

Operating Manual

alpha personal network

Radio-supported SCBA monitoring with *alpha* series

alphaSCOUT, alphaSCOUT TM, alphaMITTER, alphaBASE, xplore TABLET PC, alphaTAG, alphaHUD



alpha series
make sense technology



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1. Safety Regulations

1.1. Correct Use

The *alpha* personal network is a modular system for radio-supported SCBA monitoring primarily for firefighting operations. The basis for the alpha technology is a compressed air electronic control system and telemetry for transmission of the cylinder pressure and alarms during operation for each person using the equipment. Data concerning the respiratory protection operation are transmitted by radio and shown in real-time outside the danger area.

It is imperative that this operating manual be read and observed when using the system. In particular, the safety instructions, as well as the information for the use and operation of the apparatus, must be carefully read and observed.

Furthermore, the national regulations applicable in the user's country must be taken into account for a safe use.



Danger!

This product supports life and health. Inappropriate use, maintenance or servicing may affect the function of the device and thereby seriously compromise the user's life.

Before use, the product operability must be verified. The product must not be used, if the function test is unsuccessful, it is damaged, a competent servicing/maintenance has not been made, genuine MSA spare parts have not been used.

Alternative use, or use outside these specifications will be considered as non-compliance. This also applies especially to unauthorised alterations to the apparatus and to commissioning work that has not been carried out by MSA or authorised persons.

1.2. Liability Information

MSA accepts no liability in cases where the product has been used inappropriately or not as intended. The selection and use of the product are the exclusive responsibility of the individual operator.

Product liability claims, warranties also as guarantees made by MSA with respect to the product are voided, if it is not used, serviced or maintained in accordance with the instructions in this manual.

2. Description of the "Personal Network"

2.1. System overview

The *alpha* personal network for radio-supported respiratory protection-monitoring comprises the following components:

- Compressed Air Breathing Apparatus
- Transmitter *alphaMITTER*
- Personal Monitoring Unit *alphaSCOUT* (optional with built-in telemetry module - *alphaSCOUT TM*)
- Head-Up-Display *alphaHUD*
- Personalisation with *alphaTAG* and *TAGwriter*
- Base station *alphaBASE* and PC
- *alphaBASE* (battery powered) to attach to xplora TABLET PC
- ALTAIR 5X – Multi Gas Detector (→ Operating Instructions for the ALTAIR 5X with WirelessUSB module)

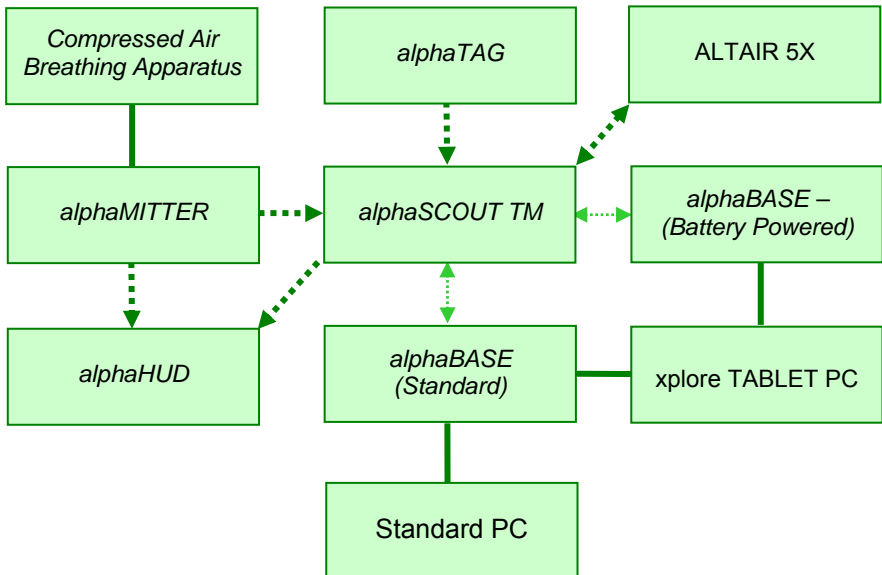


Fig. 1 System overview

— Fixed connection

- - - Short range radio

..... Long range radio

Short description *alpha*-system

The *alphaMITTER* is located on the compressed air breathing apparatus. The *alphaSCOUT* is ready for reception as soon as it is moved (e.g. taken from the shelf). If the valve on the compressed air cylinder is opened, the *alphaMITTER* sends the signal by short distance radio to the *alphaSCOUT* or *alphaHUD*.

The *alphaSCOUT* automatically indicates the pressure, calculates the remaining service time and reports in to the base station by radio using the optional integrated telemetry module (TM).

In incident command, the base station *alphaBASE* is connected to a PC. Using the telemetry software, the respiratory protection monitor can monitor the data from all operational units and, if necessary, can initiate an evacuation alarm. The alarm signal is then received by the user's *alphaSCOUT TM*, the *alphaSCOUT TM* initiates an alarm which is displayed as well at the edge of the field of vision by the *alphaHUD* mounted in the mask.

2.2. Short description of the system components

Compressed air breathing apparatus and *alpha SL*

All compressed air breathing apparatus units of the AirMaXX, BD 96 and AirGo series with SL pneumatics can be upgraded with an *alphaMITTER* which will make them able to use telemetry.

Using the SingleLine air feed system *alpha SL*, the lung governed demand valve, the pressure gauge, the warning signal and secondary connection are supplied with compressed air via a single line.

Transmitter *alphaMITTER* (→ Section 3)

The *alphaMITTER* is located on the back plate of the compressed air breathing apparatus. It measures the compressed air data (high pressure) of the compressed air cylinders and transmits these via short range radio to the *alphaSCOUT* or *alphaHUD*.

Personal monitoring unit *alphaSCOUT* and *alphaSCOUT TM* (→ Section 4)

The *alphaSCOUT* is the personal monitoring unit of the alpha system. As a monitoring and warning unit, it receives the compressed air data via short range radio from the *alphaMITTER* and calculates the remaining operation time available.

A motion sensor and an alarm function are permanently built into the unit.

The *alphaSCOUT TM* with the integrated telemetry module continues to transmit the data by radio to incident command. In reverse, the *alphaSCOUT TM* can receive signals from incident command and can, for example, initiate a return call alarm (evacuation alarm).



In the rest of the document, the personal monitoring unit will generally be referred to as *alphaSCOUT*.

Personalisation with *alphaTAG* and *TAGwriter* (→ Section 6)

Using the *alphaTAG*, the user of the apparatus can log in with the *alphaSCOUT* for personal identification purposes.

The *alphaTAG* is logged with the user's personal data using the *TAGwriter*.

In addition, the *alphaTAG* can be used for switching on certain operating conditions. Special operating modes can be set with the *alphaTAG* (→ Section 4.6).

***alphaHUD* (Head-Up-Display) for full face masks (→ Section 5)**

alphaHUD is an indicator unit for cylinder pressure and other important information. The unit is incorporated in a respiratory protection mask and the display is located directly in the user's field of vision without causing any distraction.

alphaHUD works in the personal network together with *alphaSCOUT* or *alphaMITTER*. If it is linked to an *alphaSCOUT*, additional information such as the evacuation alarm can be displayed.

Base station *alphaBASE* and PC (→ Section 7)

The user's *alphaSCOUT* is constantly in contact with the base station in incident command via a long range radio signal.

The *alphaBASE* is connected with a PC in incident command per USB. The base station receives the data from the user during the operation via radio and logs onto the telemetry software.

The telemetry software operates virtually without any intervention; all incidents are automatically represented and prepared. The operational control unit therefore monitors the data from all the operational units and can, if necessary, initiate an evacuation alarm.

If a user of the apparatus does not have an *alphaSCOUT*, the telemetry software can also operate as a classic respiratory protection monitoring display. From the start of the operational period, the compressed air data and the remaining service time can be calculated, without having to send real data.

Mobile base station with *xplore* TABLET PC (→ Section 8)

The transportable configuration can be used as an alternative to the *alphaBASE* and PC, in order to create a monitoring base locally.

The receiver is housed in a robust casing, and the monitoring software is automatically started after switching on. The function of the *xplore* TABLET PC and the *alphaBASE* with PC is identical.

3. *alphaMITTER*

3.1. Description

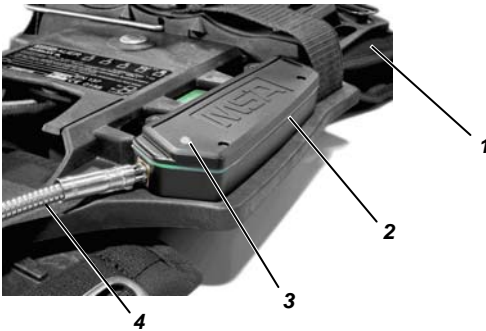


Fig. 2 *alphaMITTER*

- | | | | |
|---|--|---|---------------------------|
| 1 | <i>Back plate of breathing apparatus</i> | 3 | <i>LED</i> |
| 2 | <i>alphaMITTER</i> | 4 | <i>High pressure line</i> |

The *alphaMITTER* is a short range transmitter which is mounted on the back plate of the compressed air breathing apparatus (→ Operating Manual for the compressed air breathing apparatus).

A high pressure line is used for the connection of the *alphaMITTER* to an additional connection of the pressure reducer. It measures the high pressure of the compressed air cylinder(s) and transmits this information once per second to the *alphaSCOUT* (→ Section 4) or the *alphaHUD* (→ Section 5). The power supply for the *alphaMITTER* is provided by 3 Alkaline batteries.



The power supply should only be provided by certain types of battery for reasons of explosion prevention (→ Section 10.3).

3.2. Technical Specifications/Certifications

Technical Specifications

Operating temperature : -15°C to +55°C
-10°C to +50°C (only VARTA 4906)
Ingress Protection : IP67

Short distance radio




Mode of operation : half duplex
Frequency range : 2.4 GHz ... 2.483 GHz
Radio channels : 4
Modulation : DSSS/GFSK
Data rate : 15.625 kbits/s
Max. emission power : 1 mW
Receiver sensitivity : - 85 dBm
Frequency allocation : Frequency hopping

Certifications

European Community *)

The product *alphaMITTER* complies with the following directives, standards or standardised documents:

(→ EC Declaration of conformity www.msa-europe.com)

Directive 94/9/EC (ATEX)	:	BVS 05 ATEX E 149
		 II 1G EEx ia IIC T3/T4
		EN 50 014, EN 50 020, EN 50 284
		-30 °C ≤ Ta ≤ +60 °C
		Battery T4 – DURACELL Plus MN 1500
		T3 – VARTA 4706, 4106, 4906
Directive 1999/5/EC (R&TTE)	:	EN 300 440-1, EN 301 489-1/-3, EN 50371
		 0681
Directive 93/68/EC (Low Voltage)	:	EN 60950
Directive 89/336/EC (EMC)	:	EN 61 000-6-2, EN 61 000-6-3
		 0158 EN 137

Other countries *)

Australia		AS/NZS 4268 SAR Test to ARPANSA RPS3 AS/NZS CISPR 22 C-Tick
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*) All devices must only be used in the intended area.

3.3. Operation

The *alphaMITTER* is activated automatically as soon as the cylinder valve of the compressed air cylinder(s) is opened and the pressure is higher than 15bar.

A LED (green or red) indicates the battery condition and signals the various operation statuses of the *alphaMITTER*.

When switched off, the LED flashes approx. every 5 secs. briefly.



As soon as the LED shows red for the first time, there will be at least another 8 operational hours available before the batteries need to be replaced. (→ Section 10.3).

If the radio connection or pairing between the *alphaMITTER* and *alphaSCOUT* is lost, *alphaSCOUT* will transmit this status to the *alphaBASE*. The software switches to a mode where the consumption is estimated and the time remaining is counted down.

Pressure and remaining operational time are displayed in an inverted way (white figures on grey background). The aerial symbol remains on normal reception since it is displaying the long distance radio status.

If the pairing is lost, the *alphaMITTER* starts to search for previous connected device to renew connection. If no unit can be found, depressurise the SCBA, close the valve on the compressed air cylinder, and wait for standby mode of the *alphaMITTER*. The pairing procedure can be restarted.

To avoid premature loss of battery capacity, the *alphaMITTER* switches off if being used without *alphaSCOUT* or *alphaHUD* ("suspend mode").

