functions of the TETRA handset. The devices and settings of the mobile device software have no effect on modifications to the SwMI.

Identification features

The following features of your radio set enable you to identify that your radio set is connected with the TETRA network and that the trunking mode is activated:

The FT4 is shown here

Trunking mode (TMO) Identification features on your radio set

Legend

Identification feature	Behaviour
Display	Idle display reads TMO.
Left Signal LED	green, flashes slowly:

Activating trunking mode (TMO)

After registering in the TETRA infrastructure, the radio set is in trunking mode (TMO) and is ready for operation.

Activating the trunking mode manually

If your radio set does not automatically change over to trunking mode (TMO), you can activate this mode manually.

Prerequisite:

☑ The radio set must be located within the radio coverage range of the TETRA infrastructure.

☑ Switching to another network mode is permitted.
Note: Access to the Network submenu may be disabled by configuration.

Perform the following steps:

1. On the display, navigate to MENU > SETUP > NETWORK.
   The NETWORK menu is displayed.
2. Using the ‹cursor keys› (9), select the TMO menu item.

3. Press the ‹right menu key› (8) to select the menu item.

The FT4 is shown here

✓Done.

Direct mode (DMO)

The direct mode is a connection type in which the terminal units communicate directly with one another.

Description

In direct mode, your radio set sets up all connections from or to other subscribers directly and without using the TETRA infrastructure. The subscribers must be within the transmit range of your radio set.

Direct mode (DMO) Schematic representation of possible calls and connections

Identification features

The following features of your radio set indicate to you that the direct mode is activated (in idle mode, without an active voice connection):

The FT4 is shown here

Direct mode (DMO) Identification features on your radio set

Legend

Identification feature	Behaviour
Display	Idle display reads DMO.
Left Signal LED	green, flashes slowly:

Activating the direct mode manually

If your radio set is not switched to direct mode (TMO), you can activate this mode manually. Ensure that other subscribers are within the range so you can communicate in this mode.

Perform the following steps:

1. On the display, navigate to MENU > SETUP > NETWORK.
   The NETWORK menu is displayed.
2. Using the ‹cursor keys› (9), select the DMO menu item.
3. Press the ‹right menu key› (8) to select the menu item.

The FT4 is shown here

✓ **Done.**

Operation

In this chapter, you can familiarise yourself with the operation of the radio set. Frequent operation steps are described on the following pages.

Switching on the radio set

Take note of the safety information before switching on your radio set.

To switch on, the ‹*Hang up*› *(11)*, button must be pressed with a short or long key press, depending on the configuration.
The keystroke behaviour of the red (Hang up) button can be set to switch on the handset by means of a “short (default setting) or long key press”.

The display and keyboard illumination is switched on.

The radio set carries out a self-test. This will take a few seconds.

The radio set is connected with the TETRA infrastructure (if this has been programmed).

The display shows the idle display.

✓**Done, the radio set is switched on.**

Switching off the radio set

NOTE

Battery will discharge while the radio set is switched off!
Electrical discharge of the battery due to quiescent current/bias current (while the radio set is switched off) may impair the readiness for operation of the radio set!

➔ Place the radio set in a charger to recharge the battery.
➔ Charge the battery regularly if it is not in use for a prolonged period of time. In the event of it not being used for an extended period of time, it may be useful to disconnect the battery from the device. Take note of the safety instructions for storage and transportation of the battery.

Perform the following steps:

1. Unlock keyboard (if necessary).

2. Press the ‹Hang up› (11) key for about three seconds.
   The radio set cuts the connection.
   The display and keyboard illumination is switched off.
   The radio set switches itself off after a short time.
3. Charge the battery, see chapter “First steps“ > “Charging the battery“ (P.46).

✓ **Done, the radio set is switched off.**

Menu

The radio set makes numerous functions available to you. Many of these functions can be called up in the menu in a structured way.

Navigating the menu

The following pages tell you how to navigate through the menu for executing a function when starting from the idle display.

Prerequisite:

☑ The display shows the idle display.

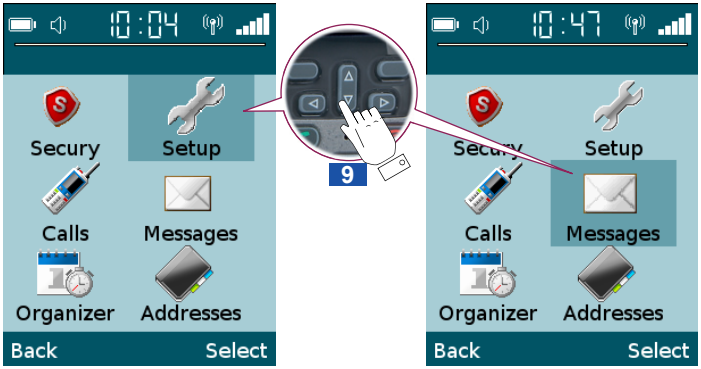
Perform the following steps:

1. Press the ‹right menu key› (8) to display the menu.

   The display shows the main menu.

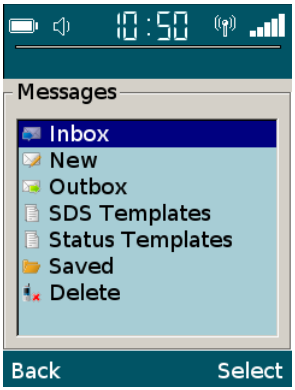
2. Highlight the desired menu item by pressing the cursor keys (9).

   Every time a key is pressed, the adjacent menu item is highlighted in the display.



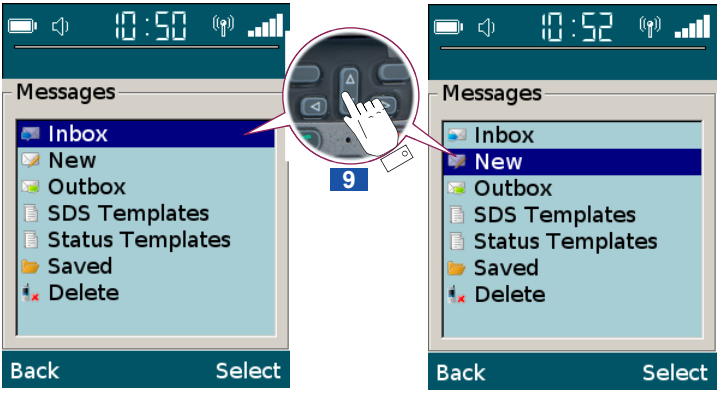
3. Press the ‹right menu key› (8) to select the highlighted menu item.

   The “Messages” menu is shown in the display.



4. Highlight the desired menu item by pressing the cursor keys (9).

   Every time a key is pressed, the adjacent menu item is highlighted.



5. Press the ‹right menu key› (8) to select the highlighted menu item.

   The function is executed. or: The display shows the menu which is subordinate to the selected menu item.

✓ **Done.**

TIP

After a prolonged inactivity period, the display switches to the screen saver, see Section “Screen saver“ (P.31).

Changing back to the previous menu

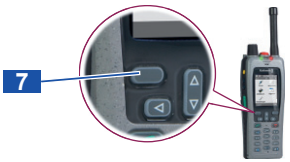
If you have executed the desired function or if you simply wish to go back, you can go back as follows:

Prerequisite:

☑ The display shows a menu.

Perform the following steps:

1. Press the ‹left menu key› (7) briefly when the BACK function is shown in the display.



The FT4 is shown here

   The display content changes back to the previous content.

2. Repeat pressing the key if required.

✓ **Done.**

Group Calls

Group calls are voice connections a subscriber sets up to several other subscribers at the same time. While one subscriber speaks, the other subscribers in that group listen to this call.

Selecting a group

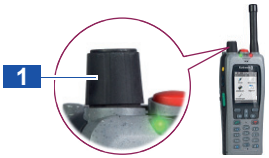
You can select a group with which you mainly communicate from ALL GROUPS or SORTED GROUPS. Pressing the ‹PTT (transmit key)› (6) will then automatically start a group call for this group.

Prerequisite:

☑ The display shows the idle display.

Perform the following steps:

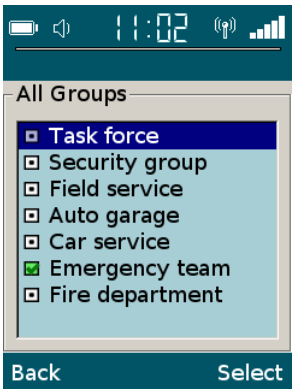
1. Long press the ‹Volume/Group Dial› (1) knob in order to enable its function as a rotary switch (if required).



The FT4 is shown here

2. Press the ‹Volume/Group Selection› (1) knob briefly.

   The ALL GROUPS menu or one of the SORTED GROUP FOLDERS is shown in the display.



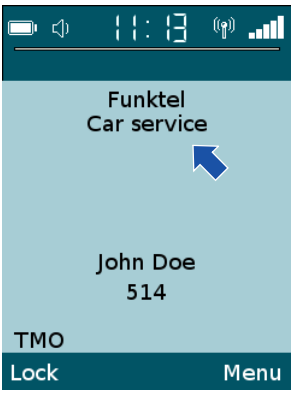
? *The display shows the VOLUME field, not the ALL GROUPS OR SORTED GROUPS menu?*
The Volume/Group Dial knob allows both setting the volume and selecting groups.
➔ Press the ‹Volume/Group Dial (1)› knob to toggle between the VOLUME field and the ALL GROUPS OR SORTED GROUPS menu.

3. Turn the ‹Volume/Group Dial› (1) knob until the desired group is highlighted.

INFO

The groups that may be reached by pressing the rotary knob are identified specifically with a dot (▣) in the selection field.

4. Press the ‹right menu key› (8) to execute the DIAL function, or press the ‹Volume/Group Dial› (1) knob again briefly.
The setting is acknowledged and stored by the “Group Change OK” display.
The display switches back to the idle display and shows the selected group.



✓ **Done.**

TIP

- The Group Dial function of the rotary knob may have been disabled while programming the radio set.
- The Group Dial submenu can also be accessed from the idle display, using either the MENU > ADDRESSES > SORTED GROUPS/SORTED GROUPS SELECTION or MENU > ADDRESSES > ALL GROUPS path.

Starting a group call

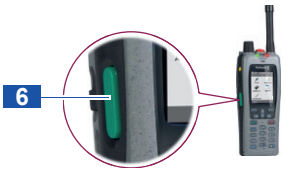
A group call is a half-duplex voice connection. While one subscriber speaks, all other subscribers in that group listen to this call. After that, the other subscribers can answer the call, one after the other.

Prerequisite:

☑ The channel is not occupied by a call.

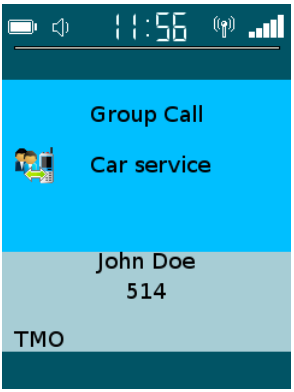
Perform the following steps:

1. Press the ‹PTT (transmit key)› (6) and keep it pressed.

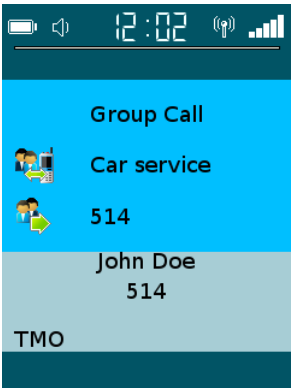


The FT4 is shown here

The connection with the subscribers in the called group is set up. The display shows the name or the call number of the group (GSSI).



After a short time, your speaking enable signal is transmitted unless another subscriber is transmitting. The radio set can also signal “speech enabling” with an audible signal, provided that the signal profile in use is configured for “Speech Authorising” signalling.



2. Keep the ‹PTT (transmit key)› (6) pressed while speaking.
3. After speaking, release the ‹PTT (transmit key)› (6).
4. Continue the conversation:
   ➔ Hold the ‹PTT (transmit key)› (6) down to talk.
   ➔ Release the ‹PTT (transmit key)› (6) to listen.

   When neither you nor any other group members are talking, the connection is terminated after a pre-set period of time. To start another call to the group, start again at step 1.

Note: It is also possible to disconnect from a group call by means of the ‹Hang up› (11) key, while the group call continues between the other subscribers. See “Leaving a group call early“ (P.77).

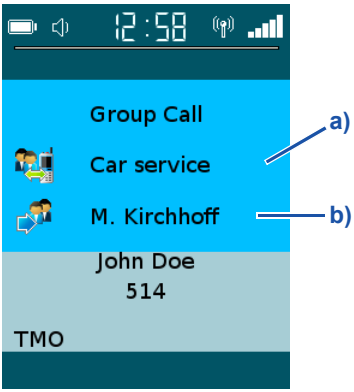
✓ **Done.**

Receiving a group call

An incoming group call from a subscriber belonging to the selected group is received automatically by your radio set. You do not have to do anything to accept the call.