In case 3 minutes have passed since pressurisation and the pressure has decreased by 15 bar the *alphaMITTER* assumes that the incident happens without *alphaSCOUT* or *alphaHUD* and goes into a power saving stand-by mode. In this mode the LED flashes every second.

Connection to an *alphaSCOUT* or *alphaHUD* can be obtained after a restart (depressurisation for 30 sec) of the *alphaMITTER*.

Connection status

Connection	No connection
LEDs lights up twice every 8 sec	<ul style="list-style-type: none"> ▪ LED lights up once every 5 sec: alphaMITTER is switched off (pressure below 15bar) ▪ LED lights up for 5 sec, then flickers for 4 sec: searching for partner (pairing mode). -> Put alphaSCOUT or alphaHUD into pairing mode as well. ▪ LED lights up every second: alphaMITTER is in suspend mode. -> Depressurize system for 10 sec and restart ▪ LED does not flash at all: battery completely empty

4. alphaSCOUT

4.1. Description



DATA Symbol "data transmission mode"

- Data transmission or pairing with other alpha components



Symbol "antenna"

- Radio connection exists.



Symbol "spanner"

- Calibration mode or fault



Symbol "running man"

- Evacuation required.



Symbol "cylinder"

- Remaining capacity in 8 stages



Symbol "battery"

- Charge status of the battery



Symbol "number display"

- Remaining time or pressure



Symbol "thermometer"

- Temperature alarm

Fig. 3 alphaSCOUT and symbols in the display

- | | | | |
|---|--------------------------------------|---|-----------------------|
| 1 | Mode button (green) | 4 | Reset button (yellow) |
| 2 | Display | 5 | Acoustic channel |
| 3 | LED button (red/green), alarm button | 6 | Carabiner hook |

The *alphaSCOUT* is the personal monitoring unit. It monitors the proper functioning of the respiratory protection apparatus, it displays the current operating data of the respiratory protection apparatus and signals the danger conditions (visually and acoustically). In addition, the *alphaSCOUT* automatically triggers an alarm if the apparatus user is not moving and provides the opportunity for manual alarm triggering.

The *alphaSCOUT* is equipped with an 8 kB internal data memory for saving the operational data for more than 30 sessions with up to 20 min working time.

The *alphaSCOUT* receives the operating data every second from the *alphaMITTER*, evaluates this data under consideration of the actual air consumption, shows it on the display and sends it via radio to the *alphaBASE* in incident command. It continues to operate as a relay station (repeater, → note in Section 4.6) of other *alphaSCOUTs*, which do not have any direct contact with the base station.

4.2. Technical Specifications/Certifications

Technical Specifications

Operating temperature : -15°C to +55°C
-10°C to +50°C (only VARTA 4906)

Ingress Protection : IP67

Short distance radio

Mode of operation : half duplex

Frequency range : 2.4 GHz up to 2.483 GHz

Radio channels : 4

Modulation : DSSS/GFSK

Data rate : 15.625 kbits/s

Max. emission power : 1 mW

Receiver sensitivity : -85 dBm

Frequency allocation : Frequency hopping

Long distance radio (European Union)

Direction : half duplex

Frequency range : 865.7 MHz ... 867.5 MHz

Channel distance : 200 KHz

Radio channels : 4

Modulation : GFSK

Data rate : 19200 kbits/s

Max. emission power : + 27 dBm (500 mW)

Receiver sensitivity : - 102 dBm

Long distance radio (Australia)

Direction : half duplex

Frequency range : 915.15 MHz ... 927.85 MHz

Channel distance : 240 KHz

Radio channels : 53

Modulation : GFSK

Data rate : 19200 kbits/s

Max. emission power : +25dBm (320 mW)

Receiver sensitivity : -85 dBm





Frequency allocation : Frequency hopping

Certifications

European Community *)

The product *alphaSCOUT* complies with the following directives, standards or standardisation documents:

(→ EC Declaration of conformity www.msa-europe.com)

Directive 94/9/EC (ATEX)	:	BVS 05 ATEX E 150
		 II 1G EEx ia IIC T3/T4
		EN 50 014, EN 50 020, EN 50 284
		-30 °C ≤ Ta ≤ +60 °C
		Battery T4 – DURACELL Plus MN 1500
		T3 – VARTA 4706, 4106, 4906
Directive 1999/5/EC (R&TTE)	:	EN 302 208-1/-2, EN 300 440-1, EN 301 489-1/-3, EN 50371
		 0681 
Directive 93/68/EC (Low Voltage)	:	EN 60950
Directive 89/336/EC (EMC)	:	EN 61 000-6-2, EN 61 000-6-3
		 0158 EN 137

Other countries *)

Australia		IECEx for Ex i IEC60079-11 (and 0) Transmitter to AS/NZS 4268 C-Tick
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*) All devices must only be used in the intended area.

4.3. Monitoring and display functions

The *alphaSCOUT* measures and monitors

- the cylinder pressure
- the remaining operational time available
- the movement status
- the battery status and
- the temperature

The remaining service time is determined on the basis of the current breathing rate.



The remaining operational time is the time remaining until the retreat alarm sounds. Under normal conditions the retreat alarm is initiated when 60 bar is reached, unless a different value has been stored for the retreat alarm (→ Section 4.5).

In order to calculate the remaining operational time, the measured values over the last 3 minutes are used. The calculation is repeated every 15 seconds on the basis of new measured values. If the rate of current breathing increases, the remaining service time will be shortened and vice versa.



Warning!

In order to obtain reliable values for the remaining service time, the unit needs a lead-in time of 3 minutes. This means that for the first 3 minutes of an operation, there will be no data for the remaining service time. In this period, the unit shows the current value of the cylinder pressure.

After the 3 minutes have expired, reliable values for the remaining operational time available are provided. The display alternates from the pressure display to the display of remaining service time.

If the unit is switched on and no current breathing is measured, the pressure display remains as standard. If, in this mode, the display is changed manually using the mode button to remaining service time, dashes are shown on the display [„----“].

If blinking of the display indicates that radio contact to the *alphaMITTER* is temporarily interrupted, calculation of the remaining service time might not lead to sensible results. The monitoring software on the PC switches to a mode where the consumption is estimated and where the remaining operating time is counted downwards. This is shown inverted. The aerial symbol remains on normal reception since it is displaying the long distance radio status.

In this case only the reading on the mechanic gauge is to be considered.

In addition, it is possible to change the alarm point of the pressure alarm on the *alphaSCOUT* e.g. from 60 bar to "empty cylinder" (→ Section 9.9, "Changing the settings"). In this case, the display then shows the time available to the user before the breathing air is fully consumed.

Manual change of the display

Using the mode button on the *alphaSCOUT* you can change the display and thus call up the measured values.

In order to do this, you must press the button several times within 15 seconds.



If the mode button is not pushed again within a period of 15 seconds, the *alphaSCOUT* switches back to the start status (unlit display of the remaining operational time or pressure display).

Actuation frequency of the green button	Display	
	After 3 operational minutes and breathing	Before 3 operational minutes or no breathing
0 (Starting status)	Remaining operational time, unlit	Pressure display, unlit
Press 1 x	Remaining operational time, lit	Pressure display, lit
Press 2 x	Pressure display, lit	"-:--" lit
Press 3 x	Remaining operational time, lit	Pressure display, lit

4.4. Operation

Commissioning

- (1) Read *alphaTAG* on the *alphaSCOUT*.
(→ Logging on to the *alphaSCOUT* in Section 6)
- (2) Open compressed air cylinder(s).

In the event that the *alphaSCOUT* is already paired

- *alphaMITTER* begins to send pressure data.
- When the *alphaSCOUT* which is already paired is moved, it switches on after some seconds and performs a self-test:
 - LED flashes, display shows all available symbols for a short period and an acoustic signal sounds.
 - Current pressure is displayed.



The momentary pressure is only shown within the first 3 minutes after commissioning. After this, the display automatically switches, upon breathing, to the display of the remaining service time as the standard display.

- (3) Pair, if combination of *alphaMITTER* and *alphaSOCUT* has been changed and *alphaSCOUT* does not switch on. In order to "pair", push the reset button of the switched off *alphaSCOUT* and hold until "PAIR" is displayed.
- A long and two subsequent short signal tones and
 - the "bar" symbol in the display indicate the completed logging on on the user's recognised *alphaMITTER*.
 - Self-test is performed.
 - Current pressure is displayed.

The unit is now paired with this *alphaMITTER*. If the apparatus combination is to be kept, during the next operation only the valve on the compressed air cylinder has to be opened.

When replacing the *alphaMITTER* or *alphaSCOUT*, the pairing must be carried out again in order to clearly allocate the units to each other.



An alphaMITTER can only paired with one device. In case another alpha device is paired and switched on, the alphaMITTER will not accept pairing requests.

Switching off



Switching off the *alphaSCOUT* is only possible in the pressure-free status.

The unit is considered to be pressure-free if the measured pressure is less than 15 bar and "----" is displayed.



In case 10 or more systems are operating in short range distance, occasionally breaks of the short distance radio link can occur. Typically the link is reestablished within a few seconds.

- (1) Turn off the valve(s) of the compressed air cylinder(s) and vent the compressed air breathing apparatus via the lung governed demand valve (→ Operating Manual for compressed air breathing apparatus).
- (2) Push the reset button twice within a period of 2 seconds.
 - An acoustic signal sounds, the pressure alarm switches off
 - The *alphaSCOUT* logs off *alphaBASE* (this might take 5 to 10 sec.)
 - Display and LED cleared.
 - Unit is switched off.

Status messages and early retreat alarm

- (1) When the operation site is reached, the reset button on the *alphaSCOUT* should be pushed once for about 2 seconds until audible acknowledgement.
 - The time is stored and displayed in the user interface of the telemetry software.
 - A early retreat alarm may be triggered.



When determining the remaining service time, the pressure required for retreat is taken as twice the pressure drop required to get to the site of the operation.

Example: if the incident was started with 300 bar and the status message is sent at 250 bar, the retreat alarm sounds at 100 bar.

- (2) When leaving the operation site, the reset button on the *alphaSCOUT* should be pushed once for longer than 2 seconds.
 - The time is stored and displayed in the user interface of the telemetry software.
 - In case the early retreat alarm is activated, it is reset by this action.

Manual alarm call

- (1) Push LED button until the alarm sounds.



The manual alarm call operates even if the unit is switched off (pressure-free). In this case you need to push the LED button for about 4 seconds.

Cancelling alarms

When the manual alarm is activated, *alphaSCOUT* initiates an acoustic alarm. The alarm button flashes red. When the user of the *alphaCONTROL* Software has acknowledged the alarm, the alarm button flashes red and green intermittently.

- (1) Move the *alphaSCOUT* when the pre-alarm is automatically actuated.
- (2) Push the reset button 2 x when the motion-alarm is automatically actuated.
- (3) Push the reset button 2 x when the alarm is manually actuated.
- (4) Push the reset button 2 x when the early retreat alarms sounds.

Illumination of the display

- (1) Push the mode button.
 - The display is illuminated for about 6 seconds.

After this time, the illumination automatically is switched off.

4.5. Alarm statuses


The *alphaSCOUT* represents the possible alarm conditions in different ways.



Warning!

Observe the displays and the alarms during the operation and adapt your behaviour accordingly.

Non observance of the alarm conditions or resetting without considering the consequences can damage your health or your life.

Alarm	Display	LED display	Acoustic
150 bar	150 bar, lit	Green flashing	2 beeps
100 bar	100 bar, lit	Green flashing	2 beeps, gap (3 x repeating)
60 bar	Pressure lit for 15 seconds then unlit	Red flashing, gap, red flashing	2 beeps repeating
Early retreat	Pressure lit for 15 seconds then unlit	Red flashing, gap, red flashing	2 beeps repeating
Evacuation alarm	 (Running man)	Red Flashing	Distinct pattern
Battery alarm	Empty battery symbol	Green flashing	One beep every 6 seconds
Manual alarm	Pressure or remaining service time	Quickly flashing red – after acknowledging alarm by the operation controllers or user: Green flashing	Distinct pattern
Motion pre-alarm	Remaining operational time available or, in first 3 minutes pressure display	Slow red flashing	Increasingly louder consecutive variable tones
Full motion alarm	Pressure or remaining service time	Quickly flashing red	3 beeps, repeating continuously
Temperature	Thermometer symbol flashes	Green flashing	High pitch low pitch continuously repeating with 6 second gap.
Loss of radio connection (only in repeater mode)	REP	Red Flashing	buzz every 3 sec.

The user can acknowledge an alarm after it is triggered.

Alarm	Acknowledging
150 bar	Not necessary, since short acoustic signal.
100 bar	Not necessary, since short acoustic signal.
60 bar	Cannot be acknowledged.
Early retreat	Pushing the yellow button twice
Evacuation alarm	Pushing the yellow button twice
Battery alarm	Replacing the battery after the operation. The capacity of the battery is still sufficient for a full operation during operation even after the battery alarm has sounded.
Motion pre-alarm	Movement of <i>alphaSCOUT</i>
Full motion alarm	Pushing the reset button twice.
Temperature	Cannot be acknowledged. Only by removing the source of the heat.
Loss of radio link (repeater mode only)	Cannot be acknowledged. Unit has to be taken back into radio range.

4.6. Special functions

Repeater



In the Australian version of the alpha personal network the repeater functionality is not available. Please do not consider any references to the repeater function in the whole manual.

If, as a result of the operational conditions, there is no direct connection between *alphaSCOUT* and *alphaBASE*, the *alphaSCOUT* that is lying between the two acts as relay station (Repeater). If an *alphaSCOUT* loses contact to the base station, it looks for another one, that has contact and can be used as a repeater for data transmission. The evacuation alarm is also transmitted in this operational mode. Whilst doing so there may be a time delay (up to max. 2 min).

This operational status is displayed with a constantly flashing antenna symbol.

If no contact can be established with a base station, the antenna symbol goes out on the *alphaSCOUT* and starts to flash (every 5 secs). When returning to the reception area of a base station, the connection is automatically re-established; the antenna symbol is shown permanently once again.

The *alphaSCOUT* can also be used exclusively as a repeater when it is logged on with a *RepeaterTAG* (→ Section 5). In this case, no compressed air data is evaluated and no motion alarm is initiated, instead, only data from other *alphaSCOUT* are transferred to incident command. This allows the range of the units to be extended.

If the *alphaSCOUT* in "repeater" mode is taken out of the radio range, an acoustic and optic alarm is triggered. This serves to ease the correct positioning of the unit.

The device can be switched off by pressing the yellow reset button twice. For increased ease of localisation, the unit can send and receive the evacuation alarm.

Allocation to a specific base station

If several base stations are being operated in the vicinity, it is recommended to assign each *alphaSCOUT* to a specific base station.

In order to do so, whilst switched off, a *baseTAG* with the corresponding identification must be read. If the required base station is not found, another is searched for.

To neutralise this setting a *baseTAG* with identification "0000 0000" can be used.

Hibernation mode

If an *alphaSCOUT* is likely not to be used for some time, it is advised to set it into a hibernation mode. This will increase battery life time significantly.

For doing this a particularly programmed *sleepTAG* is logged onto the *alphaSCOUT* (→ Section 4). After that the *alphaSCOUT* will no longer react to the radio signal of the *alphaMITTER* with which it might be paired. It is in hibernation mode.

It can be taken back into service by pushing the RESET button, starting the pairing procedure, or logging on with an *alphaTAG* (→ Section 6).

In the hibernation mode all information (pairing data, name, team name) is conserved.

If desired, *alphaSCOUT* can go into hibernation mode automatically after being switched off for more than 30 minutes. To select this option, tick "AutoSLEEP" in the *alphaLINK* module and load the setting into the *alphaSCOUT*.

Beeper

If an alarm situation arises during a session, persons not in the immediate vicinity of the *alphaBASE* can be informed of the situation by this system.

This takes place by starting an *alphaSCOUT* with a *beeperTAG*. "BEEP" shows in the display.

Alarm conditions are indicated audibly and visually ("a fleeing man").

The audible alarm can be switched off by pushing the yellow reset button twice, whilst the visual signal is only reset at the end of the alarm.

By using the PC software it is possible to set in the menu

SYSTEM – SETTINGS – SCBA MONITORING

which kind of alarm the *alphaSCOUT* responds to.

In addition to the BEEPER function, the evacuation alarm is still maintained. The activation of the motion alarm is picked when writing the *beeperTAG*.

Upon programming the *beeperTAG*, it can be chosen whether the motion alarm function is active or not.

Companion

By reading a CompanionTAG, the *alphaSCOUT* is activated without receiving any air pressure information from an *alphaMITTER*.

The *alphaSCOUT* thus operates independently from the respiratory protection equipment.

"CO" appears on the display and all other familiar functions remain in operation.



If person with an SCBA without an *alphaMITTER* is to be monitored by the system, start the accompanying *alphaSCOUT* in Companion mode and right-click on the black helmet icon. Click "start" and enter the person's name and cylinder size. By doing this the functions of a *companionSCOUT* and manual monitoring are combined in one entity on the screen and in the reports.

Pairing

Open Pairing¹⁾

- (1) Open cylinder valve.
 - alphaMITTER LED starts flashing quickly
- (2) Press reset button (yellow) for 3 seconds.
 - Display shows PAIr

Closed Pairing²⁾

- (1) Activate alphaSCOUT by pressing mode button (green).
- (2) Read in prepared pairingTAG (→ Section 6)
 - Display shows PAIr
- (3) Open cylinder valve.
 - alphaMITTER LED starts flashing quickly

When pairing is finished alphaSCOUT turns on and displays current pressure.

¹⁾ Open Pairing: the first detected alphaMITTER can be paired (must be activated)

²⁾ Closed Pairing: alphaTAG activates the alphaSCOUT for pairing (PairingTAG)

User defined



Warning!

Using this feature requires a high sense of responsibility as important alarm messages could be missed.



This function is only available when operating as a respiratory protection monitor for a compressed air breathing apparatus. A combination with other special functions is not possible.

By reading a UserTAG it is possible to perform the user-specified adjustment of volume and frequency of alarms of the *alphaSCOUT*. This might be useful when using the system in a chemical protection suit, for example.

If, after reading in the UserTAG, the *alphaSCOUT* is started within 30 seconds, operation takes place using the user-specified settings. During these 30 seconds the display shows "USER".

When programming the *UserTAG*, it is possible to determine the volume of the alarms in three steps. A distinction is made between primary alarms (pressure, motion, evacuation) and secondary ones (e.g. pre-alarms, battery, temperature). Moreover, it can be defined if alarms sound continuously or only once.

Otherwise the *alphaSCOUT* is started with the factory settings.

Readout using the *TAGwriter*

It is possible to read out the data from the *alphaSCOUT*. Settings can be changed to a certain extent and reloaded back to the unit.

This is done by loading the TecBOS.solutions software on the PC (→ Section 9), selecting the → menu

INCIDENT - SCBA MONITORING - ALPHALINK

and depressing the green button on the *alphaSCOUT* for approximately 2 seconds.

- The *alphaSCOUT* changes over to receive mode.
- On the display the message "DATA" appears.

The *alphaSCOUT* starts to search for an operationally-ready *TAGwriter* within a range of up to 1 metre.

After the connection has been successfully established, the data can be read out and displayed using the *alphaLINK* software module.

Firmware-Update

The operating software (firmware) of the *alphaSCOUT* can be updated cordlessly via the *TAGwriter* box. Please consult your MSA contact person regarding firmware and instructions.

Special functions overview:

functionality → tag ↓	alphaSCOUT switches on immediately	Motion alarm switched on	pressure data are transmitted	Evacuation alarm switched on	functionality erased at switch-off	team name is assigned	User-specific alarm sound	alphaSCOUT starts pairing, if closed pairing is activated in alphaLINK
Name	---	X	X	X	---	---	---	---
Team	---	X	X	X	---	X	---	---
Repeater	X	---	---	X	X	X	---	---
Beeper	X	---/X	---	X	X	X	---	---
Companion	X	X	---	X	X	X	---	---
Sleep	---	---	---	---	X	---	---	---
Base	---	X	X	X	---	---	---	---
User	---	X	X	X	X	---	X	---
Pairing	---	---	---	---	---	---	---	X

Connection Status Table

alphaSCOUT to *alphaMITTER*

Connection

Pressure or time value is constantly displayed

No connection

Pressure or time value and unit (bar or clock icon) is blinking

alphaSCOUT to *alphaHUD* or other device

Connection

“DATA” constantly displayed

No connection

- “DATA” is blinking: *alphaSCOUT* is looking for partner -> bring *alphaHUD* into pairing mode
- no “DATA” is displayed: *alphaSCOUT* is not in communication mode -> press green mode button for about 2 seconds

5. alphaHUD (Head-Up-Display)

5.1. Description

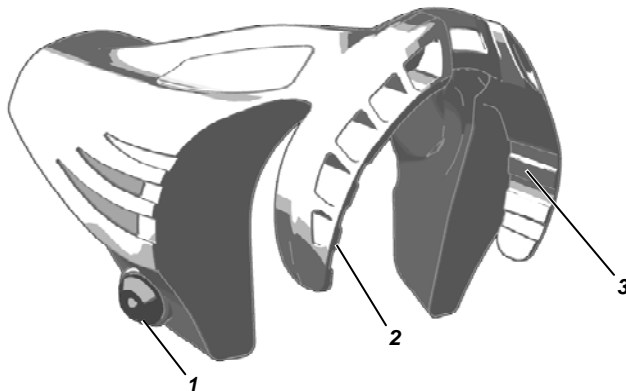


Fig. 4 *alphaHUD*

1 Operating button

2 LED Pressure display

3 Status LED



Warning!

Use the *alphaHUD* only in combination with an Ultra Elite mask in hazardous areas.



Warning!

In hazardous areas the *alphaHUD* has to be worn directly on the body under a closed jacket, if it is not being used in an Ultra Elite mask.

alphaHUD is a unit for the display of the specific cylinder pressure and other information in the full face mask. It is located directly in the user's field of vision without distracting him from his tasks.

The display is split into two blocks of LEDs (on the left and right hand sides of the field of vision). The LEDs can be easily seen and read without dazzling. The brightness of the LEDs is regulated according to ambient light conditions.

alphaHUD is an integral constituent of the alpha personal network and operates directly with the *alphaMITTER* or *alphaSCOUT*. In combination with the *alphaSCOUT* and *alphaBASE* additional information, such as the evacuation alarm, is displayed.

The transmission of pressure data to the *alphaHUD* is done wirelessly by short range radio in combination with either the *alphaMITTER* or the *alphaSCOUT*.

After pairing with one of these units, the *alphaHUD* receives the up-to-date pressure data once every second and directs this information to the display.



The pairing is a definite allocation of an *alphaHUD* to a specific communication partner (*alphaMITTER* or *alphaSCOUT*).

Power supply

alphaHUD is powered by a battery (Type CR2) fitted in the unit. The capacity of this battery is monitored and a necessary exchange is indicated on the display.



Warning!

Never change batteries in explosive areas. There is a danger of explosion since the batteries can spark when being changed!

Battery must only be exchanged outside of explosive areas (→ Section 10.3).

In order to replace the battery proceed as follows:

- (1) Unscrew the cover of the battery compartment with the help of a 10 mm Allen wrench.
- (2) Take the cover off and remove the battery.



Warning!

Check the polarity of the battery when replacing.

Otherwise the *alphaHUD* is not available for operation.

- (3) Insert the new battery and assemble in reverse order.
To prevent overtightening, close battery cover until the markings are aligned. After closing the battery compartment, *alphaHUD* might go into self-test and switches on.

5.2. Fitting in the mask

alphaHUD is a compact component which is mounted inside the Ultra Elite full face mask.

Slide *alphaHUD* into position along the lens and inner mask and downwards until it is securely positioned. The LEDs in the display must point upwards.



The air guiding flaps of the nose cup must unfold in the appropriate slots in the *alphaHUD*.



Fig. 5 Mounting of alphaHUD

To take *alphaHUD* out of mask, it should be released by successively lifting the outer ends. Pulling in the middle could lead to structural damage.