During a group call, the following information is displayed on the display of your radio set:

a) Name or number (GSSI) of the called group
b) Name or number (ISSI) of subscriber who is currently speaking



Display while receiving a group call

Answering a group call

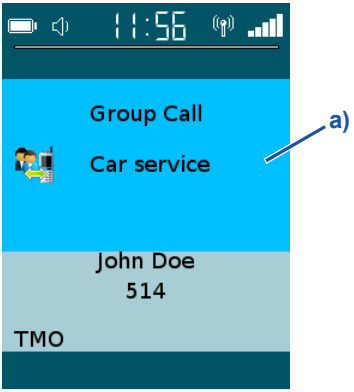
Prerequisite:

☑ Your radio set receives a group call.

Perform the following steps:

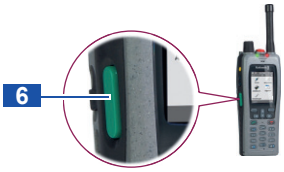
1. Wait for the calling subscriber to stop speaking.
   The display shows only the number of the group (GSSI) or its name (a). The lower icon with the blue arrow is no longer displayed.

   The radio set can also signal “speech enabling” with an audible signal when the caller has released the PTT key (6), provided that the signal profile in use is configured for “Roger-Beep” signalling.



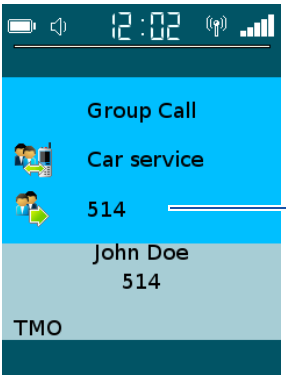
Display showing “speech enabling” during a group call.

2. Press the ‹PTT (transmit key)› (6) and keep it pressed.



The FT4 is shown here

After a short time, your speaking enable signal is transmitted unless another subscriber is transmitting. In addition, the display shows your name or your number (a) (ISSI).
Note: If another subscriber in the group has already pressed the PTT button (6), an alert tone sounds, signalling the speech channel is busy.



3. Keep the ‹PTT (transmit key)› (6) pressed while speaking.
4. After speaking, release the ‹PTT (transmit key)› (6).
   You may now be able to hear other subscribers.
   As soon as no more subscriber answers, the connection is disconnected after a pre-set time.

✓ **Done.**

Scanner function

If the scanner function is activated, your radio set will scan the radio communications in multiple groups simultaneously. If the radio set receives a call from one of the groups being scanned, the speaker is switched on automatically, and the hands-free mode is activated. To use the scanner function, you must

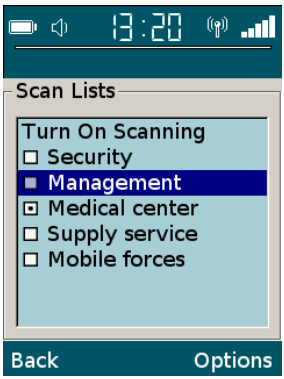
- select a scan list and
- activate the scanner function.

Selecting a scan list

The groups to be scanned are grouped in scan lists. To use the scanner function, a scan list must be selected.

Perform the following steps:

1. Navigate to MENU > ADDRESSES > SCAN LISTS in the display.
   The SCAN LISTS menu is displayed.

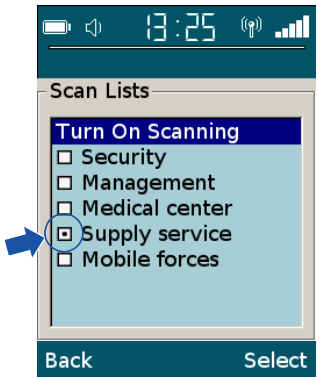


2. Highlight the desired scan list using the cursor keys (9).
3. Press the ‹right menu key› (8) to execute the OPTIONS function.

The FT4 is shown here

   The OPTIONS menu is displayed.

4. Highlight the SELECT LIST menu item using the cursor keys (9).
5. Press the ‹right menu key› (8) to execute the SELECT function.
   The display changes back to the ADDRESSES menu. The desired scan list is marked in the Scan Lists menu as "selected".
   Note: This is not activated automatically by selection of a scan list, read “Switching the scanner function on/off“ (P.76) in this regard.



✓Done.

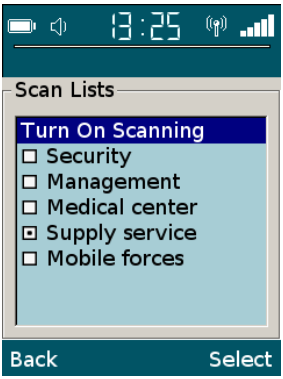
TIP
To find out which groups are summarised in the scan lists, highlight the SHOW LIST function in step 4 instead of the SELECT FUNCTION.

Switching the scanner function on/off

You can switch the scan function on and off at any time when a scan list is marked as "selected". When a scan list is selected and activated, your radio set monitors the radio traffic in all associated groups.
Scan groups are received in the same way as a normal group call. The difference is that a group call is connected to a selected group, while in the case of the scanner function, multiple groups may be available in the scan lists to receive the call.

Perform the following steps:

1. Navigate to MENU > ADDRESSES > SCAN LISTS in the display. The SCAN LISTS menu is displayed.



2. Highlight the ACTIVATE SCANNING entry using the cursor keys (9).
3. Press the ‹right menu key› (8) to execute the SELECT function.
   After a short time, the title of the menu item changes from ACTIVATE SCANNING to DEACTIVATE SCANNING.
   The scan function is now active.
   The symbol of the "selected“ scan lists changes as follows:

   In the idle display, the name of the scan list is displayed as a note regarding “Group Scanning”.

4. If required, press the ‹right menu key› (8) one more time to deactivate the scanner function again.

✓ **Done.**

TIP

The scanner function is active when the title of the menu item is DEACTIVATE SCANNING. The scanner function is inactive when the title of the menu item is ACTIVATE SCANNING.

Leaving a group call early

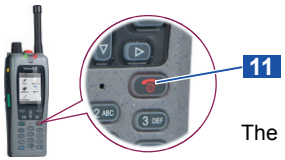
Given the large number of group calls that you receive with your radio set, not all information may be important for you. If required, you can therefore leave a group call early.

Prerequisite:

☑ Your radio set receives a group call.

Perform the following steps:

➔ Press the ‹Hang up› (11) key briefly.



The FT4 is shown here

The connection is disconnected.

The radio set ignores the active group call.

✓ **Done.**

Individual Calls

Individual calls are voice connections between two individual subscribers. Individual calls are always started by entering the desired call number. Individual calls can be set up in the following ways:

- as a full-duplex voice connection, see section Duplex mode (P.79).
- as a half-duplex voice connection, see section “Two-way call (Half-duplex)“ (P.83)

Duplex mode

An individual call in duplex mode is a full-duplex voice connection in which you hold the radio set near your ear just like a telephone set. During this time, both you and the called subscriber can listen and speak at the same time.

Starting a call

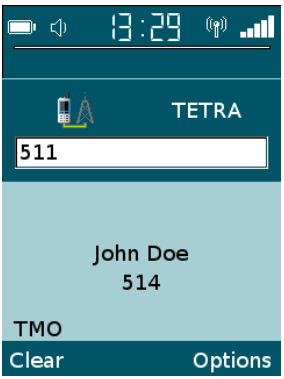
Prerequisite:

☑ The display shows the idle display or the screen saver.

☑ Direct dialling from the subscriber list is not configured.
Note: If the parameter is activated, the security prompt is not displayed when dialling from the phone book (subscriber list) list.

Perform the following steps:

1. Enter the number. Choose one option:
   ➔ Entering the call number using the number keys.
   ➔ Selecting the call number from the subscribers' list: In the display, navigate to MENU > ADDRESSES > SUBSCRIBER LIST and highlight the desired number.



The condition as shown appears in the following cases:
➔ After entering the call number in the idle condition.
➔ After highlighting the subscriber in the subscriber list and ‹calling› by pressing the ‹right menu key› (8).
➔ After highlighting the subscriber and ‹Picking up› (10).

Starting from this display, start a “full duplex individual call” by using ‹Pick up› (10).

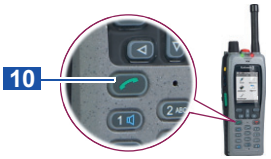
TIP

You can access the subscriber list directly from an idle condition (idle display) by pressing the CURSOR DOWNWARDS▽ (9) key. See also the quick reference guide for selected functions on page 108.

2. Press the ‹right menu key› (8), if the CALL function is available, to select a gateway (telephone, TETRA, ...), then press the ‹Pick up› (10) key. Or, after highlighting a subscriber in the subscriber list, press the ‹Pick up› (10) key twice.

TIP

The radio set can also be configured by means of “direct selection from the subscriber list”; pressing the <Pick-up> (10) key is all that is required. Consult the system administrator of your communication facilities.



The FT4 is shown here

The connection is set up.

The display shows the call number or the name of the called subscriber.

As soon as the called party accepts the call, the connection is set up.

3. Hold the radio set close to your ear like a telephone receiver for listening and speaking.

✓ **Done.**

TIP

The settings of your radio set are individually programmed by the radio set operator. The subscriber list and the composition of the groups and group folder are predefined and cannot be changed on the radio set. If you have any questions, please contact the responsible system administrator for your communication facilities.

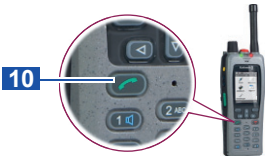
Picking up a call

Prerequisite:

☑ Your radio set signals an incoming individual call.

Perform the following steps:

1. Press the ‹Pick up› (10) button



The FT4 is shown here

The connection is set up.

2. Hold the radio set close to your ear like a telephone receiver for listening/speaking.

✓ **Done.**

Terminating a call

Perform the following steps:

➔ Press the ‹Hang up› (11) button

The FT4 is shown here

The connection is disconnected.

✓ **Done.**

Rejecting a call

Perform the following steps:

➔ If you do not wish to accept a call, you can reject the call by pressing the ‹Hang up› (11) key while the call is being signalled.

Two-way call (Half-duplex)

At the factory, two-way calls are configured in "direct through" mode. A call in "direct through" mode is a half-duplex voice connection during which you alternately set the radio set to transmit mode by means of the ‹PTT (transmit key)“ (6) (keeping the PTT (transmit key) pressed) or receive mode (by releasing the PTT button). The hands-free mode is activated, and the loudspeaker is on. The called subscriber does not need to accept the call to hear you. Either you or the called user can speak.

Starting a call

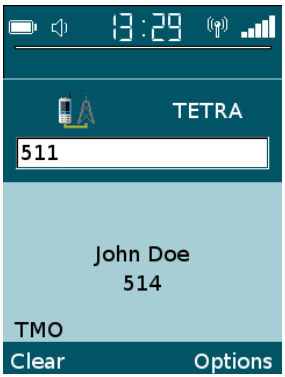
Prerequisite:

☑ The display shows the idle display or the screen saver.

☑ Direct dialling from the subscriber list is not configured.
Note: If the parameter is activated, the security prompt is not displayed when dialling from the phone book (subscriber list) list.

Perform the following steps:

1. Enter the number. Choose one option:
   ➔ Entering the call number using the number keys.
   ➔ Selecting the call number from the subscribers' list: In the display, navigate to MENU > ADDRESSES > SUBSCRIBER LIST and highlight the desired subscriber.



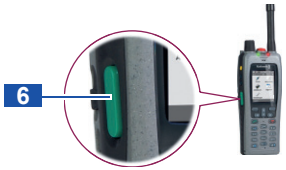
The condition as shown appears in the following cases:
➔ After entering the call number.
➔ After highlighting the subscriber and using ‹Call›.
➔ After highlighting the subscriber and actuating (pressing and releasing) the ‹PTT (transmit key)” (6) key.

Starting from this display, start the call with the ‹PTT (transmit key)› (6) key (press, keep pressed and talk; release and listen).

2. Press the ‹right menu key› (8) if the CALL function is available, then press the ‹PTT (transmit key)› (6) and hold it down. Or, after highlighting a subscriber in the subscriber list, press the ‹PTT (transmit key)› (6) twice and keep it pressed after pressing the second time.