5.3. Technical Specifications/Certifications

Technical Specifications

Operating temperature : -30°C to +60°C

Storage temperature : -30°C to +60°C

Short distance radio (W-USB)

Mode of operation : half duplex

Frequency range : 2.4 GHz up to 2.483 GHz

Radio channels : 4

Modulation : DSSS/GFSK

Data rate : 15.625 kbits/s

Max. emission power : 1 mW

Receiver sensitivity : - 85 dBm

Frequency allocation : Frequency hopping

Ingress Protection : IP45

Approvals

European Community

The product *alphaHUD* complies with the following directives, standards or standardising documents (→ EU Declaration of Conformity

www.msa-europe.com):

Directive 94/9/EC (ATEX) : BVS 07 ATEX E085



II 1G Ex ia IIC T4 Ga

EN 50 014, EN 50 020, EN 50 284

-20 °C ≤ Ta ≤ +60 °C

Battery Panasonic Photo Power CR2 Lithium

Varta Professional 6206 CR2 Lithium

Duracell Ultra M3 CR2 Lithium

Directive 1999/5/EC (R&TTE) : EN 300 440-1, EN 301 489-1/-3



0681

Directive 93/68/EC : EN 60950
(Low Voltage)

Directive 89/336/EC (EMC) : EN 61 000-6-2, EN 61 000-6-3



0158

EN 136



To maintain ATEX approval, *alphaHUD* must only be taken into hazardous atmosphere while being mounted in the mask.

5.4. Monitoring and display functions

The cylinder pressure in five filling levels, the battery alarm of the *alphaHUD* and, when incorporated into the alpha personal network, the evacuation alarm is displayed, as well as the alarms from other units which have been connected.

The 3 LEDs for pressure indication are located on the right hand side, the 2 status LEDs on the left hand side of the field of vision.

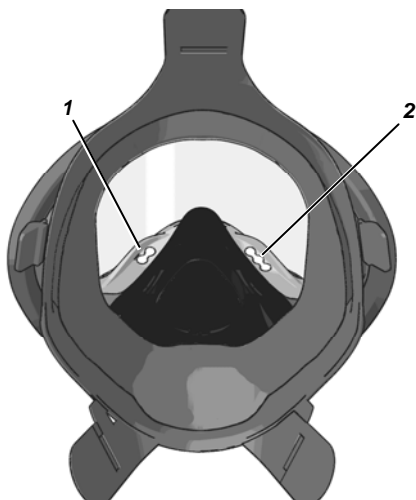


Fig. 6 LED position

1 Status LEDs

2 Pressure LEDs

If radio contact is lost and if the last received pressure value is greater or equal 15 bar, this value is displayed for a further 5 minutes, whilst the radio status LED is flashing. After the five minutes have elapsed, the LEDs go out and *alphaHUD* switches off.

Cylinder pressure display

The up-to-date filling level of the compressed air cylinders is displayed in five stages, in accordance with the following coding, using 3 LEDs.

Pressure level in the compressed air cylinder	LED display	Visual representation
> 270 bar	3 green LEDs	● ● ●
≤ 270 bar and > 180 bar	2 green LEDs	● ● ○
≤ 180 bar and > 100 bar	1 yellow and 1 green LED	● ○ ●
≤ 100 bar and > 55 bar	1 yellow LED	○ ● ○
≤ 55 bar or pressure alarm from <i>alphaSCOUT</i>	1 red LED flashing and 2 Buddy lights	● ○ ○

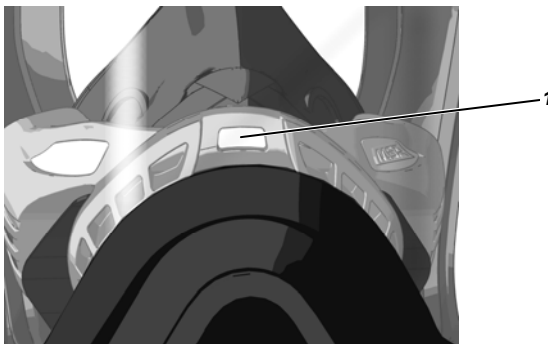
The pressure display takes place alternately for 2 seconds brightly and then at a dimmed level (reduced brightness) for 8 seconds.

In the event of pressure alarms (cylinder pressure less than 60 bar or less than the preselected alarm threshold of the *alphaSCOUT*) or if the retreat alarm is initiated, the bright red LEDs mounted on both sides and the front of the *alphaHUD* flash and are visible from the outside, these being the so-called Buddy light LEDs.

The pressure alarm flashes constantly.



The window in the middle of *alphaHUD* serves to detect the brightness of the environment and must not be covered.



1 Window

Fig. 7 Window for brightness sensor

5.5. Operation

The operation of the *alphaHUD* takes place using the operating button which is actuated from the outside through the mask by pressing inwards. It is dependent on whether:

- *alphaHUD* is to be used directly with *alphaMITTER* or via an *alphaSCOUT*,
- *alphaHUD* has already been paired with a unit or
- *alphaHUD* is to be paired with a previously unknown unit.



Fig. 8 Position of the operating button



It is recommended to switch on the unit before donning of the mask and without gloves.

Using *alphaHUD* directly with *alphaMITTER* (no *alphaSCOUT*)

Operation of the *alphaHUD* is only possible with *alphaMITTER* with serial numbers greater than 25277. These devices can be identified by an antenna symbol on the label.

If the pairing is lost, depressurise the SCBA, close the valve on the compressed air cylinder, and wait for standby mode of the *alphaMITTER*. The pairing can be restarted. If pairing is lost during operation *alphaMITTER* and *alphaHUD* will automatically try to reconnect to the known units.

Commissioning (not yet paired)

- (1) Push the operating button until the first LED flashes (appr. 3 sec).
 - *alphaHUD* transfers into ready mode
 - *alphaHUD* does a self test (LEDs light up consecutively).
 - Radio status LED flashes rapidly if no radio contact is established.
 - *alphaHUD* searches for a ready *alphaMITTER*. Open cylinder valve to activate *alphaMITTER*,
 - the *alphaHUD* detects the *alphaMITTER* and switches on and stores the serial number of the unit until the new pairing,
 - the radio status LED goes out and
 - the cylinder pressure is displayed.

If the *alphaHUD* loses the contact to its partner, this is displayed by a slow flashing of the radio status LED.

An *alphaHUD* that is already switched on but has not found its partner can be brought into pairing mode by pressing the button for about 3 seconds until the radio LED flashes rapidly.



An *alphaMITTER* can only be paired with one device. In case another *alpha* device is paired and switched on, the *alphaMITTER* will not accept pairing requests.











Commissioning (already paired)

- (1) Press the operating button briefly. (In case the button is pressed for too long, the *alphaHUD* might go into pairing mode and might pair with another *alphaMITTER*).
 - *alphaHUD* transfers into ready mode
 - *alphaHUD* does a self test (LEDs light up consecutively).
 - Radio status LED flashes if no radio contact is established.
- (2) Open cylinder valve to activate the *alphaMITTER* or *alphaSCOUT* which is already paired
 - the *alphaHUD* detects the *alphaMITTER* and switches on,
 - the radio status LED goes out and
 - the cylinder pressure is displayed.

If the *alphaHUD* loses contact to its partner, this is displayed by a slow flashing of the radio status LED.

Status and alarm display

The up-to-date status and possible alarms are represented in accordance with the following coding, using 2 LEDs.

Status / Alarm	LED display	Visual representation
HUD battery alarm (< 1 h remaining battery life)	Yellow LED lights up briefly every 2 seconds.	 
System error	<ul style="list-style-type: none"> If there is a system error during the self-test the red LED flashes fast (frequency depending on error code). 	 
Radio status	<p>Normal Operation</p> <ul style="list-style-type: none"> Blue LED is off. <p>Searching partner</p> <ul style="list-style-type: none"> Blue LED flashing (twice per second) <p>Lost radio contact</p> <ul style="list-style-type: none"> Blue LED slow flashing (every 2 seconds) <p>Pairing</p> <ul style="list-style-type: none"> Blue LED very rapid flashing 	 
Gas alert 1	<p>Radio status LED flashing orange:</p> <ul style="list-style-type: none"> all gas alarms [low/high], sensor failure, pump blocked 	 
Gas alert 2	<p>Radio status LED flashing yellow:</p> <ul style="list-style-type: none"> battery warning 	 
High priority alarm	<ul style="list-style-type: none"> Pressure alarm Full motion alarm by <i>alphaSCOUT</i> 	Buddylights (visible from outside)

Using alphaHUD with alpha Personal Network

(*alphaSCOUT* and *alphaMITTER*)

Operation of the *alphaHUD* is only possible with *alphaSCOUT*s with a firmware version 1.31 or above. The firmware version can be retrieved via alphaLINK (9.9) or in the log-on data in the monitoring window of the PC software (9.4).











If the *alphaHUD* is to be used with *alphaSCOUT* the connection between the *alphaSCOUT* and *alphaMITTER* must be created first (→ Section 4.4).

The *alphaSCOUT* needs to be switched on:

- (1) Press the MODE button on the *alphaSCOUT* for about 3 seconds until
 - *alphaSCOUT* transfers into an additional search mode ("DATA" flashes on the display).
- (2) If the *alphaHUD* has already been paired with this *alphaSCOUT*, press the operating button on the *alphaHUD* briefly
 - *alphaHUD* is activated and
 - the connection to the *alphaSCOUT* is created.
 - "DATA" is shown on the display.
- (3) If the *alphaHUD* has previously had contact with other units, press the operating button on the *alphaHUD* until the first LED flashes.
 - Contact with a ready *alphaSCOUT*, which is in range, is created.
 - "DATA" is shown on the display.



Within the first 30 seconds after being switched on, the *alphaSCOUT* is in communication mode ("DATA" is flashing). Linking to an already paired device is possible without pressing the MODE button.

Status / Alarm	LED display	Visual representation
HUD battery alarm (< 1 h remaining battery life)	Yellow LED lights up briefly every 2 seconds.	 
Evacuation alarm (in the alpha personal network) or system error	<p>Evacuation alarm</p> <ul style="list-style-type: none"> ▪ If the evacuation alarm is not confirmed the red LED lights up twice per second. ▪ If the evacuation alarm is confirmed the red LED lights up every 2 seconds <p>System error</p> <ul style="list-style-type: none"> ▪ If there is a system error during the self-test the red LED flashes fast (frequency depending on error code). 	 
Radio status	<p>Normal Operation</p> <ul style="list-style-type: none"> ▪ Blue LED is off. <p>Searching partner</p> <ul style="list-style-type: none"> ▪ Blue LED flashing (twice per second) <p>Lost radio contact</p> <ul style="list-style-type: none"> ▪ Blue LED slow flashing (every 2 seconds) <p>Pairing</p> <ul style="list-style-type: none"> ▪ Blue LED very rapid flashing 	 
Alarm condition (e.g. gas alarm)	<p>Radio status LED flashing orange:</p> <ul style="list-style-type: none"> ▪ gas alert 1 <p>Radio status LED flashing yellow:</p> <ul style="list-style-type: none"> ▪ gas alert 2 	<p> </p> <p> </p>
High priority alarm	<ul style="list-style-type: none"> ▪ Pressure alarm ▪ Full motion alarm by <i>alphaSCOUT</i> 	Buddylights (visible from outside)

Switching-off

The *alphaHUD* switches off automatically

- after 20 seconds of not finding a partner in pairing mode (blue status LED rapidly flashing)
- after 30 seconds of having lost the radio link at a pressure <15 bar
- after losing the radio link for more than 5 minutes.

In addition, the unit can be switched off manually at any stage by pressing the button three times within 5 seconds.

5.6. Updating the firmware by short range radio link

The operating software (firmware) of the *alphaHUD* can be updated wirelessly via the *TAGwriter* box. Please consult your MSA contact person regarding firmware and instructions.

6. *alphaTAG* and TAGwriter

6.1. Description

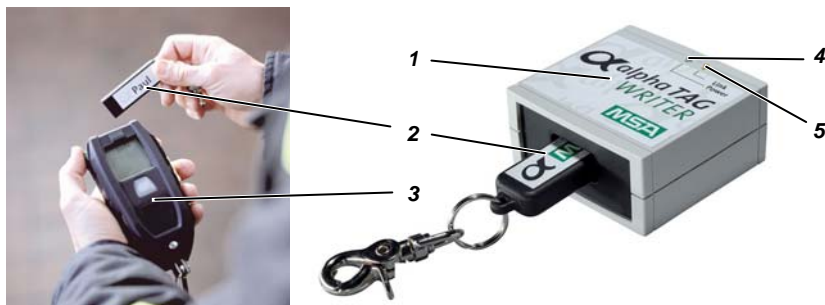


Fig. 9 *alphaTAG*

- 1 TAGwriter
- 2 *alphaTAG*
- 3 *alphaSCOUT*

- 4 LED - Readiness for operation (green)
- 5 LED - Data transfer (yellow)

The *alphaTAG* serves to provide personal identification of the user and his logging on to the *alphaSCOUT*. Up to 18 figures are freely programmable on the *alphaTAG*.

The *alphaTAG* is logged with the user's personal data using the TAGwriter. The TAGwriter is connected to the computer with a USB cable.

The transmission of the *alphaTAG* data takes place by means of a transmitter as soon as the *alphaTAG* is brought into close proximity with the *alphaSCOUT*. The data are displayed on the computer in incident command (→ Section 9).

The following versions are possible as *SpecialTAG* (Function → Section 4.6):

- *baseTAG* (to assign to a base station)
- *repeaterTAG* (to switch on the repeater mode)
- *sleepTAG* (to initialise hibernation mode)
- *beeperTAG* (to initialise beeper mode)
- *companionTAG* (to initialise companion mode)
- *userTAG* (to determine the alarm setting)
- *pairingTAG* (for activating the pairing mode when closed pairing is activated for *alphaSCOUT*)



The *alphaTAG* is an active transponder, the battery life time is up to 5 years.

The battery can not be replaced - no warranty!
Please contact the MSA Customer Service.

6.2. Technical Specifications/Certifications *alphaTAG*

European Community *)

The product *alphaTAG* complies with the following directives, standards or standardisation documents:

(→ EC Declaration of conformity www.msa-europe.com)

Directive 94/9/EC (ATEX) : BVS 05 ATEX E 148



II 1G EEx ia IIC T4

EN 50 014, EN 50 020, EN 50 284

-30 °C ≤ Ta ≤ +60 °C



0681



0158

Other countries *)

Australia

ECEX for i IEC60079-11 (and 0)

Transmitter to AS/NZS 4268

C-Tick

*) All devices must only be used in the intended area.

6.3. Operation

Description of the *alphaTAG*

- (1) Connect the *TAGwriter* to the computer with a USB cable.
 - *TAGwriter* is supplied with power - green LED lights up.
- (2) *alphaTAG* to be inserted into the *TAGwriter*.
- (3) Start MSA TecBOS.solutions software on the computer and select menu options:
INCIDENT – SCBA MONITORING – TAGWRITER
 - An input field with a max. of 18 characters appears on the screen.
- (4) In the menu "TAG Writer", click on the item "NAME", if a name *TAG* is to be written or "TEAM", if a Team *TAG* is to be written.
Special *TAG*s can be written using the relevant check boxes.
- (5) To assign a BASE station, enter the 8 digit serial number of the alphaBASE. This can be found on the label of the device or on top of the monitoring window in the PC software.
- (6) Enter the necessary recognition data and click on "write".
 - Green LED flashes - data are being written and the message "Tag has been written" appears.
- (7) Remove *alphaTAG* from the *TAGwriter*.



It is recommended that the content of the *TAG*(s) be marked on sticky tape.

A Word format template (alphaTAG-Label.dot) for easy printing of the "labels for alphaTAG" (PO 10071717) can be found on the data storage medium.



An *alphaTAG* can only carry one coding at a time. Previous recordings are deleted with every "write *TAG*" operation.

Logging on to the *alphaSCOUT*

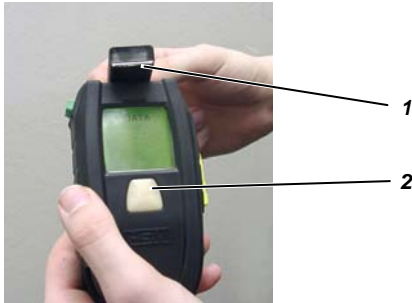


Fig. 10 Logging on to the *alphaSCOUT*

- 1 *alphaTAG*
2 *alphaSCOUT*

- (1) Push the green button on the *alphaSCOUT* for approx. 2 seconds.
 - The *alphaSCOUT* changes over to receive mode.
 - On the display the message "DATA" appears.
- (2) Hold the *alphaTAG* on the top front side of the *alphaSCOUT*.
 - The recognition data is read in.
 - A signal sounds, "OK" is displayed and the alarm button lights up in green for 3 seconds.
 - Tag data will later be transmitted to the *alphaBASE*.

In the case of a *beeperTAG*, *companionTAG* or *repeaterTAG* (→ note in Section 4.6) the *alphaSCOUT* switches on immediately.

- (3) Remove the *alphaTAG* from the *alphaSCOUT* and store safely.



On the *alphaSCOUT* you can sign in with both the one *alphaTAG* with your personal recognition data and, at the same time, with a second one using recognition data of the operational group to which you belong.

7. *alphaBASE*

7.1. Standard version

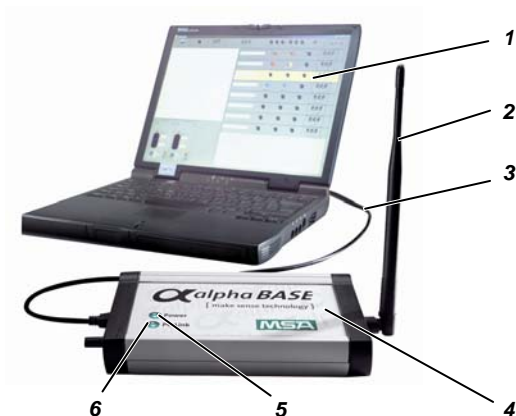


Fig. 11 *alphaBASE* – Standard version

- | | | | |
|---|---------------------------|---|---------------|
| 1 | Computer (PC or Notebook) | 4 | Base station |
| 2 | Receiving antenna | 5 | Power - LED |
| 3 | USB cable | 6 | LED - PC Link |

This is the base station in the incident command and, in use, is in constant contact with all the registered *alphaSCOUT TM* units, and receives their data. This data is transmitted to the computer via USB cable and displayed accordingly. The operational control unit therefore monitors the data from all the operational units and can, if necessary, initiate an evacuation alarm.

The *alphaBASE*, depending on the model, is supplied via the mains or battery.



If required, the *alphaBASE* can be fitted in the command vehicle using screws. A laptop can be used in this case as a computer.



Instead of the rod antenna, the range can be extended by connecting an external antenna with a magnetic base if desired. To do so, it must be placed on a metallic substrate (e.g. a car roof).

7.2. Battery powered version

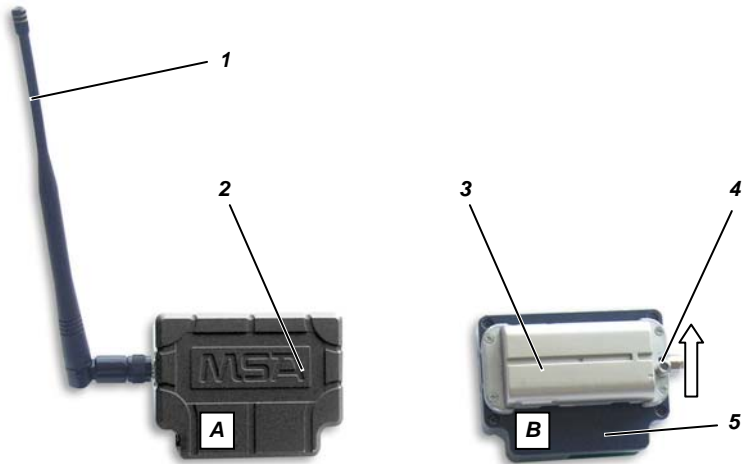


Fig. 12 alphaBASE – Battery Powered

A Front view (with antenna)

B Rear view (without antenna)

1 Antenna

2 alphaBASE

3 Rechargeable battery

4 Locking

5 USB-Connector

This version can be used on the scene. It can be connected to the portable xplora TABLET PC by a quick connector (→ Section 8).

During operation, the operational control is in continuous contact with all logged in *alphaSCOUT TM* and receives their data. These are transferred via the *alphaBASE* interface directly to the xplora TABLET PC.



Warning!

alphaBASE must not be used in a hazardous area.



alphaBASE must only be used with supplied antenna.

Power supply

The *alphaBASE* is provided with power from an accumulator on the rear of the apparatus.

In order to replace the accumulator proceed as follows:

- (1) Push the lock on the side of the antenna connection in the direction of the arrow.
- (2) Lift the accumulator on the side of the slider up and remove.
- (3) Insert a new accumulator in the reverse order. Whilst doing so, ensure that the battery clicks into the interlock.

**Warning!**

The rechargeable battery of the *alphaBASE* is not fully charged when delivered.

The battery should be fully charged before using for the first time. The charging process normally takes 2.5 – 3.5 hours.



For the first charge cycle, we would recommend that the battery be charged for a minimum of 8 hours, or overnight.



The battery can be changed during an incident. After the new battery is inserted, all *alphaSCOUT* that had been logged on will reappear on the screen. Real-time monitoring is interrupted for about one minute.

7.3. Technical Specifications/Certifications

Technical Specifications

Operating temperature : -15°C to +55°C
Ingress Protection (battery powered version only) : IP45

Long distance radio (European Community)

Mode of operation : half duplex
Frequency range : 865.7 MHz ... 867.5 MHz
Channel distance : 200 KHz
Radio channels : 10
Modulation : GFSK
Data rate : 19200 kbits/s
Max. emission power : +27 dBm (500 mW)
Receiver sensitivity : -102 dBm
Frequency allocation : Listen-before-talk

Long distance radio (Australia)

Direction : half duplex
Frequency range : 915.15 MHz ... 927.85 MHz
Channel distance : 240 KHz
Radio channels : 53
Modulation : GFSK
Data rate : 19200 kbits/s
Max. emission power : +27 dBm (500 mW)
Receiver sensitivity : -102 dBm
Frequency allocation : Frequency hopping

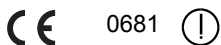
Certifications

European Community *)

The product *alpha*SCOUT complies with the following directives, standards or standardisation documents:

(→ EC Declaration of conformity www.msa-europe.com)

Directive 1999/5/EC (R&TTE) : EN 302 208-1/-2, EN 300,
EN 301 489-1/-3, EN 50371



Directive 93/68/EC : EN 60950
(Low Voltage)

Directive 89/336/EC (EMC) : EN 61 000-6-2, EN 61 000-6-3

Other countries *)

Australia Transceiver to AS/NZS 4268
SAR Test to ARPANSA RPS3
AS/NZS CISPR 11:2004
C-Tick

*) All devices must only be used in the intended area.

7.4. Operation – standard version

Software installation



For the correct monitoring function the telemetry software must be installed on the computer (→ Online help and Section 9).

For using alpha personal network it is necessary to install PC software "TecBOS.Solutions" from the data storage medium.

Installation of TecBOS.Solutions should start automatically after inserting the data storage medium. If that is not the case please start the file "setup.exe" manually.

- (1) During installation of the PC software pick "user defined", keep the default settings and follow the instructions.
- (2) When asked for user name, abbreviation and password keep user name and enter:

Abbreviation : AD
Password : Administrator

- (3) After entering the password, click on [OPTIONS], select [Licence] and confirm by clicking [OK].
- (4) Copy the registration code you received from your MSA contact person into the field "Activation Code" and confirm by [OK].
- (5) Click "options" and select "Reorganise data base", then press [OK].
The software starts the "Debug server" window for organising the data base.
This process takes several minutes
- (6) After finishing the installation please restart the software and change the administrator password.



Warning!

Do not forget to change the administrator password after software installation.

Preparing for use

- (1) Connect *alphaBASE* to the computer with the connection cable.
- (2) Screw the antenna in place and erect.
- (3) Provide a power supply via mains plug or on-board mains supply.
The green readiness for operation display POWER lights up.
If the POWER shows red, then there is no connected power source.
- (4) Start telemetry software (→ Section 9.1) PC link shows green.



Warning!