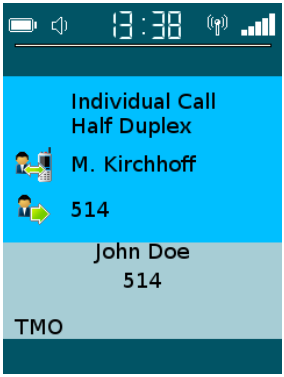
TIP

The radio set can also be configured for “Direct dialling from the subscriber list” and then a keystroke on the ‹PTT (transmit key)› (6) or pressing the ‹right menu key› (8) “Call” is all that is required to set up a call directly to reach the subscriber directly. “Direct dialling” by means of the menu function key (8) activates the “Hot Mic Function” of your radio set automatically; the microphone is switched on and you may speak without pressing any further keys. In order to listen to the subscriber and end the “Hot Mic Function“, press the ‹PTT (transmit key)› (6) briefly. If necessary, consult your system administrator.



The FT4 is shown here

The connection is established as soon as the display shows the call number or name of the called subscriber.



The called subscriber can hear you.

3. To listen and speak, hold the radio set in the hand at head height and slightly to one side of the mouth; the microphone is located in the lower area of the keypad.
4. Keep the ‹PTT (transmit key)› (6) key pressed when speaking.

5. To listen, release the ‹PTT (transmit key)› (6).

✓ **Done.**

TIP

The settings of your radio set are individually programmed by the radio set operator. The subscriber list and the composition of the groups and group folder are predefined and cannot be changed on the radio set. If you have any questions, please contact the responsible system administrator for your communication facilities.

Terminating a call

Perform the following steps:

➔ Press the ‹Hang up› (11) button

✓ **Done.**

TIP

When neither you nor the called subscriber are speaking, the connection is cut automatically after a certain period.

TMO Call Priority Control

Outgoing and incoming individual calls in full duplex or half duplex mode can be prioritised. The TMO call priorities for outgoing and incoming calls (accepting a new call) can be configured on the radio.

- The TMO call priority functions according to the set level of urgency when you wish to make a call and the TETRA system has no resources available to process this call preferentially at the time.
- An ongoing voice call may be preferentially overridden or disconnected by a new, incoming call, depending on the selected TMO call priorities.

TIP

The settings of your radio set are individually programmed by the radio set operator. The configuration of the subscribers and their respective priorities are permanently predefined and cannot be changed on the radio. If you have any questions, please contact the responsible system administrator for your communication facilities.

TETRA Emergency Calls (TMO Emergency Calls)

A group call, half-duplex call or a full duplex call with emergency priority can be initiated by triggering a TETRA emergency call (TMO alarm voice connection). Use this function only when you are in an emergency situation.

Special features

A TETRA emergency ‹Alarm› call (2) is then only possible if the radio has not logged in to the personal emergency signal system.
As long as the radio set is logged in to the personal emergency signal control centre, triggering the emergency ‹Alarm› call (2) will generate a "personal alarm" and transmit it to the personal emergency signal control centre.

During an active TETRA emergency call connection, the radio set works with the following restrictions:

- The scan function is switched off. Group monitoring is not carried out.
- Individual calls cannot be received.
- Group calls cannot be received.

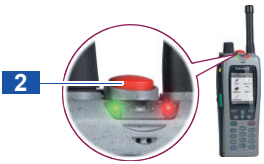
Prerequisite:

☑ The radio set is switched on.

☑ The alarm voice connection and its call type and target number are set. The “Group Call” type of call is shown here as an example.

Perform the following steps:

1. Long press the ‹Alarm› (2) button



The FT4 is shown here

Example: Triggering the alarm with a group call

- All services, e. g. a set-up voice call, are terminated.
- The radio set initiates a group call with an emergency priority.
- The microphone is activated (Hot-Mic), the speakers on the radio sets belonging to the called group are switched on. A one-way (half-duplex) voice connection is set up, with an outgoing voice call from the radio set that is transmitting the emergency call and the incoming call being received by the “listening” group. Press the PTT key briefly to end the Hot Mic mode.
- The emergency call connection appears on the display on a red background.
- The radio set is now in TETRA emergency call mode.

2. Maintain a clear distance between the radio set and your head when listening and speaking (half-duplex / two-way call).
   ➔ Press the ‹PTT (transmit key)› (6) and keep it pressed to talk.
   ➔ To listen, release the ‹PTT (transmit key)› (6). The one-way voice connection is ended and the two-way call mode (Direct Through) by means of the PTT key is active.

The FT4 is shown here

✓Done.

Ending a TETRA emergency call

When neither you nor the called subscribers are no longer speaking, the connection is cut automatically after a certain period. Otherwise, you can terminate the emergency call manually.

Perform the following steps:

➔ Press the ‹Hang up› (11) key to terminate the connection.

The FT4 is shown here

✓**Done.**

TIP

If you wish to use the TETRA emergency call in duplex mode, change the setting of the alarm voice connection to the “Full duplex voice connection” and specify the desired target number (ISSI). Full duplex group calls with “GSSI” are not possible.

Messaging/Text Messages

Message types

For sending and receiving text messages, the following text message types are differentiated.

Text message types on funktel FT4/FT5 radio sets

Designation	Type	Behaviour of the funktel FT4/FT5 radio set when receiving
Status message	Pre-defined, non-modifiable text message (The transmission is bit encoded and can take place to and from any TETRA radio set. To achieve successful communication, the assignment of bit combinations and text messages must be the same in your radio set and the receiving unit and have the same meaning.)	Alert tones and display content. After executing the **OK** function (by pressing the ‹RIGHT MENU KEY (8)›), the message is stored in the Inbox as read. If cancelled by pressing the ‹RIGHT MENU KEY (7)›, the message is stored as unread. Unread mail in the inbox is signalled with the appropriate number in the idle display. If no action is taken, the last message to have been received is displayed until it is acknowledged.
SDS text message	Text message that is individually composed (Message is transmitted in clear text and transmission is possible from and to any TETRA-compatible terminal unit.)	Alert tones and display content. After executing the OK function (press ‹RIGHT MENU KEY (8)›), the message no longer appears on the display. The transmitted message is stored under the “Sent” menu item and can be sent again. The received message is stored in the “Inbox”, where it can be read, answered and stored in the Saved folder.

Creating an SDS text message

An SDS (Short Data Service) text message is an individual text message that you can create. In addition, SDS templates can be selected, completed and sent. The maximum length of the text message that may be received by SDS or message (Type 1-5) in Unicode on the FT5/FT5 is 101 (SDS) or 99 (message) characters. SDS templates may be preconfigured with a maximum length of up to 70 characters and expanded to the maximum permissible value by means of the Editor.

Note: Text inputs with a greater number of characters than that which the terminals receive can be made by means of the SDS Editor of the radios or Messaging from the control centre (Nucleus, DSS/TSS System). Before sending a message, take note of the character count of your text; split longer notifications into multiple SDS/ messages if necessary.

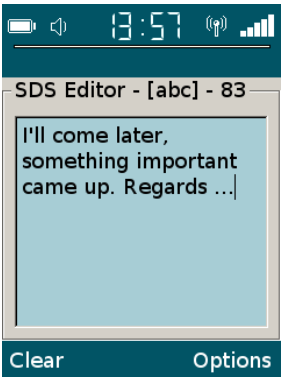
Prerequisite:

☑ The display shows the idle display.

Perform the following steps:

1. In the display, navigate to MENU > MESSAGES> NEW MESSAGE.
   The empty SDS EDITOR window is displayed.

2. Entering text:
   - ➔ Enter alphabetic characters by means of the ‹2 TO 9, 0› (12) keys.
   - ➔ Enter digits by means of the ‹1 TO 9, 0› (12) keys.
   - ➔ Special characters can be entered by means of the ‹1› key and the star ‹*› (13) key.
   - ➔ Switch between capitalisation and non-capitalisation by means of the hash ‹#› (14) key.

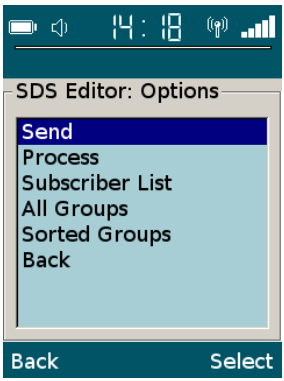


As long as no text has been entered, the footer (left menu key 7) shows the BACK element instead of DELETE. The display of the left menu key (7) changes to DELETE only after the first character has been entered.

3. Press the ‹RIGHT MENU KEY (8)› to execute the OPTIONS function.

The FT4 is shown here

The displayed text is accepted including all changes.
The SDS EDITOR: OPTIONS window is displayed.



4. Transmit the message, see section “Sending an SDS text message“ (P.95).

✓Done.

Composing an SDS text message from a template

An SDS text message is a text message that you can compose individually. In practice, similar information is often transmitted repeatedly. For this reason, your radio set is programmed with pre-defined, frequently used text blocks. These text messages can be transmitted directly, but you can also modify and supplement them before sending them.

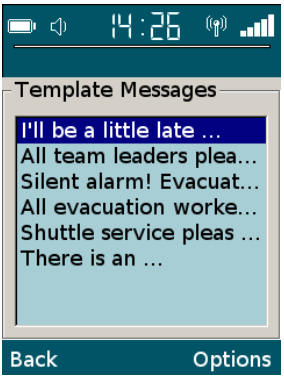
Note: SDS templates may be preconfigured with a length of up to 70 characters and may be expanded to a maximum text length of up to 101 SDS or 99 message characters as required.

Prerequisite:

☑ The display shows the idle display.

Perform the following steps:

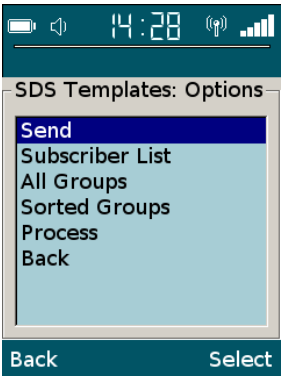
1. On the display, navigate to MENU > MESSAGES> SDS TEMPLATES: OPTIONS.
   The SDS TEMPLATES: OPTIONS window is displayed.



2. Highlight the desired template by using the ‹CURSOR KEYS (9)›.
3. Press the ‹RIGHT MENU KEY (8)› to execute the OPTIONS function.

The FT4 is shown here

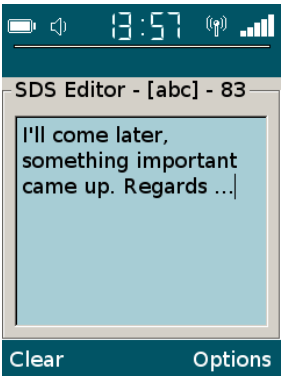
The SDS TEMPLATES: OPTIONS window is displayed.



4. By using the ‹CURSOR KEYS (9)›, highlight the ‹PROCESS› menu item to modify or expand the template as required.
5. Press the ‹RIGHT MENU KEY (8)› to execute the Select function.

The FT4 is shown here

The SDS: EDITOR window is displayed.



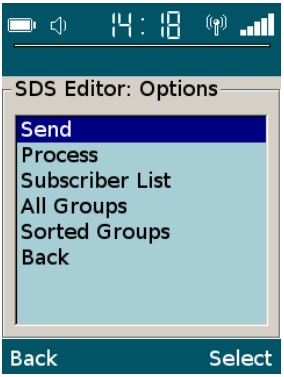
6. Modify or supplement the text as needed.
   - ➔ Navigate to the desired point in the text by using the ‹CURSOR KEYS (9)›.
   - ➔ Enter alphabetic characters by means of the ‹2 TO 9, 0› (12) keys.
   - ➔ Enter digits by means of the ‹1 TO 9, 0› (12) keys.
   - ➔ Special characters can be entered by means of the ‹1› key and the star ‹*› (13) key.
   - ➔ Switch between capitalisation and non-capitalisation by means of the hash ‹#› (14) key.

7. Finally, press the ‹RIGHT MENU KEY (8)› to execute the OPTIONS functions.

The FT4 is shown here

The displayed text is accepted including all changes.

The SDS: EDITOR: OPTIONS window is displayed.



8. Transmit the message, see section “Sending an SDS text message“ (P.95).

✓ **Done.**

Sending an SDS text message

When you have finished composing a text message or adapting a template, you can transmit the message. They are transmitted in plain text, using the Short Data Service (SDS).

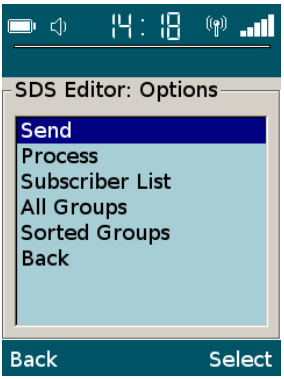
Prerequisite:

☑ The text message to be transmitted is composed, see section “Creating an SDS text message“ (P.90) or section “Composing an SDS text message from a template“ (P.92).