In the event of long periods of operation without antenna, overheating of the electronic system can occur (thermal overload). There is then a danger that the unit no longer works properly or may fail.

During Use

During use, no user activities are required on the *alphaBASE*. Data transmission and evaluation takes place automatically.

Only monitoring and checking functions on the computer are required in order to be able to intervene immediately in the event of any irregularities, emergency situations etc. (→ Section 9.2).

7.5. Simultaneous operation of several *alphaBASEs*

It is possible to operate several *alphaBASEs* on the same scene. Every *alphaBASE* automatically picks a free channel in the band.



Two *alphaBASEs* can operate right next to each other. To avoid interference all further *alphaBASEs* have to be located at a considerable distance, preferably out of sight. More than four *alphaBASEs* should not be operated within radio range to each other.

To determine to which *alphaBASE* an *alphaSCOUT* logs on, the *alphaSCOUT* should be programmed by means of a base TAG (see 4.6).

It is possible to centralise monitoring on one screen by linking the PCs via LAN or W-LAN (see 9.7).

8. xplore TABLET PC



For detailed information for description and using the xplore TABLET PC refer to the xplore TABLET PC User's Handbook.

8.1. Description

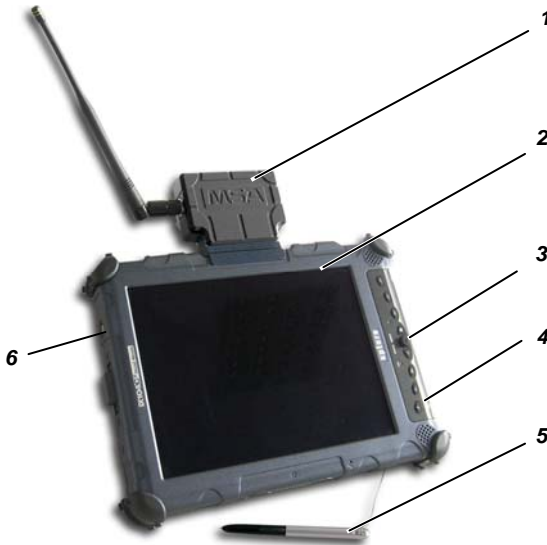


Fig. 13 xplore TABLET PC

- | | | | |
|---|-------------------------------|---|---------------------------|
| 1 | <i>alphaBASE with antenna</i> | 4 | <i>Connection sockets</i> |
| 2 | <i>xplore TABLET PC</i> | 5 | <i>Stylus</i> |
| 3 | <i>Operating buttons</i> | 6 | <i>ON / OFF switch</i> |

The transportable xplore TABLET PC can be used as an alternative to the *alphaBASE* and PC, in order to create an incident command locally. The receiver (*alphaBASE* battery powered) is connected to the unit.

xplore TABLET PC is housed in a robust watertight casing. With the high resolution screen it is usable in all lighting conditions, including direct sunlight.

The telemetry software is automatically started after switching on.

The main task of the xplore TABLET PC is to monitor all the active users in the operational area.

If you have to disconnect the *alphaBASE battery* from the xplore TABLET PC, press lock pin, push the *alphaBASE* in the direction of the arrow and remove from the base strip.

8.2. Operation (Short Description)

The operation of the xplore TABLET PC and the software can be via a stylus on a screen or via the operating buttons
(→ User's Handbook of the xplore TABLET PC).



Warning!

xplore TABLET PC must not be used in hazardous areas.



Warning!

The rechargeable battery of the xplore TABLET PC is not fully charged when delivered.

The battery should be fully charged before using for the first time. The charging process normally takes 2.5 – 3.5 hours.

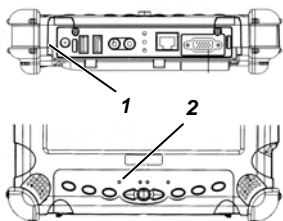


For the first charge cycle, we would recommend that the battery be charged for a minimum of 8 hours, or overnight.

Inserting the battery



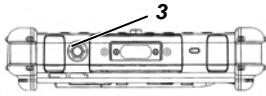
- (1) Position the battery above the empty battery compartment with the contacts aligned correctly.
- (2) Push the battery into the compartment.
- (3) Continue to push the battery in until it clicks in position.
 - The battery ejector button springs back to its original position.
 - The battery is locked into the compartment.



Charging the battery

- (1) Connect the approved mains unit to the power input ① of the PC.
 - The status LED ② starts to flash.
 - The charging process continues until the battery is 100% charged.

The LED lights constantly when the battery is fully charged.



Switching the computer on

- (1) Check that the battery is fully charged. If necessary, connect an external mains supply.
- (2) Push the ON/OFF button ③.

Adjusting the brightness

As soon as the ambient light sensor is switched on, it automatically regulates the brightness of the screen to suit the individual light conditions.

- The brightness LED then turns yellow.

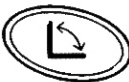
If the sensor is switched off the LED is not illuminated.

Proceed as follows to adjust the brightness manually:

Proceed as follows to adjust the brightness manually:



- (1) Press the function key and then the Tab key.
 - The display gets darker.
- (2) Push the function key and then the Windows Start key.
 - The display gets brighter.



Changing the screen format

- (1) Push the screen changeover key
 - Display switches between horizontal and vertical.

Using the sensor stylus

The *xplorer* TABLET PC is equipped with a sensor stylus which can be used to operate the software.

The stylus is used in the same way as a mouse. It can be used to actuate the following functions:

Selecting

Click once on the object with the stylus.

Double Click

Click twice in quick succession on the object with the stylus.

Right Click

Hold the stylus over the object for approximately 1 second and then lift.

or

Hold the right click button on the stylus whilst clicking on the object.

Moving Objects (drag & drop)

Click on the object and then hold it on it. Then move the stylus and displace the object.

Sensor stylus calibration

Before using the computer for the first time the stylus must be calibrated.

- (1) Push the function key [Fn] and then the key [P3].
- (2) Follow the instructions on the screen.
- (3) At the end, push the [OK] key.

Screen settings

The xplore TABLET PC can be used in daylight. In order to optimise the unit for operation under these conditions proceed as follows:

- (1) Select menu `START-SYSTEM CONTROL`.
 - (2) Select `DISPLAY-DESKTOP`.
 - (3) Set background to `NONE`.
 - (4) Select `DISPLAY-REPRESENTATION` and set to "Windows Classic".
-

Switching computer off

- (1) Save your work and close all the programs.
 - (2) Push the **START** and **SWITCH OFF** buttons.
 - A dialogue box appears.
 - (3) Select **SWITCH OFF** in the dialogue box.
 - The computer shuts down.
-

Fault rectification

Problem	Reason / Solution
Computer does not start	<ul style="list-style-type: none"> ▪ Check battery for secure seating and charge condition. ▪ If necessary, power the computer through the mains unit.
Display shows nothing	<ul style="list-style-type: none"> ▪ Check that the unit is switched on. ▪ Brightness too low – make the display brighter. ▪ Display has switched off (power saving mode). Click on the display with the stylus to reactivate.
Cursor is incorrectly positioned	<ul style="list-style-type: none"> ▪ Recalibrate the sensor stylus. ▪ Push the [Fn] and [P2] keys and then click on the display with the sensor stylus.

In case recovery of the software is necessary, this can be done by using the supplied data storage medium or from the directory "Program files\MSA\TecBOS.solutions" on the xplore TABLET PC.

9. *alphaCONTROL*

Before using the telemetry software it is necessary to install it on the PC or notebook (→ Section 7.4).



Ex-works, a user with the abbreviation "AD" and with the password "Administrator" has been created.

A second user with the abbreviation "TM" and the password "TM" has a read-only status and cannot change any settings.

9.1. Start and Login

In incident command, the base station is connected to a PC on which the monitoring software is installed. The monitoring software is a module from the software package "TecBOS.solutions", which can be extended by the incorporation of other modules.

On the screen, incident command can monitor the data sent by all users via *alphaSCOUT* as soon as the monitoring software is started.

After switching on the PC start the monitoring software and logon with abbreviation and password.

- the monitoring software is started and the software main menu appears

After switching on the xplora TABLET PC:

- user registration with login and password is automatically performed for the "TM" user,
- the monitoring software is started and the monitoring windows appears.



When logging on with an administrator password, certain settings can be altered. Consult your relevant administrator for this facility.

The *alpha* personal network organises itself with a regular polling cycle. All logged in *alphaSCOUT* are contacted for information one by one and the current data is sent to the base station. There, they are displayed for each logged in apparatus user or *alphaSCOUT* by the monitoring software. A complete polling cycle takes about 3.5 seconds.

A maximum of 24 *alphaSCOUTs* can be logged on to the *alphaBASE*.

9.2. User interface

The user interface of the monitoring software is largely self-explanatory. All displays are by explicit and familiar symbols.

The user interface is subdivided into three main areas

- Log in area for users with *alphaSCOUT*,
- Team overview,
- Detailed display of pressure, remaining service time and alarm, and the menu bar (→ Fig. 14).

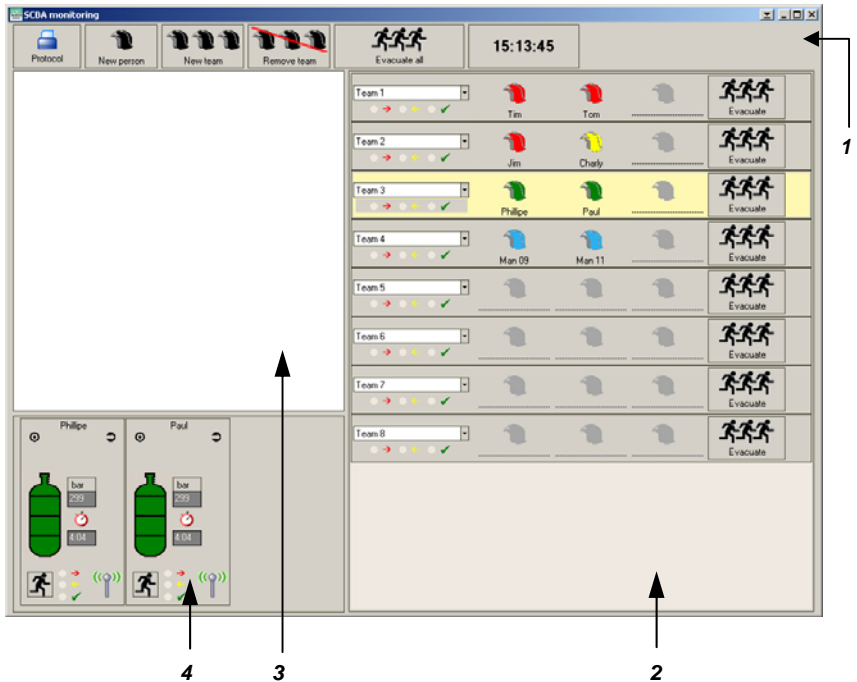


Fig. 14 User interface telemetry monitoring software

- 1 Menu bar
- 2 Team overview,
- 3 Log in area for users with *alphaSCOUT*
- 4 Detailed display (pressure, remaining service time, alarm)

In the log in area, all apparatus users are represented by helmet symbols, who are logged in with an *alphaSCOUT*. If the user has read in a name with *alphaTAG*, the name of the apparatus user appears next to this. If the *alphaTAG* has also been used to enter the membership of a team, this is automatically shown in the team overview and the helmet symbol of the logged in *alphaSCOUTS* is displaced to the relevant team .

If there is no team membership yet, then the *alphaSCOUTs TM* logged in under their names can be grouped together to create a new operational team of 2 to 3 persons.

- (1) Click on the button "New Team" on the menu bar.
- (2) In the signing in area, click on the relevant helmet symbol with the mouse and drag it to the area for the team overview by using drag and drop.

For each apparatus user, the current operational data such as pressure status, remaining service time, alarms and lack of movement are displayed in the detailed area.

All occurrences are automatically shown in the operational report and can later be displayed and printed.