☑ The SDS EDITOR: OPTIONS or SDS TEMPLATES: OPTIONS window is displayed.

Perform the following steps:

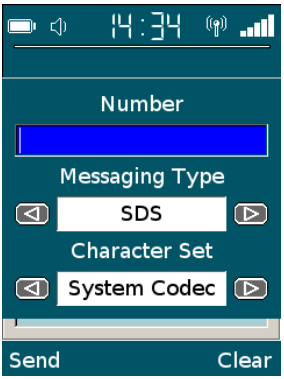
1. If required, select the recipient from the ***Subscriber List***, ***All Groups*** or from the defined ***Sorted Groups***:
   ➔ Using the ‹CURSOR KEYS (9)› highlight the SUBSCRIBER LIST menu item and select by using the ‹RIGHT MENU KEY (8)›. Using the cursor keys, highlight the desired recipient in the contact list and select it by using the right menu key. To send the message, press the ‹LEFT MENU KEY (7)›.
   ➔ Using the ‹CURSOR KEYS (9)› highlight the ALL GROUPS menu item and select by using the ‹RIGHT MENU KEY (8)›. Using the cursor keys, highlight the desired recipient group and select it by using the right menu key. To send the message, press the ‹LEFT MENU KEY (7)›.
   ➔ Using the ‹CURSOR KEYS (9)› highlight the SORTED GROUPS menu item and select by using the ‹RIGHT MENU KEY (8)›. Using the cursor keys, highlight the group folder and select it by using the right menu key. Using the cursor keys, select the desired recipient group and press the right menu key to access the target number input field. To send the message, press the ‹LEFT MENU KEY (7)›.



2. Using the ‹CURSOR KEYS (9)›, highlight the SEND menu item.
3. Press the ‹RIGHT MENU KEY (8)› to execute the function.

The FT4 is shown here

The input window for the TARGET NUMBER is displayed.



If the input field is already filled, a recipient from the contact list or a group has already been selected in Step 1. Continue with step 4b.

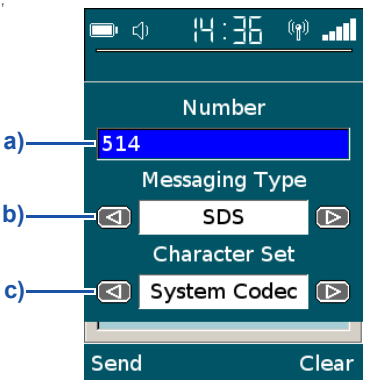
4. Input of the target data of a recipient or a group.

➔ In the TARGET NUMBER (a) field, enter the “SSI” number of the recipient or the “Group SSI” of a group by using the ‹1 TO 9, 0› keys.

➔ In the MESSAGING TYPE (b) field, select the desired type of signalling for the SDS as SDS (TETRA default) or (Type 1-Type 5 funktel Messaging). The type of signalling can be defined for the individual types in the TETRA Configurator.

➔ The character set to be used when sending the text message can be selected in the CHARACTER SET (c) field; the Codec system is the default. “UNICODE” can be selected for communication with mobile devices of other manufacturers.
Note: Unicode is a digital international standard for fonts and is suitable for communicating with other cultures in other languages. See also Creating an SDS text message (P.90).

TIP
If this menu is accessed by selecting the “Contact list” or “Group list” as the target, the name of the entry is displayed instead of the target number. By first pressing the ‹RIGHT MENU KEY (8)› “Delete”, the display is reset to the target number.



5. Press the ‹LEFT MENU KEY (7)› to execute the SEND function.

The FT4 is shown here

The SDS text message is sent.

✓**Done.**

Transmitting a status message

A status message is a pre-defined text message that cannot be modified by the sender. Only bit-coded data are transmitted to the recipient. This makes the transmission time very short. The data are decoded on the recipient's unit, the original message is displayed. The prerequisites are:

- Each predefined text message has the same meaning for the sender and recipient; the assignment of the numbers (status values) to the texts must be identical in the templates.
- The data to be transmitted are encoded in the same manner on the sender's and the recipient's unit.

Sending a status message (menu-based status templates)

Transmit a predefined text message (status template) by selecting the MESSAGES > STATUS TEMPLATES function in the menu of the radio set.

Prerequisite:

☑ The display shows the idle display.

Perform the following steps:

1. In the display, navigate to MENU > MESSAGES> STATUS-TEMPLATES.
   The list of status templates (predefined text message) is displayed.
2. Highlight the desired status template using the ‹CURSOR KEYS (9)›.
3. Press the ‹RIGHT MENU KEY (8)› to execute the OPTIONS function.

The FT4 is shown here

   The STATUS OPTIONS menu is displayed.
4. Highlight the SEND menu item.
5. Press ‹RIGHT MENU KEY (8)› SELECT.
   The TARGET NUMBER input field is displayed.
6. In the TARGET NUMBER field, enter the “SSI” number of the recipient or the “Group SSI” of a group by using the ‹1 TO 9, 0› (12) keys.

7. Press the ‹LEFT MENU KEY (7)› to execute the SEND function.

The FT4 is shown here

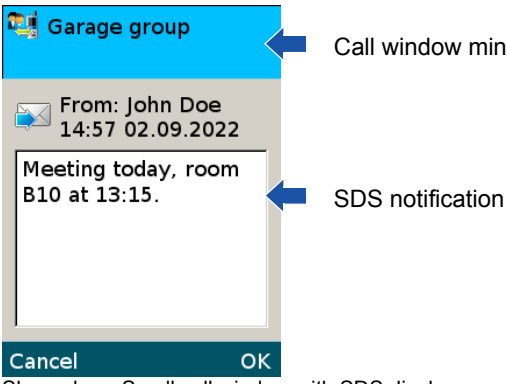
The status message is sent.

✓Done.

TIP

If this menu is accessed by selecting the “Contact list” or “Group list” as the target, the name of the entry is displayed instead of the target number. The display is reset to the target number by first pressing the ‹RIGHT MENU KEY (8)› “Delete”.

Display showing the call connection when the text message SDS is displayed



Shown here Small call window with SDS display

Small call window with SDS display

The TETRA radio sets are configured in such a manner that a text message (SDS) and a call connection can be displayed and handled together. If a text message and a call are received simultaneously, then the minimised call window shifts to the top in the status bar.

- If required, define the function in the TETRA Configurator by activating the “Small call window for SDS display” checkbox.

Special display behaviour in the case of important messages

Display suppression when receiving important messages

Display behaviour

Important messages (without timeout) that are sent to a terminal from the control centre by DSS/TSS or Nucleus System should remain displayed until confirmed by the user (“manual acknowledgement” [accept or reject]). This is intended to ensure that all important messages are displayed to the recipient, who confirms receipt manually, before they are stored under the Inbox menu item.

Note: The function applies only to messages for which the control centre requires positive or negative confirmation. Other messages that require only local read confirmation (OK or cancel), are stored in the Inbox of the terminal as unread when a new message is received, insofar as they have not already been acknowledged by means of the menu key.

Prerequisite:

- It is necessary for the control centre (Client workstation) to send a message “without display timeout” and with “manual confirmation” in order for the special display behaviour to be implemented.
  Info: In the case of Funktel or TETRA messaging (SDS/status of device to device), special display behaviour does not come into effect; in this case transmission of the message takes place without manual acknowledgement.
- The terminal is in TMO mode and has an active radio communication with the TETRA infrastructure (SwMi).

Functional description:

The control centre sends multiple important messages to a terminal. The last message to have been received (latest), continues to be displayed (no timeout); older messages (up to 31) remain in sequence in the background. As soon as the latest message is acknowledged manually the next one in the order in which the messages have been received continues to be displayed until, in turn, confirmed by the user. The user must always allow all important messages to be displayed and processed (confirmed) before operating functions in the MMI of the terminal are re-enabled.
Info: Security messages (sensor test, etc.) do only override a message temporarily, as is the case with a timeout.

SDS-controlled functions

Specific functions may be triggered on system-compliant TETRA handsets by other (remote-controlled) authorised devices by means of SDS messaging.

Functions that can be controlled

- Contact control on the controlled TETRA handset (function only possible with FT4)
- Operating state of the controlled TETRA handset
- Remotely controlled call

Application and function description of SDS-controlled functions

Contact control (FT4): “External Contact on” and “External contact off”

- When this function is used, the controlled FT4 handset must be in a Desktop Station FT4 (Part number 5010982000). The contact output that is housed in the handset is switched by is guided means of the bottom connector of the handset to a triple-pin array at the rear of the Desktop Station FT4.

Switch off: (Remote) switch off of a radio:

- This SDS-controlled function enables the TETRA handset to be switched off via another handset as an individual subscriber (SSI) or of a group (GSSI).
  Note: The controlled TETRA handset can be switched on again manually!

Remotely controlled call by SDS Triggering of a half duplex (two-way call) or full duplex (bi-directional voice communication) Tetra connection.

- This SDS-controlled function enables the TETRA handset to set up a half or full duplex TETRA connection automatically via a radio other than an individual subscriber (ISSI/SSI) or the communication control centre on receipt of a preprogrammed SDS. The remotely controlled radio can be triggered by SDS templates with ISSI/SSI for an individual TETRA connection or with GSSI in the case of a group to set up a call. The “Remotely controlled call by SDS” function is only possible in TMO mode and can only be controlled from a single source (ISSI/SSI).

TIP

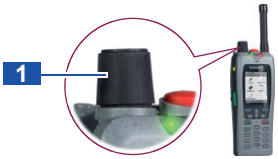
If SDS-controlled functions are used on your system, consult your system administrator regarding the trigger texts required to control other devices or trigger functions on your radio remotely, as required.

Setting the volume

You can set the volume as required by the situation both for the receiver and for the loudspeaker.

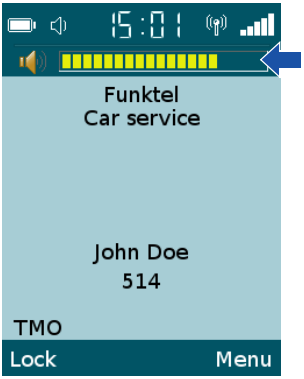
Perform the following steps:

1. Long press the ‹Volume/Group Dial (1) knob to enable its function as a rotary switch (if required).



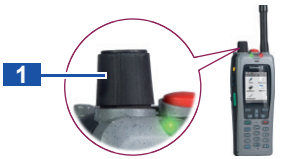
The FT4 is shown here

2. Turn the ‹Volume/Group Selection› (1) knob.
   The display shows the VOLUME field.



? *The display shows the GROUP DIAL field, not the VOLUME field?*
The ‹Volume/Group Dial› (1) knob allows the volume to be set and groups to be selected.
➔ Press ‹Volume/Group Dial› (1) control knob to switch between volume setting and group dialling.
➔ To cancel group dialling, press the ‹Hang up› (11) key or wait for approx. 5 seconds until the idle display returns.

3. Turn the ‹Volume/Group Dial› (1) knob until the desired volume is set.



The FT4 is shown here

The VOLUME field is hidden again after a short time.

This setting is automatically saved.

✓**Done.**

Key lock

You can lock the keys of your radio set in order to avoid accidental entries. However, you have to unlock the keys of your radio set before it can be operated again as usual.

Locking the keys

Prerequisite:

☑ The display shows the idle display.

Perform the following steps:

1. Press the ‹left menu key (7)› to execute the LOCK function.

The FT4 is shown here

2. Press the ‹Star * › (13) key within one second.

The FT4 is shown here

The display shows the *Keys locked* message.

✓**The keys are locked.**

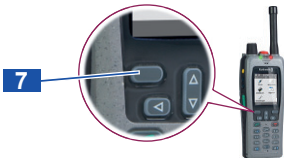
Unlocking the keys

Prerequisite:

☑ Keyboard is locked.

Perform the following steps:

1. Press the ‹left menu key (7)› (13) to execute the UNLOCK function.



The FT4 is shown here

2. Press the ‹Star * › (13) key within one second.

The FT4 is shown here

The display shows the *Keys unlocked* message.

✓ **Keyboard is unlocked.**

TIP

Normally (default configuration), the PTT key is not disabled in the case of manual keypad locking. If required, the radio set can be configured for “PTT locked with manual keypad locking”. If necessary, consult your system administrator.

Open listening mode ON/OFF during a call

If you are performing a call in duplex mode (full duplex voice connection), you can switch on the loudspeaker to hear the other party openly.

Prerequisite:

☑ Individual call in duplex mode (full duplex voice connection) is established.

CAUTION

High volume

High volume may damage your hearing seriously.

➔ Never hold the radio set directly near your ear when open listening is activated!

Note: At high volume, interference with the microphone may result.

Perform the following steps:

1. Long press the ‹1› (12) key.
   The speaker is switched on. You can hear the other party speak via speaker.
2. Long press the ‹1› (12) key again to switch off the speaker.
   Hold the radio set close to your ear like a telephone receiver for listening and speaking when open listening is deactivated.

✓ **Done.**

Muting the microphone during a call

If you are making a call in duplex mode (full duplex voice connection), you can mute the microphone to talk discreetly off the radio. Your called party will not be listening in.

Prerequisite:

☑ Individual call in duplex mode (full duplex voice connection) is established.

Perform the following steps:

1. Long press the ‹Star * › (13) key.
   The microphone is muted. The party you have called cannot hear you.
2. Long press the ‹Star * › (13) key again to switch the microphone on again.

✓ **Done.**

Brief instructions for selected functions

The following tables list selected functions to be executed on the radio set by tasks.

General functions

Function	Operation	Prerequisite or special features
Locking/unlocking the rotary switch	Long press the ‹Volume/ Group Dial› (1) knob.	Possible only if the idle display is displayed.
Switching on the radio set	Long press the ‹Hang up› key.	The keystroke behaviour to switch on can be configured for a short (default setting) or long key press as an option.
Switching off the radio set	Long press the ‹Hang up› (11) key.	The radio set can only be switched off after it was logged out of the personal emergency signal centre. The radio set programming determines the procedure for logging in/ out of the personal emergency signal centre.
Switching the open listening function on/off	Long press the ‹1› (12) key.	Possible only during an individual call in duplex mode (full duplex voice connection).
Changing the volume	Turn the ‹Volume/Group Dial› (1) knob.	Press the button briefly to switch between volume setting and group dialling.
Muting the microphone	Long press the ‹Star * › (13) key.	Possible only during an individual call in duplex mode (full duplex voice connection).
Calling up the postbox MENU > MESSAGES > CALL UP POSTBOX	Press the CURSOR UP ▲(9) key.	Possible only if the idle display is displayed.
Calling up the idle display	Press the ‹Hang up› (11) key.	–

General functions (cont'd)

Function	Operation	Prerequisite or special features
Calling up the signal profile CALLING UP MENU > SETUP > SIGNAL PROFILE	Press the CURSOR RIGHT ►(9) key, then highlight and select the desired signal profile.	Possible only if the idle display is displayed.
Locking/Unlocking the keypad	Press the ‹left menu key (7)›, then press the ‹Star * › (13) key.	Possible only if the idle display is displayed. Press keys in rapid succession.
Calling up the Subscriber List MENU > ADDRESSES > CALL UP SUBSCRIBER LIST	Press the CURSOR DOWN ▼(9) key.	Possible only if the idle display is displayed.
Calling the subscriber directly by means of the “Skip to Subscriber List (subscriber list)”	Press the ‹0-9 numeric keypad (12)› key for approx. 2 secs.	Only possible if the idle display is shown and the keypad is not locked. The key function can be configured.
Calling up missed calls CALL UP MENU > CALLS > MISSED CALLS CALL	Press the CURSOR LEFT ◄(9) key.	Possible only if the idle display is displayed.

TETRA functions

Function	Operation	Prerequisite or special features
Selecting a group (via menu)	Navigate to the ***"All Groups"*** menu: MENU > ADDRESSES > ALL GROUPS. Using the ‹CURSOR KEYS (9)›, highlight the desired group and press the ‹right menu key (8)› to select. Navigate to the ***"Sorted Groups"*** menu: MENU > ADDRESSES > SORTED GROUPS. Using the ‹CURSOR KEYS (9)›, highlight a group folder and press the ‹right menu key (8)› to select. Using the ‹CURSOR KEYS (9)›, highlight the target group and press the ‹right menu key (8)› to select.	The group can be selected from the ALL GROUPS list or from the SORTED GROUPS list. ***TIP*** You can select your target group from the user-defined folders in the group folder.
Selecting a group (via quick access)	Press the ‹Volume/Group Selection› (1) knob briefly. Now turn the knob to highlight the desired group. Press the ‹right menu key (8)› or the ‹Volume/Group Dial› (1) knob to select.	The group can be selected from the ALL GROUPS group list or you can select your target group from a GROUP FOLDER. Note: The group folder for the ‹Volume/Group Dial›1 rotary knob is defined in the TETRA Configurator and cannot be selected.
Group call (half-duplex voice connection)	Press the ‹PTT (transmit key)› (6) to transmit. Release the key to listen.	A group must be selected.

TETRA functions (cont'd)

Function	Operation	Prerequisite or special features
Individual two-way call in "direct through" mode (half-duplex voice connection)	Enter the number. Press the ‹PTT (transmit key)› (6) to transmit. Release the key to listen.	Possible only if the idle display is displayed.
Individual call in duplex mode (full duplex voice connection)	Enter the number. Press the ‹Pick up› (10) button. Make the call.	Possible only if the idle display is displayed.

TETRA functions (cont'd)

Function	Operation	Prerequisite or special features
Toggle between TMO <--> DMO connection type	On the display, navigate to MENU > SETUP > NETWORKS. Press the ‹CURSOR KEYS (9)› to highlight the desired type of connection. Press the ‹right menu key (8)› to make a selection. It is possible that the radio set has been programmed so that it is possible to switch by means of ‹Function key 1 (3)›, ‹Function key 2 (4)›, ‹Function key 3 (5)› as an alternative.	Possible only if the radio set is *not* logged into the personal emergency signal control centre. In operation, the connection type can be switched accidentally if the switching option is activated by means of ‹Function key 1› (FT4/5), ‹Function key 2› (FT4), ‹Function key 3› (FT4).

Initiating an emergency call

Function	Operation	Prerequisite or special features
Triggering a TETRA emergency call (TMO Alarm)	Long press the ‹Alarm-› (2) key.	Possible only if the radio set is *not* logged into the personal emergency signal control centre.
Triggering a personal emergency call	Pushbutton alarm 1 ‹Alarm› (2) key - long press Pushbutton alarm 2 ‹Alarm› (2) key - press briefly three times.	Possible only if the radio set is logged in at the personal emergency signal control centre. Pushbutton alarm 1 is *always active* Pushbutton alarm 2 can be disabled.
Triggering a warning alarm	Warning alarm 1: Long press ‹Function key 1› (3). Warning alarm 2: Press ‹Function key 1› (3) briefly three times.	Possible only if the radio set is logged in at the personal emergency signal control centre. Warning alarm 1, can be disabled. Warning alarm 2, can be disabled.

"Device functions by speed dial" key functions

The table below lists device functions (options) that can be configured to enable them to be accessed and triggered by means of speed dial (quick access) with the aid of the ‹0-9 numerical keypad (12)›. If necessary, the yellow ‹Function key F1 (3) / F1 (Warning)› may also be configured for quick access, insofar as a warning alarm function is not to be used on the radio set. In addition, the ‹F2 (up [4]) and F3 (down [5])› function keys can also be used for speed dial key functions on the FT4.

Configurable speed dial functions 0-9 keys

Function	Operation	Prerequisite or special features
Options: **0-9** key ▪ No function ▪ Toggle TMO/DMO ▪ To toggle the screen saver ▪ Upward cursor movement ▪ Downward cursor movement ▪ GPS/LIP position transmission ▪ Group Call ▪ PTT call ▪ Call ▪ Send message ▪ Go to Menu Organizer ▪ Go to Menu Security ▪ Go to Menu Sorted Groups ▪ Go to Menu All Groups ▪ Go to Menu Scan Lists ▪ Go to Groups Menu for Rotary knob press	Quick access with the **0-9** keys of the numeric keypad: Press the preferred numeric key for approx. 2 seconds until the function is triggered.	Only possible if the idle display is shown and the keypad is not locked. Switching between TMO/DMO is not possible when logged in to Security Mode.

Configurable speed dialling by Function keys F1-F3

Function	Operation	Prerequisite or special features
Options: Function keys **F1 to F3** ▪ No function ▪ Toggle DMO/TMO ▪ Group selection ▪ To switch the screen saver on / off ▪ Upward cursor movement ▪ Downward cursor movement ▪ GPS/LIP position transmission ▪ Group Call ▪ PTT call ▪ Call ▪ Send message ▪ Go to Menu Organizer ▪ Go to Menu Security ▪ Go to Menu Sorted Groups ▪ Go to Menu All Groups ▪ Go to Menu Scan Lists ▪ Go to Groups Menu for Rotary knob press	Quick access by means of the **function keys**: F1 "Warn"› (3) FT4/5 F2 "up"› (4) FT4 only F3 "down"› (5) FT4 only A brief keystroke triggers the key function that has been configured.	Depending on the programming of the radio set, you can execute one of the functions with the function keys. Each key may be configured with a function. Quick access by means of the **yellow** ‹Function keys 1› (3) is only possible if *no* warning alarm has been activated in the alarm settings. Function keys can also be used gain quick access to submenus but not if the keypad is locked. Switching between TMO/DMO is not possible when logged in to Security Mode.

TIP

Consult the system administrator who is responsible for the personal emergency signal system as to whether the key functions on your radio set are set up for quick access and regarding those that can be added if required.

Personal Emergency Signal (PES) Functions

This chapter describes the emergency signal functions. Due to the integrated sensors and safety functions, you can use the radio set for security purposes during hazardous (single-person) jobs by connecting to a system-compatible personal emergency signal centre.

Will-dependent emergency signal functions

Will-dependent emergency signal functions are triggered by the user by an intentional action.

Control elements

The radio set offers the following control elements for triggering a will-dependent alarm or warning alarm.

Control elements for triggering will-dependent alarms or warning alarms

Designation	Function
‹Alarm› (2)	Triggering of a personal alarm (will-dependent alarm). Decide for yourself if you wish to trigger Alarm 1 or Alarm 2: ▪ Alarm 1: Press key for more than 1 second. ▪ Alarm 2: Press key briefly three times.
‹Function key 1› (2)	Triggering a warning alarm. Decide for yourself if you wish to trigger Warning alarm 1 or Warning alarm 2: ▪ Warning alarm 1: Press key for more than 1 second. ▪ Warning alarm 2: Press key briefly three times.

TIP

If the radio set is not logged into the personal emergency signal centre, the control elements may have different functions, see chapter “Design and function“ > “FT4 / FT5 control elements“ (P. 16).

Alarm types

At the factory, the radio set is set to provide the following will-dependent alarms and warning alarms:

Will-dependent alarms and warning alarms of the radio set

Alarm type	Condition for triggering of
Pushbutton alarm 1	The ‹Alarm› (2) is depressed for longer than 1 second.
Pushbutton alarm 2	The Alarm› (2) key is pressed briefly three times.
Warning alarm 1	The ‹Function 1› key (3) is depressed for longer than 1 second.
Warning alarm 2	The ‹Function 1› key (3) is pressed briefly three times.

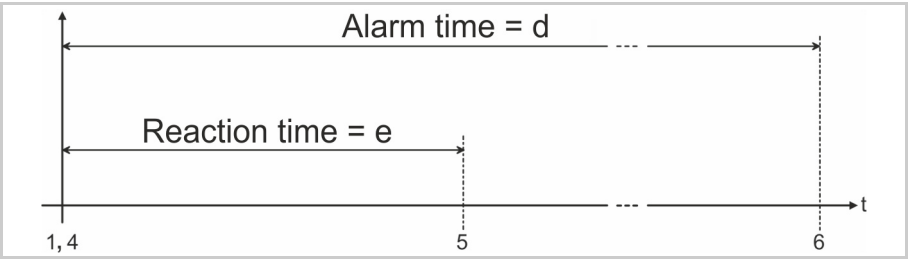
The criteria for evaluation and differentiation between Pushbutton alarm 1 and Pushbutton alarm 2 as well as between Warning alarm 1 and Warning alarm 2 have been defined by the operator of the personal emergency signal system.

TIP

Ask the system administrator of your communication systems which personal emergency signal functions are programmed on your radio set.

Time sequence

Each will-dependent alarm results in the alarm being transmitted directly after triggering. There is no delay and no pre-alarm.



Time sequence of will-dependent emergency signal functions in case of alarm

Legend

No.	Designation	Description
1	Alarm condition occurs	As the user of the radio set, you detect a dangerous situation.
4	Triggering the alarm	You, the user of the radio set, intentionally triggers a will-dependent alarm transmitted to the personal emergency signal centre. The radio set starts signalling the alarm (d). This will continue until the alarm is reset.
5	Arrival of alarm at the personal emergency signal centre	The alarm is received by the personal emergency signal control centre. The personnel at the personal emergency signal centre begins to initiate emergency measures.
6	Resetting the alarm	The alarm is reset by the personal emergency signal control centre sending a reset authorisation or by the radio set that triggered the alarm and can be ended on the radio set after receipt of the “End alarm” message.
d	Alarm time	Period of time between triggering of the alarm (4) and the alarm being reset by the radio set or a reset authorisation being sent by the personal emergency signal control centre (6).
e	Reaction time	(according to the DIN V VDE V 0825 Part 1 standard) Period of time between the occurrence of the alarm condition (1) and the arrival of the alarm at the personal emergency signal control centre (5).