9.3. Indications and symbols in the area team overview

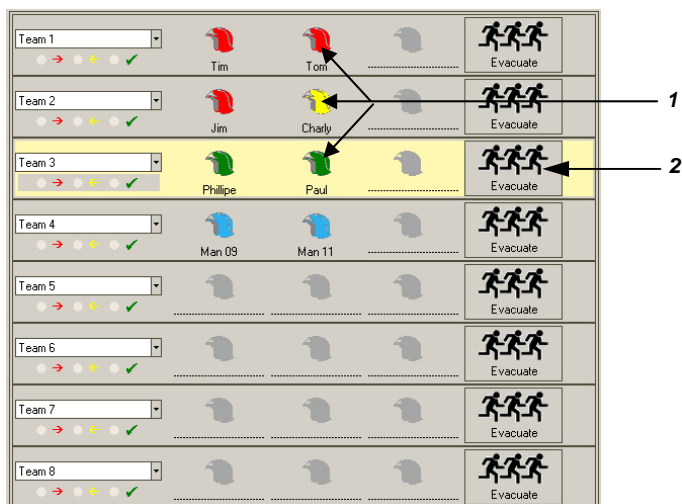


Fig. 15 Team overview

- 1 Coloured helmet symbols for display of the compressed air status of each person
- 2 Button for initiation of an evacuation alarm

Significance of the colours of the helmet symbols

- green** = Compressed air supply is sufficient
- yellow** = Attention! Pressure less than 150 bar
- red** = Emergency condition: pressure less than 60 bar, alarm
- blue** = Not yet fully logged on

9.4. Indications and symbols in the detailed display

Normal radio contact

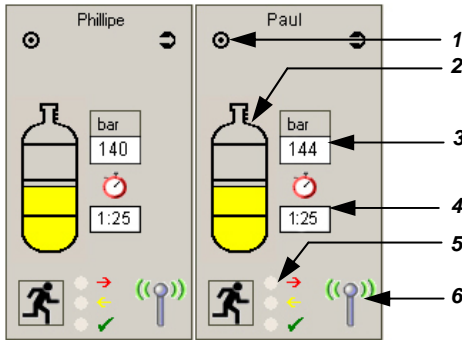


Fig. 16 Detailed depiction per person in operating mode

- 1 Indicator for status messages
- 2 Coloured level indicator of the compressed air cylinders
- 3 Current compressed air pressure
- 4 Current remaining operating time available
- 5 Coloured LED display for evacuation alarm
- 6 Display of radio contact

Significance of the colours of the compressed air cylinders:

green = Compressed air supply is sufficient

yellow = Attention! Pressure less than 150 bar

red = Emergency condition: pressure less than 60 bar, alarm, acoustic signal.

A window opens in which the exact data of the person at risk is displayed. The person must leave the danger area at once!

Significance of the LED colours → following Section 9.5.



Detailed information will be provided for the highlighted team (see Fig. 15).



If the mouse is moved over the cylinder icon, a window shows data like log-on time, assigned *BASE*, serial numbers and firmware versions.

Interrupted radio contact

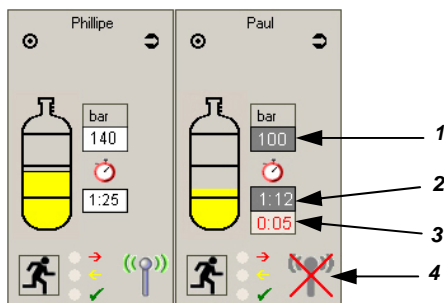


Fig. 17 Detailed depiction for interrupted radio contact

- | | |
|--|------------------------------|
| 1 Current compressed air level | 3 Time without radio contact |
| 2 Current remaining operating time available | 4 Display of radio contact |

A red crossed-out antenna icon indicates that the radio contact between *alphaSCOUT* and *alphaBASE* is interrupted (→ "Paul" in Fig. 17). An additional display shows how long the radio contact has been interrupted.

The estimated pressure of compressed air and the remaining operating time are calculated on the basis of the data transmitted last. The inverted display (white on dark background) indicates that the shown values are estimates.

The pressure alarm is triggered when the preset value is reached.

Repeater function

(→ note in Section 4.6)

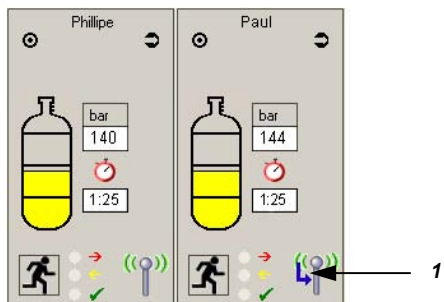


Fig. 18 Detailed depiction for repeater function

- | |
|-------------------------------------|
| 1 Repeater designation (blue arrow) |
|-------------------------------------|

If another *alphaSCOUT* operates as a relay station (repeater) for *alphaBASE* this is indicated by a blue arrow on the antenna icon (→ "Paul" in Fig. 18). The current level of air and of operating time are displayed in black on a white background as measured values are shown.

9.5. Evacuation by incident command

Under certain conditions, it may be necessary for individual teams, or all of the persons in scene, to leave the danger area at once. Incident command can, in this case, initiate an evacuation alarm by clicking with the mouse on the button "Evacuate".

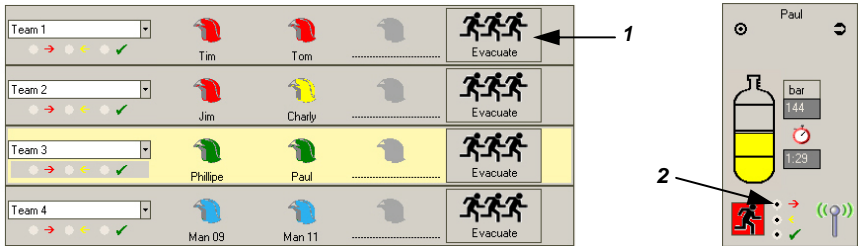


Fig. 19 Evacuation alarm

- 1 Button for evacuation alarm in the area of the team overview
- 2 LED display for the reception of the evacuation alarm in the detailed depiction

Significance of the LED colours with the evacuation alarm

- red** = Signal for evacuation has been sent to the person in danger.
- yellow** = Signal has been received by the *alphaSCOUT* of the person in danger
- green** = Signal has been reset by the person in danger on the *alphaSCOUT*.

The colour of the button "Evacuate" indicates the common status of the team. As soon as the *alphaSCOUT* receives the signal for evacuation, an acoustic alarm sounds and the following symbol appears on the *alphaSCOUT* display:



The apparatus user must leave the danger area at once!



In case a team without direct radio contact is to be evacuated, the team acting as a repeater will be evacuated as well. A window with the according notification must be acknowledged.

By clicking a green evacuation button the evacuate status of that team is reset (button turns mellow green). Once this was acknowledged by the concerned *alphaSCOUTs*, the button turns grey again.

9.6. Display lack of movement / motion alarm

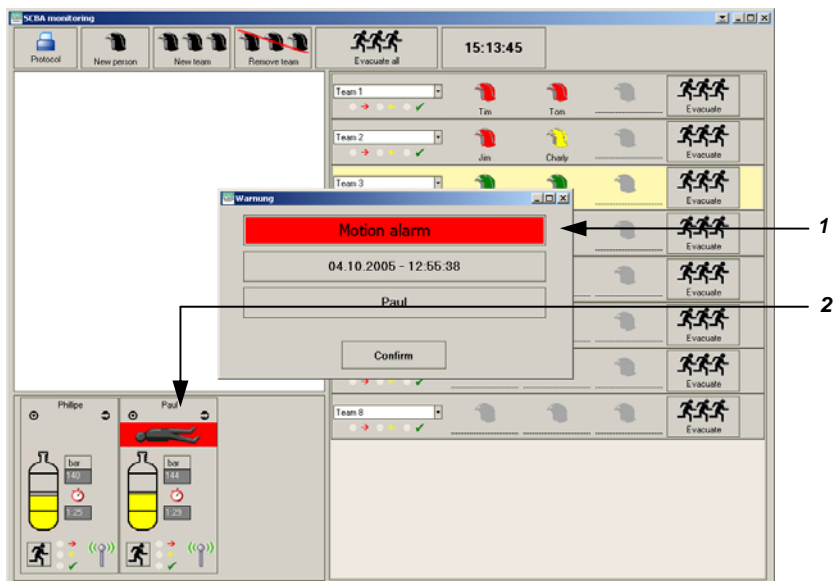


Fig. 20 Display lack of movement

- 1 Display motion alarm, manual alarm, date and time of the lack of movement, name of the person concerned
- 2 Symbol for the lack of movement of a person in operational mode, emergency condition, immediate help required



Warning!

In the event of a movement or manual alarm, incident command must initiate immediate assistance measures. The person in danger must be removed from the danger area as quickly as possible and must receive medical care if required.

9.7. Linking of several *alphaBASEs*

It is possible to centralise monitoring of several base stations on one PC. The PCs link to a pre-configured W-LAN network and must have the monitoring software running. The button “enable network functionalities” in the menu INCIDENT – SCBA MONITORING – SETTINGS must be ticked. Once the link is established, all *alphaBASEs* are represented by icons in the monitoring window. The *alphaBASE* which belongs to the looked at PC that is used for monitoring is represented by a green icon. By clicking on an icon, the information provided by this *alphaBASE* is displayed. This is indicated by a green box behind the icon.

In addition, two “sector” icons are shown. All *alphaSCOUTs* that log onto the system are automatically assigned to Sector 1. By drag and drop it is possible to move a complete *alphaBASE*, a team (drag an helmet icon in the team) or an individual helmet icon (only if not assigned to a team) to another sector (manual fire fighters have to be created on the respective PC, they cannot be reassigned). By clicking on a sector icon, the fire fighters assigned to that sector are displayed. This is indicated by a frame around the sector icon.



Fig. 21 Icons

- | | |
|------------------------|------------------------------|
| 1 not monitored sector | 3 "own" <i>alphaBASE</i> |
| 2 monitored sector | 4 monitored <i>alphaBASE</i> |

Further sectors can be created by right click in the section where the other icons are located. A new name can be assigned to a sector or an *alphaBASE* by right or double click on the respective icon.

A global monitor can be used to monitor all *alphaSCOUTs*, independent of the used *alphaBASE* station. The global monitor can be created using the context menu after a right click in a free space next to the icons of the network area.



Info: All activities carried out on one PC (e.g. assignment to sector, name changes etc.) show up on all screens in the network.

9.8. Incident report

All occurrences are automatically shown in the operational report and can later be displayed and printed. The data is prepared in various ways depending upon the type of report required.

To display or print a report, press the „protocol“ on the left top of the monitoring window or in the main menu INCIDENT – REPORTS. Pick the required date and choose the type of report requested. Available reports are e.g. device histories, pressure curve, general and personal log file.

For detailed information consult the online help (press F1 or pick ? – HELP in the main menu).

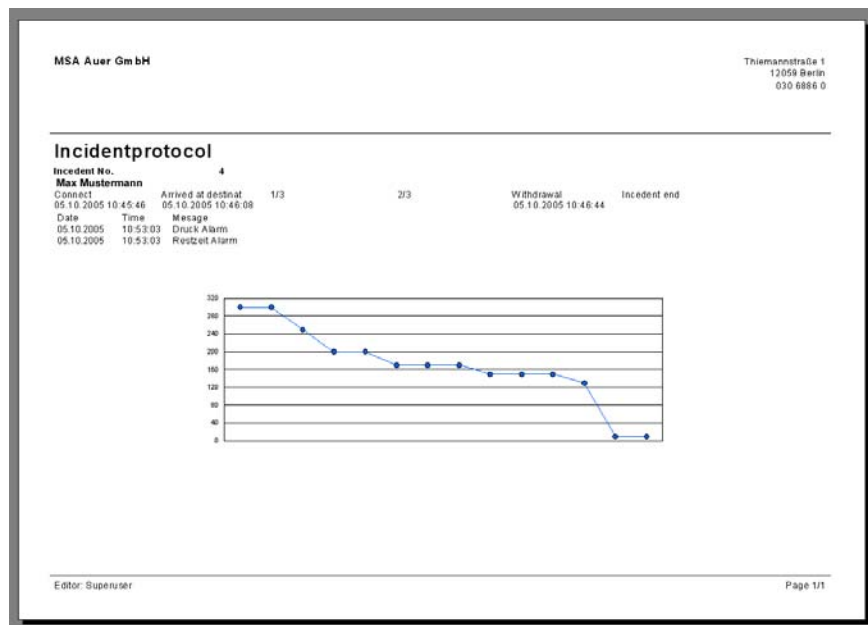


Fig. 22 Operational report

If available, all operational data specific to persons and units are assigned to and filed on the corresponding modules of the user software TecBOS.solutions.