Will-independent emergency signal functions

Will-independent emergency signal functions are automatically triggered by the radio set if you are in certain situations while in possession of the radio set. The triggering conditions can be caused "intentionally" or "accidentally".

Alarm types

At the factory, the radio set is set to provide the following will-independent emergency signal functions:

Will-independent emergency signal functions of the radio set

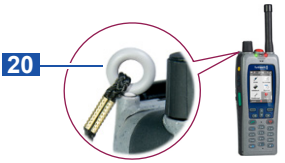
Alarm type	Condition for triggering of
Position alarm	Radio set is tilted too far. The tilting angle is programmed by the operator of the personal emergency signal system. Standard value is 55° (based on a vertical position, tolerance±5°).
No-motion alarm	The radio set is not moved.
Tear-off alarm	Pulling the tear-off contact plug.
Loss alarm (FT5 only)	Removal of the radio set from the carry case.
Time alarm	The radio set is not actuated within a certain period of time (dead man's time).

TIP

Ask the system administrator of your communication systems which personal emergency signal functions are programmed on your radio set.

Triggering the Tear-off alarm

The tear-off alarm is triggered by pulling the plug.



The FT4 is shown here

Tear-off contact for triggering the Tear-off alarm

The tear-off contact triggers a tear-off alarm as soon as the plug is pulled out of its holder and the delay has elapsed. The tear-off alarm is triggered once the pre-alarm time has elapsed.

Triggering the Loss alarm

The loss alarm is triggered by the radio set being removed from its carry case.

The FT5 is shown here with carry case

Triggering of the sensor of the loss alarm when the radio set is removed

Functional description of the loss sensor

The loss sensor reacts when the radio set is removed from the carry case and starts the delay (standby time) with a prompt for the PIN until the alarm is triggered. Enter the Loss PIN to cancel the alarm within the standby time. Input of the PIN deactivates the loss sensor until it is inserted in the cary case again.

If the PIN is not entered or is entered incorrectly, the loss pre-alarm is triggered. The PIN input field is hidden when the pre-alarm time begins and the PIN cannot be entered during the pre-alarm. Place the radio set back in the carry case to prevent the main alarm from being triggered.

The loss alarm can be configured in such a way that it can be cancelled manually by pressing the ‹left menu key› (7). When the pre-alarm is triggered, the standby time begins afresh and input of a PIN is also required.

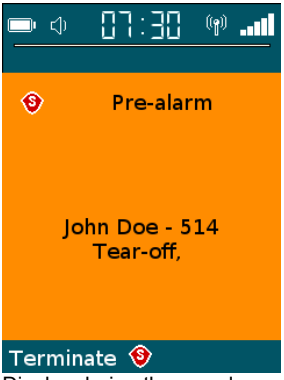
Notes regarding the alarm time and the personal emergency signal functions

- If the radio set has not been logged in at the personal emergency signal control centre, the tear-off contact and the loss sensor do not function and no alarm is triggered.
- The delay and the pre-alarm time on your radio set are specified by the operator of your system. If necessary consult your system operator or system representative regarding the configuration of your radio set.

Pre-alarm

Pre-alarms exist only for will-independent alarm types. After an alarm condition has occurred, your radio set will first attract your attention to this status by issuing a pre-alarm.

- An acoustic signal sounds (if programmed).
- The display shows a pre-alarm instead of the idle display.



Display during the pre-alarm

While a pre-alarm is active, you can prevent the transmission of a personal alarm as follows:

- Eliminate the alarm condition.
- Acknowledge the pre-alarm: Press the ‹left menu key› (7), to execute the END function. If you have not eliminated the alarm condition, the pre-alarm starts again after the programmed delay.

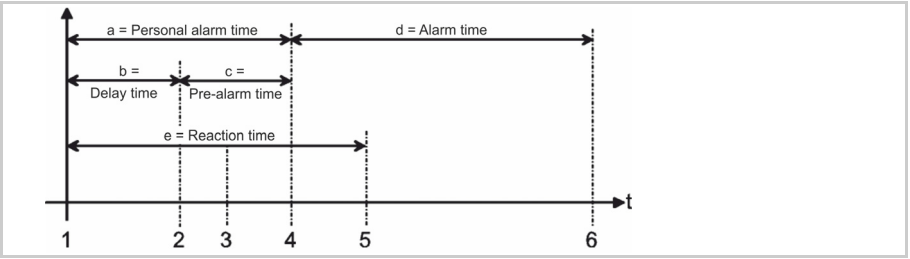
After expiration of the pre-alarm delay without any actions, the radio set will send the alarm to the personal emergency signal centre.

Note

The option of cancelling a pre-alarm by keystroke may be prohibited by the configuration of your radio set. If necessary consult your system operator or system representative regarding the configuration of your radio set.

Time sequence

Any will-independent alarm results in the transmission of the alarm to the personal emergency signal centre as soon as the alarm condition occurs and the programmed delay and pre-alarm time have expired. You can stop the transmission of the alarm if you eliminate the alarm condition during the delay and pre-alarm time, or if you end the pre-alarm during the pre-alarm time.



Time sequence of will-independent emergency signal functions in case of alarm

Legend

No.	Designation	Description
1	Alarm condition occurs	The radio set identifies an automatic (will-independent) alarm condition.
2	Start of pre-alarm on the radio set	The alarm condition detected at time (1) still exists. The radio set starts signalling the pre-alarm.
3	Ending of the pre-alarm by the operator	If you acknowledge the pre-alarm during the pre-alarm period or if you set aside the alarm condition, the pre-alarm signal will fall silent. The alarm is not triggered for the time being. The only point in time at which a pre-alarm can be ended is during the pre-alarm time (c).
4	Transmission of the alarm	The radio set transmits an alarm to the personal emergency signal centre. In addition, the radio set starts signalling the alarm (d). This lasts until the alarm is reset.
5	Arrival of alarm at the personal emergency signal centre	The alarm is received at the personal emergency signal centre immediately after being transmitted by the radio set. The personnel at the personal emergency signal centre begins to initiate emergency measures.

Legend (cont'd)

No.	Designation	Description
6	Resetting the alarm	The alarm is reset by the personal emergency signal control centre sending a reset authorisation or by the radio set that triggered the alarm and can be ended on the radio set after receipt of the “End alarm” message.
a	Personal alarm time	Period of time between the occurrence of the alarm condition (1) and transmission of the alarm (4). The personal alarm time is the total of the delay time (b) and the pre-alarm time (c).
b	Delay time	Period of time between the occurrence of the alarm condition (1) and beginning of pre-alarm on the radio set (2). The period of time can be individually programmed for each individual will-independent emergency signal function.
c	Pre-alarm time	Period of time between the beginning of the pre-alarm on the radio set (2) and triggering of the alarm (4). During this time, the radio set announces the impending alarm. You can prevent the alarm by ending the pre-alarm within the pre-alarm time (3) or by eliminating the alarm condition. The period of time can be individually programmed for each individual will-independent emergency signal function.
d	Alarm time	Period of time between triggering of the alarm (4) and the alarm being reset by the radio set or a reset authorisation being sent by the personal emergency signal control centre (6).
e	Reaction time	(according to the DIN V VDE V 0825 Part 1 standard) Period of time between the occurrence of the alarm condition (1) and the arrival of the alarm at the personal emergency signal control centre (5).

Localisation functions

With the localisation functions, the personal emergency signal centre can determine the location of the radio set. This requires that the radio set is equipped with a receiver for the localisation systems such as the inductive localisation beacon system, Bluetooth (FT5 only) or GPS/GNSS localisation that are in use. The location of the radio set can be localised by one or more systems simultaneously insofar as the required localisation receivers has been configured and activated.

For inductive localisation beacon localising, inductive localisation beacons (ILBs) must be permanently installed on the premises of the personal emergency signal system, Bluetooth localisation is achieved in a similar manner by means of BT beacons. The radio sets store GPS (FT4/FT5) and GNSS (FT5 only) location data or the identifier of the inductive localisation beacons (ILBs) and the BT beacons when the radio sets are within range of the beacons.

The localisation functions can be used for the following application scenarios:

- Localisation of the radio set in the event of an alarm
- Tracking of the radio set in an alarm situation (P. 125)
- Guard Control (P. 126)

Localisation of the radio set in the event of an alarm

After a personal alarm is triggered, the radio set transmits the stored codes of the last three inductive localisation beacons (ILBs), or of the BT beacons or the GPS/GNSS position data in the case of satellite localisation, to the personal emergency signal control centre. By analysing these codes, the staff at the personal emergency signal control centre can determine your location and reconstruct the path you have covered with the radio set directly before the alarm was triggered.

Tracking of the radio set in an alarm situation

After a personal alarm is triggered, the radio set remains in alarm condition until the alarm is terminated, see section “Alarm and alarm processing“ (P. 136).

If the radio set detects additional codes of inductive localisation beacons (ILB), BT beacons or GPS/GNSS position data, e g. because you are fleeing from a danger while carrying the radio set after triggering the personal alarm, the radio set will also send these codes to the personal emergency signal control centre. In this way, the staff at control centre can trace the escape route during the alarm condition.

Guard Control

The Guard Control mode is used to log check points during a patrol when you are performing a guard function. The radio set can be programmed with the settings required for this purpose. During programming it can be defined which emergency signal functions shall be active in the radio set.

When the Guard Control mode is active, the radio set will react as follows if it receives the code of an inductive localisation beacon (ILB), of a BT beacon or GPS/ GNSS position data:

- The code is signalled acoustically (if programmed).
- The code is displayed on the display (if programmed).
- The code is transmitted to the personal emergency signal centre.

Note: The Guard Control function is only possible in “TMO mode” and logged in while in “Security mode”

TIP

Radio sets with active warden control mode are typically specially marked. If necessary, ask the responsible system administrator of the personal emergency signal system whether the Guard Control mode is activated on your radio set.

Technical alarms and faults

Fault messages and technical alarms signal that a personal emergency signal unit is either non-functional or functional only with restrictions.

Technical alarms

The personal emergency signal centre sends out cyclical status requests. The personal emergency signal unit must respond to these status requests. If there is no status request from the personal emergency signal centre or no feedback from the radio set, a technical alarm is triggered both at the centre and on the radio set, provided this is technically possible.

Typical causes include:

- No feedback because the radio set is defective.
- No status requests because the personal emergency signal centre is defective.
- No radio connection between the radio set and the personal emergency signal centre because the radio set is out of radio range.

Technical faults

Technical faults, just like technical alarms, signal that a personal emergency signal unit is either non-functional or functional only with restrictions. As opposed to the technical alarms, technical faults are not defined in the requirements issued by the employer's liability insurance associations.

Typical causes include:

- The radio set detects that the battery is exhausted.
- The delay time for repeating the sensor test in continuous operation mode was exceeded.

Programming

The correct programming of your radio set is prerequisite for logging into the personal emergency signal centre. During programming, the user defines which emergency signal functions are activated on your radio set.

Starting up

The section below describes how to start up your radio set as a personal emergency signal unit. You will find a summary of all work steps in the quick reference guide. Following that, you will find detailed information on the most important work steps.

Quick reference guide

These short instructions provide a brief description of all work steps required for starting up your radio set as a personal emergency signal unit.

Prerequisite:

☑ Your radio set was correctly programmed by the operator of the personal emergency signal system.

☑ You know which emergency signal functions are programmed on the radio set.

Perform the following steps:

1. Performing a visual inspection (P.129).
2. Switching on the radio set (P.63).
   When you remove the radio set from the charger, it is already switched on.
3. Logging in to the personal emergency signal centre (P.129), Performing the sensor test (P.133).
   If the automatic log-in procedure is programmed on your radio set, it will automatically start the sensor test (Step 3) after it is removed from the charger.

? *You cannot log into the personal emergency signal centre?*
➔ Activate Trunking mode (TMO), see section “Activating trunking mode (TMO)“ (P.59).
➔ Repeat Step 3.

4. Fitting the tear-off cord (P.135).
5. Affixing the radio set to your clothing (P.135).

✓ **Done.**

Performing a visual inspection

Check the radio set thoroughly and diligently every time before starting up the unit.

Check the following criteria:

- Is any damage visible?
- Are any impaired functions detectable?
- Is the antenna that matches the UHF or VHF device type (longer antenna) properly seated in its mounting?
- Are all accessories properly connected and tightly seated?
- Is the battery charge sufficient for the intended period of use?

Your radio set must pass the visual inspection without any suspected damage or impairment. If you feel that your radio set might not be in proper condition, ensure that it will not be used until a specialist has examined its condition.

TIP

Continue the start-up only if the radio set passes the visual inspection.

Logging in to the personal emergency signal centre

To log the radio set into the personal emergency signal centre, the trunking mode (TMO) must be activated on the radio set.

Login status

A symbol in the footer of the display indicates whether the radio set is logged into the personal emergency signal centre.

Symbols indicating the log-in status

Symbol	Login status	Remark
	Not logged in	The emergency signal functions are not available on the radio set.
	Logged in	The emergency signal functions are available on the radio set.
	Error	The radio set is logged in, but the connection is interrupted. Triggered alarms are not being transmitted until the connection is restored.

Login types

When the radio set is programmed, the operator defines how the radio set will log into the personal emergency signal centre. One of the following login types is programmed on the radio set:

Login types of the radio set to the personal emergency signal centre

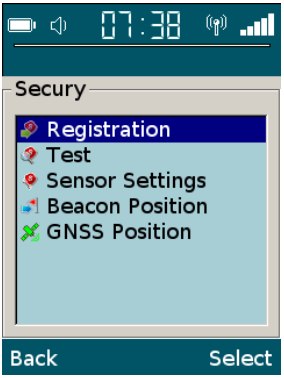
Programmed value	Description
“automatic“	The radio set logs into the personal emergency signal centre automatically as soon as you remove it from the charger or start it up by attaching the battery. Before the radio set logs into the personal emergency signal centre, the radio set will prompt you to perform a sensor test, see section “Sensor test“ (P. 132). The radio set will automatically log out of the personal emergency signal centre when you place it back in the charger. Manual login to and logout from the personal emergency signal centre are not possible.
"automatically and manually"	Your radio set automatically logs into the personal emergency signal centre as soon as you switch it on or after you remove it from the charger. Before the radio set logs into the personal emergency signal centre, the radio set will prompt you to perform a sensor test, see section “Sensor test“ (P. 132). You can abort the sensor test and operate the radio without emergency signal functions. After completing the mission, manually log the radio set out of the personal emergency signal centre. If needed, you can log it back in manually. Place the radio set in the charger to log out automatically.
“manual”	You have to log the radio set into the personal emergency signal centre manually, see section “Logging in the radio set manually“ (P. 131). After completing the mission, you have to log the radio set out of the personal emergency signal centre manually. It is not possible to login at and logout from the personal emergency signal control centre automatically.

Logging in the radio set manually

If the automatic log-in (registration) procedure is programmed on your radio set, it will automatically start the log-in procedure after it is removed from the charger. If manual log-in and log-off is programmed on the radio set, you must log the radio set into the personal emergency signal centre manually.

Perform the following steps:

1. Unlock keyboard (if necessary).
2. In the display, navigate to MENU > SECURY.
   The SECURY menu is displayed.



3. Using the cursor keys (9), highlight the REGISTRATION menu item.

? *The REGISTRATION menu item is not displayed?*
➔ Activate Trunking mode (TMO), see section “Activating trunking mode (TMO)“ (P.59).

4. Press the ‹right menu key› (8) to execute the function.

The FT4 is shown here

The radio set will then prompt you to perform the sensor test, see section “Sensor test“.

After successfully completing the sensor test, the radio set logs in at the personal emergency signal control centre.

✓ **Done.**

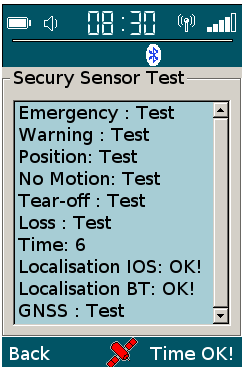
Sensor test

During the sensor test, the radio set tests the integrated sensors. Before the radio set logs into the personal emergency signal control centre, the radio set will prompt you to test the sensors.

Please note:

During the sensor test, the sensors for all emergency signal functions programmed on the radio set are being tested. In the meantime, you have to initiate a variety of different actions on the radio set. These actions are described in Section “Performing the sensor test“ (P. 133).

You will be guided through the test procedure in the SECURY TEST menu. Each individual sensor is tested consecutively. When a sensor passes the test, the pertinent display changes from TEST to OK. In addition, an audible signal sounds during the test, until all sensors have been determined to be fault-free.



Display with menu of the SECURY SENSOR TEST

If the radio set is not offering the testing of individual sensors, either the pertinent emergency signal function or the pertinent sensor test was not programmed.

If a sensor is determined to be faulty, the relevant TEST display continues to be shown. In this case, logging into the personal emergency signal centre is not possible. Have your radio set checked by a specialist and ensure it is not used before this check is completed.

TIP

Ask the system administrator of your communication systems which personal emergency signal functions are programmed on your radio set.

Performing the sensor test

In the following, all sensors that can be programmed on the radio set are listed. If an emergency signal function is not programmed on the radio set, the test for the pertinent sensor is skipped without performing the test.

Prerequisite:

☑ Your radio set is not in the charger.

☑ The SECURY SENSOR TEST menu is displayed.

☑ You can carry out the following work steps in any order.

Perform the following steps:

1. EMERGENCY (PUSHBUTTON ALARM) sensor: Press the ‹Alarm› (2) key.
   The display changes to OK if the sensor passes the test.
2. WARNING ALARM sensor: Press ‹Function key 1› (3).
   The display changes to OK if the sensor passes the test.
3. POSITION ALARM sensor:
   ➔ Position the radio set horizontally. Wait for a short time.
   ➔ Position the radio set vertically. Wait for a short time.
   The display changes to OK if the sensor passes the test.
4. NO MOTION ALARM sensor: Move the radio set.
   The display changes to OK if the sensor passes the test.
5. TEAR-OFF ALARM sensor: Remove the ‹Tear-off contact› (20) and insert.
   The display changes to OK if the sensor passes the test.
6. LOSS ALARM sensor: ‹Loss sensor› (20) Remove the radio set from the carry case and put it back.
   The display changes to OK if the sensor passes the test.
7. TIME ALARM sensor: Press the ‹right menu key› (8).
   The display changes to OK if the sensor passes the test.
8. LOCALISATION IOS sensor: Move the radio set near an inductive localisation beacon (IOS) so that it will receive a valid IOS localisation signal.
   The display changes to OK if the sensor passes the test.
9. LOCALISATION BT sensor: Move the radio set near a Bluetooth beacon so that it will receive a valid BT localisation signal.
   The display changes to OK if the sensor passes the test.

10. GNSS: TEST sensor: Place the radio set in a satellite reception area in the open air to enable localisation data to be received in outdoor areas by means of the global navigation satellite systems (GNSS).

    The display changes to OK if the sensor passes the test.

    Note: When a radio set is restarted, it may take slightly longer than usual for satellite data to be received for localisation. In order to speed up the search for satellite signals, the A-GPS (Assisted Global Positioning System) function can be configured on the radio set to obtain assistive satellite auxiliary data (Almanac GNSS data) from groups of radio sets or individual devices. If necessary, consult your system administrator.

✓ **The display shows the login status, e. g. "Secury - logged into Secury server".**

TIP

After completing the login, the radio set will react to all programmed emergency signal functions and is constantly being monitored by the personal emergency signal control centre.

Fitting the tear-off cord

The tear-off cord is connected to the tear-off contact, see section “Triggering the Tear-off alarm“ (P.120). If the radio set detaches from your clothing or is forcefully torn off, the tear-off cord is designed to open the tear-off contact and trigger a loss alarm.

Affix the free end of the tear-off cord to a suitable spot of your clothing near the radio set. Ensure that the cord will neither be in your way as you work nor become a hazard, e.g. by potentially coming into contact with rotating machine parts.

Affixing the radio set to your clothing

You should affix your radio set securely to your clothing directly after the sensor test. To do so, use the clip or a carry bag.

Choose a suitable carrying position. Please bear in mind:

- You must be able to reach all keys of your radio set reliably at any time.
- The position alarm and the no-motion alarm must be reliably triggered in case of an alarm.
- The radio set must not come off your clothing by mistake.
- If a loss alarm has been activated on your radio set (FT5 only), then take note whether the carry case in use supports the loss alarm triggering function. If necessary, consult your system specialist supplier or our company.

TIP

While affixing the radio set, hold it vertically and move it, so that a position or no-motion (man down) alarm is not triggered.

Operation

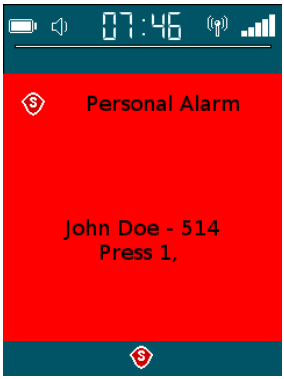
You can use your radio set to provide security for dangerous (single person) tasks if the unit is logged in at the personal emergency signal control centre. The radio set will react to all programmed emergency signal functions and will be constantly monitored by the personal emergency signal control centre, see section "Alarm and alarm processing". In continuous operation mode, you should repeat the sensor test regularly, see section “Sensor test“ (P. 139).

Alarm and alarm processing

When an alarm is triggered and transmitted to the personal emergency signal control centre, the radio set will signal this event on the display and with acoustic signals (if programmed). At the same time, evaluation and processing of the event starts in the personal emergency signal control centre.

An alarm is triggered as follows:

- If you press the ‹Alarm› (2) key, the radio set will trigger a pushbutton alarm and transmit it to the personal emergency signal control centre. The display indicates the personal alarm and the type of PUSHBUTTON ALARM. An acoustic signal is heard additionally (if programmed).
- If you press ‹Function key 1› (3) key, the radio set will trigger a warning alarm and transmit it to the personal emergency signal control centre. The display indicates the personal alarm and the type of WARNING ALARM. An acoustic signal is heard additionally (if programmed).
- When the pre-alarm time of a will-independent alarm elapses, and if the pre-alarm is not stopped, or if the alarm condition is not cancelled, the radio set will trigger an alarm. The display indicates a personal alarm and the type of alarm. An acoustic signal is heard additionally (if programmed).



Display after triggering of an alarm (Pushbutton alarm 1 shown here)

Personal alarm signal

A different alarm tone can be specified for individualised acoustic signalling of each personal alarm to enhance the differentiation of the type of alarm. Four different tone sequences can be selected for the alarm tone, which in addition can be configured with a low or high alarm volume Signalling can also take place silently with “Alarm volume off”.

Acoustic signalling of the “pushbutton and warning alarm” types as an example

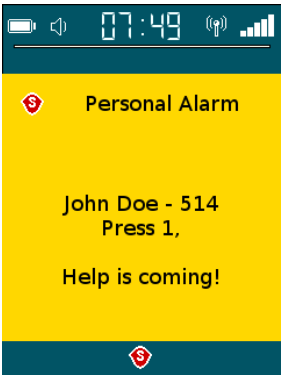
Event	Signal tone
Pushbutton alarm 1	Tone sequence 1 with increasing volume
Pushbutton alarm 2	Tone sequence 2 with reducing volume
Warning alarm 1	Tone sequence 3 with increasing volume
Warning alarm 2	Tone sequence 4 with reducing volume

During that time, evaluation and processing of the event starts at the personal emergency signal centre.

First, the personal emergency signal centre personnel confirms receipt of the alarm. Your radio set receives the acknowledgement. The display shows the following message.

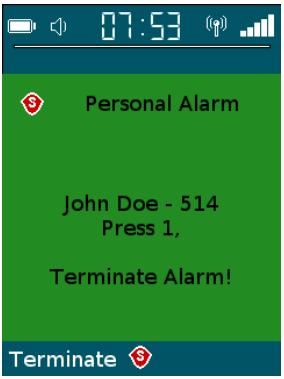
TIP

Ask the system administrator of the personal emergency signal system as to how the acoustic signals of the personal alarms are programmed on your radio set.



Display after confirmation of receipt at the personal emergency signal control centre.

After the personal emergency signal centre personnel has taken all necessary steps, the personal emergency signal control centre grants the radio set the permission to reset the alarm. The display shows the following message:



Display after reset authorisation has been issued by the personal emergency signal control centre

Now you can reset the alarm on the radio set. Press the ‹left menu key› (7) to execute the END function. Alarm processing is now complete.

Sensor test

Repeat the sensor test regularly while the radio set is logged in at the personal emergency signal control centre. For this purpose, start the sensor test manually, see section "Activating the sensor test manually". If your personal emergency signal system is operated as per the specifications of the Employer's Liability Insurance Association (Germany), you are required to perform the sensor test at least once every 24 hours, see section “24-hour check“ (P. 141).