9.9. Reading out the *alphaSCOUT*

It is possible, by using the *TAGwriter*, to read out the data from the *alphaSCOUT*, to change certain settings and to reload them back into the unit.



A secure connection between the *alphaSCOUT* and the *TAGwriter* is ensured up to a maximum separation of 1 metre.

- (1) Make sure the TAGWRITER is connected to the PC.
- (2) Start the TecBOS.solutions software on the PC.
- (3) Select the menu point
USE - SCBA MONITORING - ALPHALINK.
- (4) Establish a connection between the *alphaSCOUT* and the *TAGwriter*.
This is done by switching on the *alphaSCOUT* by depressing the green mode key for approximately 2 seconds and then moving the unit into the area near the *TAGwriter*.

Display of settings

The *alphaSCOUT* window opens up, and the settings can be read out by using the [READ SETTINGS] button.

Fig. 23 Screen of settings

- 1 Display of unit data
- 2 Selection of functions
- 3 Setting (modification) of unit data
- 4 Setting for AutoSLEEP

The following information is displayed:

- Time
- Date
- Serial number of the unit
- Software version
- Serial number of the radio module
- Software version of the radio module

Changing the settings

Furthermore the following settings are displayed. With the appropriate user rights, they can be altered and written back to the device:

- 3 values for the pressure (pre)alarms.
- The time after the last upload after which the name read in via the TAG is deleted (preset to = 24 hours or for ever).
- Temperature alarm threshold.
- Calculation of the remaining service time, whereby swapping between pressure alarm (default) and empty cylinder is possible.
- Adoption of the PC system time.
- After the desired data has been changed it can be transmitted to the *alphaSCOUT* using the [READ SETTINGS] button.
- With [SAVE AS DEFAULT] custom settings can be saved for further use.

Memory readout

The data from the last 30 hours is stored in the *alphaSCOUT* in a scrolling loop (roll over memory).

This can be read out and displayed using the [INCIDENT DATA READOUT] button (→ Fig. 18). The stored sessions are displayed in chronological order in the window on the right of the display.

When one of the sessions is selected all the relevant data such as

- alarms as points or bars,
- temperature measurements as a sequence,
- pressure display as a sequence

are displayed in the diagram.

All the events stored in the *alphaSCOUT* can be stored with the corresponding data on the PC or Notebook. When closing the window of before reading in new data, a message box asks if the data shall be saved.

serial number: 10517682 total service time alphaSCO00:40

Stand 25.07.2006 11:14

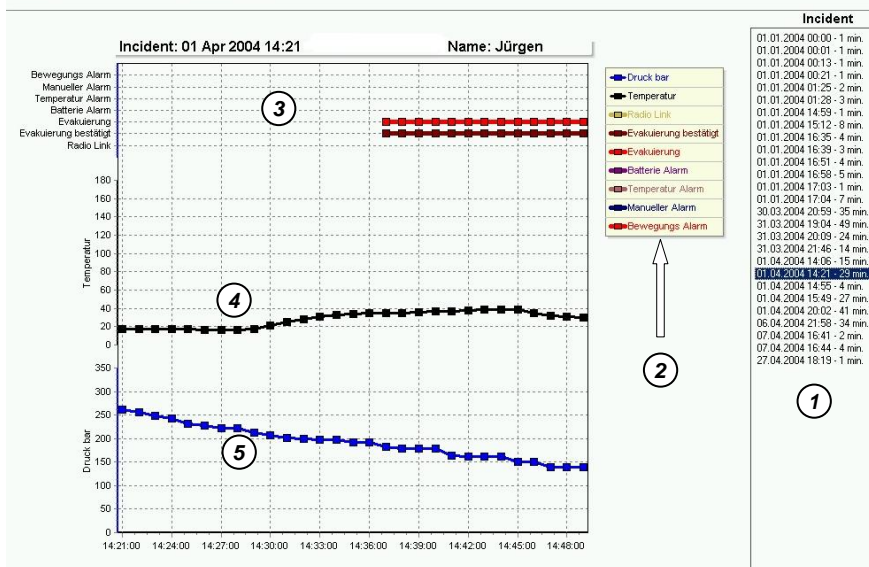


Fig. 24 Display of session data

- 1 Incidents
- 2 Display legend
- 3 Session data
- 4 Temperature sequence
- 5 Pressure sequence

10. Cleaning and maintenance

10.1. Cleaning

**Warning!**

Do not use any organic cleaning material for the cleaning of the individual components, such as nitro thinners, alcohol, white spirit, petrol etc.

The unit components should be cleaned after each operation and, if badly contaminated, with a damp cloth (tepid water) and a little detergent.

When maintaining and cleaning a respiratory protection mask with integrated *alphaHUD*, this must first be removed from the mask. *alphaHUD* itself is watertight and can be cleaned using tepid water with commercially-available detergent additive.

The display of the xplora TABLET PC must be cleaned using lukewarm water with commercially-available detergent additive.

10.2. Maintenance

The unit components are largely maintenance-free. It is recommended that the *alpha*-components are subjected to regular visual inspection to check whether there are any faults or damage.

After strong thermal or mechanical loading, it may be necessary to change the extension disc of the *alphaSCOUT*.

On the *alphaHUD*, the battery charge condition should be checked and the battery replaced if required (→ Section 10.3).

If there are any faults, then the unit is to be replaced. The unit must not be repaired by the user. Repairs must only be undertaken by the manufacturer or by a repair service authorised by the manufacturer.

10.3. Changing the battery



The *alphaTAG* is an active transponder, the battery life time is up to 5 years.

The battery can not be replaced - no warranty!
Please contact the MSA Customer Service.

Various components are designed for operation with power supplied by batteries / accumulators. These are:

- *alphaMITTER* – 3 batteries 1.5 V, Alkaline, type AA,
- *alphaSCOUT TM* – 4 batteries 1.5 V, Alkaline, type AA,
alphaBASE (battery powered) – lithium ion battery pack BN-V214
(→ Operating Instructions of the battery charger),
- *alphaHUD* (1 Battery 3.0 V, Type CR2),
- xplora TABLET PC – lithium ion accumulator → Users handbook of the TABLET PC.

Due to storage and delivery times it might be necessary to exchange batteries before putting units into first service.

If *alphaSCOUT* is in full operation, a battery life of 20 hours can be expected.

Battery life of the *alphaHUD* depends mainly on lighting condition of the environment. An average of 50 operational hours can be expected.

Batteries in the *alphaMITTER* typically last one year, depending on frequency of usage.

Both *alphaBASE* (battery powered) and xplora TABLET PC typically run for three hours per charge.

The charging status of the batteries is monitored by the units. Low battery condition is notified. The batteries must be changed when notified to do so.

It is recommended that the batteries be changed at least once a year or if indicated to do so by the LED or on the display.

**Warning!**

Never change batteries in hazardous areas. There is a danger of explosion since the batteries can cause sparks when being changed!
Caution – danger of injury!

**Warning!**

Check the polarity of the battery when replacing.
Incorrect polarity connection can lead to damage to the unit or impairment of the operability of the unit.

**Attention!**

The max. locking torque for battery cover is 0,7 Nm. Do not overtighten, otherwise the inserts can be pulled out!



Used batteries must be returned to the dealer or manufacturer for disposal. They should never be disposed of in household waste.

alphaMITTER and alphaSCOUT

The units may only be operated with the following battery types:

Protection rating T3 ATEX: Varta (4706, 4106, 4906)

Protection rating T4 ATEX: Duracell Plus (MN1500)

- (1) Open the battery compartment with the Allen key provided.
- (2) Replace the battery with a new one.
- (3) Refit the cover of the battery compartment. Whilst doing so, check the sealing for damage and dirt. Replace the sealing if required.
Maximum locking torque for battery cover: 0,7 Nm.

If the sealing is not damaged or soiled, the cover is not twisted or warped and the screws are not overtighten, the unit is water tight and ready to use.



After changing the battery, the *alphaSCOUT* must be paired with an *alphaMITTER* or *alphaHUD*.

alphaHUD

The units may only be operated with the following battery types:

Protection rating T4 ATEX: Panasonic Photo Power CR2 Lithium

Varta Professional 6206 CR2 Lithium

Duracell Ultra M3 CR2 Lithium

- (1) Open the battery compartment with a 10mm Allen wrench.
- (2) Replace the battery with a new one. Whilst doing so, check the sealing for damage and dirt. Replace the sealing if required.
- (3) Refit the cover of the battery compartment and turn cover until markings are aligned.



After changing the battery, the *alphaHUD* must be paired with an *alphaMITTER* or *alphaSCOUT*.

After closing the battery compartment, *alphaHUD* might go into self-test and switches on.

xplore TABLET PC

The power supply is by accumulator. For maintenance and care of the accumulator → User's handbook of the xplore TABLET PC.

10.4. Maintenance and test schedules *alphaSCOUT*, *alphaMITTER*, *alphaHUD*

Type of work	Before use	After use	Annually	Every 9 years
Changing the battery (→ Section 10.3)			X	
Cleaning (→ Section 10.1)		X		
Basic overhaul by manufacturer				X

10.5. *alphaSCOUT* Error Messages

- (1) If an error code occurs try to restart device.
- (2) If an error code continues to show, send the device to your MSA Customer Service and report the error code.

**Warning!**

If an errors occur, the unit is not serviceable!
Contact MSA customer service immediately in order to resolve the error.



If, during functional checking, several errors arise at the same time, they are displayed in order of priority. Only the error with the highest priority is displayed.

In addition to the fault code, there is a visual (red LED) and acoustic (beep) alarm warning.

11. Ordering Information

Designation	Part No.
<i>alphaSCOUT</i> complete with batteries, <i>alphaTAG</i> and carabiner hook	10058213
<i>alphaSCOUT TM</i> complete with telemetry module, <i>alphaTAG</i> and carabiner hook	10058212
Protective cover for <i>alphaSCOUT</i> display (pack or 10)	10068301
Rubber cover <i>alphaSCOUT</i> spare	10068302
Reset button <i>alphaSCOUT</i> (pack of 10)	10054723-SP
Mode button <i>alphaSCOUT</i> (pack of 10)	10054724-SP
Battery seal <i>alphaSCOUT</i> (pack of 10)	10054722-SP
Battery cover, <i>alphaSCOUT</i> (5 pieces)	10095679
Carabiner hook and pin <i>alphaSCOUT</i> (pack of 5)	10069159-SP
Support bracket for <i>alphaSCOUT</i> (10 pieces)	10065874
<i>alphaHUD</i> (complete with battery)	10086118
Battery compartment cover for <i>alphaHUD</i>	10092243
Spare batteries for <i>alphaHUD</i> (pack of 5)	10087974
<i>alphaTAG</i> (5 pieces)	10065873
<i>TAGwriter</i> incl. USB cable	10065875
<i>alphaBASE</i> standard, incl. power supply unit, USB cable and software	10058214
External aerial with magnetic foot (optional for <i>alphaBASE</i> standard)	10070847
<i>alphaBASE</i> battery powered, incl. battery, charger and software	10070795
xplore TABLET PC , suitable for daylight	10068805
<i>alphaMITTER</i> to refit to AirMaXX SL	10058211
<i>alphaMITTER</i> to refit onto BD 96 SL [Q]	10069803
High pressure line <i>alphaMITTER</i> spare	10068185-SP
<i>alphaMITTER</i> U-clip, long; 23,5 mm; spare (10 pieces)	10068183-SP
Cover <i>alphaMITTER</i> spare (pack of 5)	10103576-SP
Screws M3x8, ICU, <i>alphaMITTER</i> ,Scout (40 pieces)	10090402
Seal <i>alphaMITTER</i> (pack of 10)	10068159-SP
<i>alphaMITTER</i> clamping piece (5 pieces), (includes screws)	10095871
xplore TABLET PC car mounting kit, incl. power supply unit 12/24 V DC	10070562

Designation	Part No.
xplore TABLET PC with alphaBASE (battery powered) in rugged case, with accessories	10076041
PC software: alphaCONTROL	10126876
Labels for alphaTAG (10 sheets of 42 labels)	10071717

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