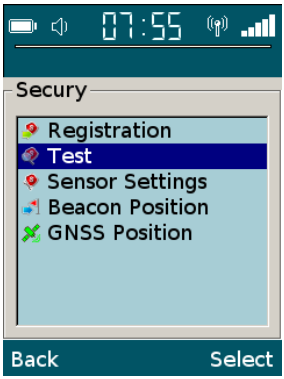
Activating the sensor test manually

Prerequisite:

☑ Your radio set is not in the charger.

Perform the following steps:

1. Unlock keyboard (if necessary).
2. In the display, navigate to the MENU > SECURY.
   The SECURY menu is displayed.



3. Using the cursor keys, highlight the SENSOR TEST menu item.

4. Press the ‹right menu key› (8) to execute the function.

The FT4 is shown here

The SECURY SENSOR TEST menu is displayed.

The radio set will then prompt you to perform the sensor test, see section “Sensor test“ (P. 132).

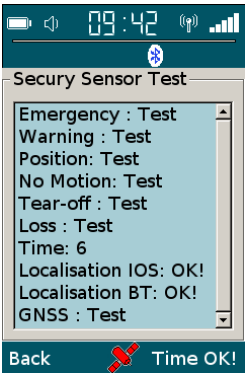
After successfully completing the sensor test, the display indicates the current log-in status, e.g. "Secury - logged into Secury server".

✓Done.

Please note:

During the sensor test, the sensors for all emergency signal functions programmed on the radio set are being tested. In the meantime, you have to initiate a variety of different actions on the radio set. These actions are described in Section “Performing the sensor test“ (P. 133).

If your radio set detects a faulty sensor, the display in question remains set to TEST.



Display with menu of the SECURY SENSOR TEST

Note: If the mode of login of the radio set on the personal emergency signal (PES) system is only configured with the “automatic” value, then the option of cancelling the process by exiting the “Secury Sensor Test” by using the left menu key to select ‘back” is no longer available when performing a manual sensor test.
If the radio set reaches the point in time for the 24-hour check without having completed a sensor test or having completed it successfully, then it transmits a technical alarm to the personal emergency alarm control centre.

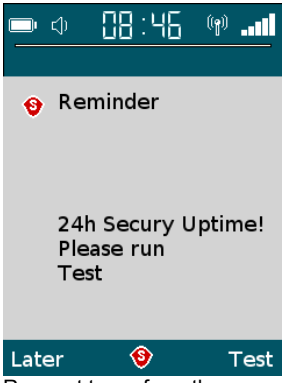
24-hour check

If your radio set is certified by the Employers' Liability Insurance Association (Germany), you are required to perform the sensor test at least once every 24 hours.

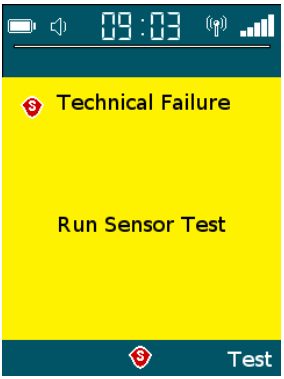
The radio set will prompt you to test the sensors before this period expires. If you press the ‹left menu key› (7) (Later), you can postpone the sensor test by some minutes. After that, the radio set will prompt you again to perform the sensor test.

After successfully completing the sensor test, the counter will restart the time.

After expiration of the 24 hours without a sensor test or after premature abortion of the sensor test, the radio set will send a technical alarm to the personal emergency signal control centre. A fault message is shown on the display. The emergency signal functions of the radio set continue to be active in the meantime.



Request to perform the sensor test (24-hours test) before the deadline expires



Technical alarm because the 24-hours test was not carried out in good time

TIP

You can also activate the sensor test manually before the period expires, see section “Activating the sensor test manually“ (P. 139).

Shutting down

After completing the mission, log the radio set out of the personal emergency signal centre.

Logging out of the personal emergency signal centre

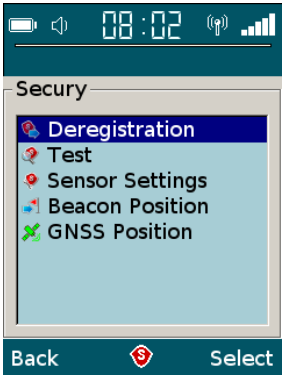
If the automatic logout (Deregistration) procedure is programmed on your radio set, it will automatically log out of the personal emergency signal control centre when it is placed back in the charger.

Logging out the radio set manually

If manual log-in and logout (Registration/Deregistration) is programmed on the radio set, you must log the radio set out of the personal emergency signal centre manually with the following steps.

Perform the following steps:

1. Unlock keyboard (if necessary).
2. In the display, navigate to the MENU > SECURY.
   The SECURY menu is displayed.



3. Using the cursor keys (9), highlight the DEREGISTRATION menu item.
4. Press the ‹right menu key› (8) to execute the function.

The FT4 is shown here

   The radio set logs itself out of the personal emergency signal centre.

✓ **Done.**

TIP

The emergency signal functions will be available to you only after another sensor test and logging into the personal emergency signal centre again.

Care and cleaning

This chapter contains information on how to service and clean the radio set.

Care information

The recommendations below apply in the same way to the radio set, the battery, the charger, and all accessories.

- Do not use any chemicals, solvents or aggressive cleaning agents for cleaning the radio set.
- Do not paint the radio set. The paint may stick the moving parts together, thus preventing proper unit operation.
- Wipe off the housing with a moist cloth as required. Never use a dry cloth. This involves a static charge hazard.
- From time to time, carefully blow out all openings accessible from the outside and the battery compartment.
- The radio set is jet-proof. After contact with liquid, remove the water from the radio set with an absorbent cloth.

The handsets are protected against jetted water and are dust-proof. In spite of this, there is dirt that only be removed from the handset with great effort.

For example, fine iron filings that are held on the housing by the loudspeaker magnets or paste-like substances (e.g. grease, creams) that can collect in the loudspeaker and microphone openings.

NOTE

Should your radio set have come into contact with a large amount of liquid, and you suspect that liquid may have seeped in, e. g. because the battery was not completely locked or the antenna was not screwed on, then contact your support department or ship the radio set to the
Funktel Customer Service Department.

Care instructions for the batteries

The battery capacity remains available for a long time if you consider the following instructions.

- Use only a system-compatible charger to charge batteries.
- Charge the battery immediately as soon as it is exhausted.
- If you do not expect to use the radio set for a few days, disconnect the battery from the radio set, thus avoiding electrical discharge of the battery by bias current.
- If the battery is to be stored for an extended period of time, charge it to avoid deep discharge.
- It is detrimental to the service life of the battery if the unit is heated to high temperatures during storage or operation. Never expose the battery to direct sunlight or other heat sources for an extended period of time.

Technical data of the FT4

In this chapter you will find the technical data of the radio set.

Mechanical and electrical properties

Technical data FT4

Properties	
Dimensions HxWxD (without antenna)	145 mm x 60 mm x 36 mm 148 mm x 60 mm x 42 mm (with belt clip)
Weight	approx. 295 g to approx. 360 g (depending on battery type used)
Level of protection	IP 65 according to IEC 60529 jet-proof and dust-tight
FT4 2900 V battery	Lithium-polymer battery 3.7 V / 2 900 mAh
Operating time at room temperature)	up to 14 h with a battery capacity of 2 900 mAh (at 5 % transmit time, 5 % receive time and 90 % standby time)

TETRA-specific features

Technical data FT4

Properties	
Frequency band	380 MHz to 430 MHz
	410 MHz to 470 MHz (optional)
Duplex spacing	10 MHz (380 MHz to 470 MHz)
Switching bandwidth TMO DMO	 Depending on frequency range Depending on frequency range
HF transmitter power output	1 Watt
Antenna gain	Antenna with max. -2 dBi gain

Operating conditions

Technical data FT4

Properties	
Temperature ranges (radio handset)	
Operation PES operation (ILB) Charging Storage	-20 °C to +55 °C -10 °C to +55 °C 10 °C to +45 °C -30 °C to +75 °C without battery
Temperature ranges (battery)	
Charging: Storage temperature Up to 3 months:	10 °C to +45 °C -20 °C to +45 °C
Operating altitude range	up to 2 000 m ASL

Energy supply data

Technical data FT4

Properties	
FT4 2900 V battery	Lithium polymer battery 3.7 V DC; 2 900 mAh; with vibrator Protection level III in accordance with IEC 60950-1
Desktop Charger II FT4 Desktop Station FT4	Input: 100 V to 240 V AC; 50 Hz to 60 Hz; 0.4 A Output: 5 V DC; 2 A Protection level II in accordance with IEC 60950-1
FT4 Plug-in power supply: Desktop Charger II FT4 Desktop Station FT4	Input: 100 V to 240 V AC; 50 Hz to 60 Hz; 0.48 A Output: 5 V DC; 2.5 A Protection level II in accordance with IEC 60950-1

TIP

For information on charging accessories for travel and for use in automotive vehicles, contact your speciality retailer or our sales department.

Side connector

Technical data of the FT4 audio interface

Properties	Technical data
Maximum output values of side connector interface	$U_0 \leq 4{,}20$ V $I_0 \leq 82$ mA $I_0 \leq 2.7$ A (in event of a fault)
Permitted combinations of capacitance and inductance which may be connected to this interface of the radio set:	max. capacitance: $C_0 \leq 1.0$ µF max. inductance: $L_0 \leq 3.0$ µH
Permissible ambient temperature range (T_a)	-20 °C ≤ T_a ≤ + 55 °C

Technical data of the FT5

In this chapter you will find the technical data of the radio set.

Mechanical and electrical properties

Technical data FT5

Properties	
Dimensions HxWxD (without antenna)	138 mm x 55 mm x 27 mm 138 mm x 55 mm x 40 mm (with belt clip)
Weight (without antenna / with clip)	Approx. 200 g without battery Approx. 253 g with standard FT5 battery Approx. 253 g with standard FT5 battery
Level of protection	IP 65 according to IEC 60529 jet-proof and dust-tight
Battery	Lithium-polymer battery 3,8 V
Operating time at room temperature)	up to 12 h with a battery capacity of 1 950 mAh up to 22 h with a battery capacity of 4 000 mAh (at 5 % transmit time, 5 % receive time and 90 % standby time)

TETRA-specific features

Technical data FT5

Properties	
HF frequency range	380 MHz to 430 MHz
Duplex spacing	10 MHz (380 MHz to 470 MHz)
HF frequency band (VHF)	146 MHz to 175 MHz
Duplex spacing (VHF)	1.6 / 4.5 MHz (146 MHz to 175 MHz)
Switching bandwidth TMO DMO	 Depending on frequency range Depending on frequency range

Technical data (cont'd)FT5

Properties	
HF transmitter power output	3 Watt
Antenna gain depending on antenna in use	Antenna with max. -3 dBi gain
2.4 GHz radio	
ISM frequency band	2.402 GHz to 2.480 GHz
HF transmitter power output	< 4 dBm, BLE < 10 dBm
Standard used	(BER/EDR Class2)

Operating conditions

Technical data FT5

Properties	
Temperature ranges (radio handset)	
Operation PAS (ILB) mode Charge Storage	-20 °C to +55 °C -10 °C to +55 °C 10 °C to +40 °C -30 °C to +75 °C without battery
Temperature ranges (standard battery)	
Charging Storage temperature	10 °C to +40 °C 22 °C to +28 °C
Temperature ranges (extended battery)	
Charging Storage temperature	10 °C to +40 °C 0 °C to +25 °C
Operating altitude range	up to 2 000 m ASL

Energy supply data

Technical data FT5

Properties	
Standard FT5 battery	Lithium-polymer battery 3.8 V DC; 1 950 mAh Protection level III in accordance with IEC/EN 62368-1
FT5 Extended battery	Lithium-polymer battery 3.8 V DC; 4 000 mAh Protection level III in accordance with IEC/EN 62368-1
Plug-in power supply: Desktop Charger FT5 Desktop Station FT5 Battery Charger FT5	Input: 100 V to 240 V AC; 50 Hz to 60 Hz; 0.58 A Output: 12 V DC; 2 A Protection level II in accordance with IEC/EN 62368-1

TIP

For information on charging accessories for travel and for use in automotive vehicles, contact your speciality retailer or our sales department.

Side connector

Technical data of the FT5 audio interface

Properties	Technical data
Maximum output values of side connector interface	$U_0 \leq 3{,}6$ V $I_0 \leq 60$ mA
Microphone input (NF+)	8mV/Pa / 1 kHz at 1 kOhm
Speaker output (NF-)	1W at 4 Ohm
Permissible ambient temperature range (T_a)	-20 °C ≤ T_a ≤ + 55 °C

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Manual Handheld FT4/FT5
Part number 6187133001-b | 2022-12-08

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