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For Your Safety

This User Instruction for the **DrägerMan PSS® Merlin®** Telemetry System must be used in conjunction with the User Instruction supplied with the **DrägerMan Sentinel** Series electronic signal and warning unit and the associated self contained respiratory protection apparatus (SCBA).

General

- Use of the equipment requires training and observance of this User Instruction together with User Instruction supplied with the associated equipment.
- Use the equipment only for the purpose as specified in this User Instruction or as confirmed in writing by Dräger.
- Only trained competent personnel should inspect and service the equipment at regular intervals and a record kept of such inspections and service.
- Dräger recommends a service contract be obtained from your Dräger branch or Agent.
- Contact Dräger for details of Service Contracts and Training Courses.
- Notify Dräger if there is a component fault or failure.
- Use only original Dräger Spare Parts for service and maintenance.
- Use only Dräger Test Equipment for service and maintenance.
- The Merlin ECB and Portable Unit meet the FCC requirements regarding exposure of human beings to radio frequency radiation. Occupational/Controlled limits apply when persons are exposed to radio frequency radiation as a consequence of their employment provided these persons are fully aware of and exercise control over their exposure. Awareness of exposure can be accomplished by use of warning labels or by specific training or education through appropriate means, such as an RF safety program in a work environment.

Warning: All electronic devices may suffer from a temporary loss of function, e.g. during high levels of RF radiation. Following a temporary loss of function with the DrägerMan Entry Control Board (ECB), the microprocessor will reset and record this event as an 'ECB Reset' in the datalog. Any displayed alarm LEDs will be cleared. All previously 'Logged On' data radio units will be automatically re - 'Logged On'. Full operational and functional features will reactivate and the ECB will continue to operate with no loss of performance. It should be noted that up to 15 minutes of datalog events could be deleted.

Power Packs

Used power packs

- **Do Not** Incinerate – risk of explosion.
- **Do Not** puncture the battery casing – risk of explosion.
- Special waste disposal – according to local waste disposal regulations. Information on this subject should be available from the local environmental and regulatory agencies and waste disposal companies.

Liability Statement

Responsibility for reliable function of this equipment and any approved ancillary units transfers to the owner or operator when the equipment is serviced, or repaired by untrained personnel, (not employed or authorised by Dräger) or when used in a manner not conforming to its intended use.

Dräger cannot be held responsible for damage caused by non-compliance with the recommendations given above.



The Warranty and Liability provisions of the Terms of Sale and Delivery are likewise not modified by the recommendations given above.

Changes or modifications to the equipment not expressly approved by Dräger Safety could void the user's authority to operate the equipment.

Introduction

When the decision is taken to use self-contained respiratory protection apparatus (SCBA) in a life threatening hazardous environment, it is essential that an effective control procedure is in place to manage, monitor and safeguard the wearer of the equipment.

In the United Kingdom, the Technical Bulletin – Breathing Apparatus/Command and Control Procedures, together with the Manual of Firemanship, provide guidance for Fire Authorities and Firefighters in the introduction, application and management of a risk based approach to the wearing of breathing apparatus.

The **DrägerMan PSS® Merlin®** Telemetry System package further enhances and supports these control procedures by providing a means of remote 2way digital data and alert status communication between the wearer of the self contained respiratory protection apparatus and an external support control module.

To achieve this communication, the **DrägerMan PSS® Merlin®** Telemetry System modules (Entry Control Board and Data Radio Unit) interface with the **DrägerMan Sentinel** Series electronic signal and warning unit fitted to the self contained respiratory protection apparatus.

It is important to be aware that communication can be affected by a breakdown in the transmission signal due to extremes of application scenarios such as long distance, building construction, below ground structures etc. Dräger offer the **DrägerMan Repeater**, which is a system module option designed to provide a means of enhancing the signal effectiveness in harsh environments. Contact Dräger for details.



Description and Intended Use

The Entry Control Board

The **DrägerMan PSS® Merlin®** Entry Control Board (ECB) is a battery-powered unit incorporating an integral digital radio transmitter and receiver with associated antenna. The ECB has twelve channel slots each able to accept the encoded tally of an individual Data Radio Unit. Inserting the tally activates the transmission link monitoring capability between the ECB, the Data Radio Unit and the **DrägerMan Sentinel** Series electronic signal and warning unit combination.

Entry Control Boards are individually programmed with a unique identity code (e.g. Fire Brigade Identity Code or a User Code) together with the allocated Board Identification (ID) Number.

The data transmission link (Log On) between the Entry Control Board and each Data Radio Unit and Sentinel combination is activated following the insertion of an encoded transponder 'Tally Key' into any of the available channels of the board. The 'Tally Key' is encoded with the same codes as the corresponding Data Radio Unit.

The ECB identifies the associated Data Radio Unit/Sentinel combination and the On-Line radio icon illuminates (Green) continuously, confirming a successful radio link with the Sentinel. The individual channel screen defaults to show the actual 'Time of Whistle' information.

At an incident, the use of the Entry Control Board (ECB) is normally the responsibility of an Entry Control Officer (ECO). The ECO must ensure that agreed control procedures are in place to manage, monitor and safeguard the wearer of the breathing apparatus.

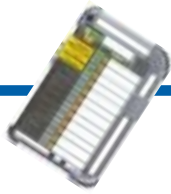
To support any possible requirement for incident analysis information, the ECB stores and maintains an 'Event Log' (datalog) that can be downloaded to a computer. Contact Dräger for full details of associated software.

For positive and secure support of the ECB at and during an incident a support bracket is available (see order list) for fitment to a tripod unit.

Receiving Information

The On-line Signal radio icon illuminates (Green) at each channel of the ECB indicating satisfactory radio contact with the associated Data Radio Unit and Sentinel combination.

The 'Time of Whistle' (TOW) default shown on the individual channel screens is calculated automatically by the ECB by adding the initial TTW value transmitted at the initial Log On of the Sentinel, to the actual time shown on the real time clock of the ECB.



The following additional on going data is communicated to the ECB every 20 seconds from each 'Logged On' Data Radio Unit and Sentinel combination:

- Time to Whistle (TTW).
- Pressure.
- Temperature of the Sentinel.

By pressing the information button of the ECB, a controller is able to scroll between the Time of Whistle, Time to Whistle, Pressure, and Temperature. The Time to Whistle information is the default data displayed on the Sentinel.

Additionally, the Time Elapsed from activating the Sentinel to 'operational mode' can be displayed.

The above information is displayed on the individual channel screens of the ECB and the defaults and data sequence can be configured to meet the requirement of the end user. Contact Dräger for details.

Additional alert status signals received from the Data Radio Unit are:

- Automatic Distress Signal Unit (ADSU) alarm signal – movement sensor.
- Manual Distress Signal – panic button.
- Voluntary Withdrawal.

Each of these signals is differentiated and identified on the ECB by separate illuminated icons.

Transmitting Information

The ECO is able to activate the following transmissions from the Entry Control Board to each 'Logged On' Data Radio Unit:

- Acknowledgement of a Voluntary Withdrawal transmission from the Data Radio Unit.
- Selective Evacuation - evacuation command to a specific Data Radio Unit or Units (team).
- Evacuation Signal – simultaneous evacuation command to all 'Logged On' Data Radio Unit.
- Acknowledgement of ADSU or Panic Alarm.

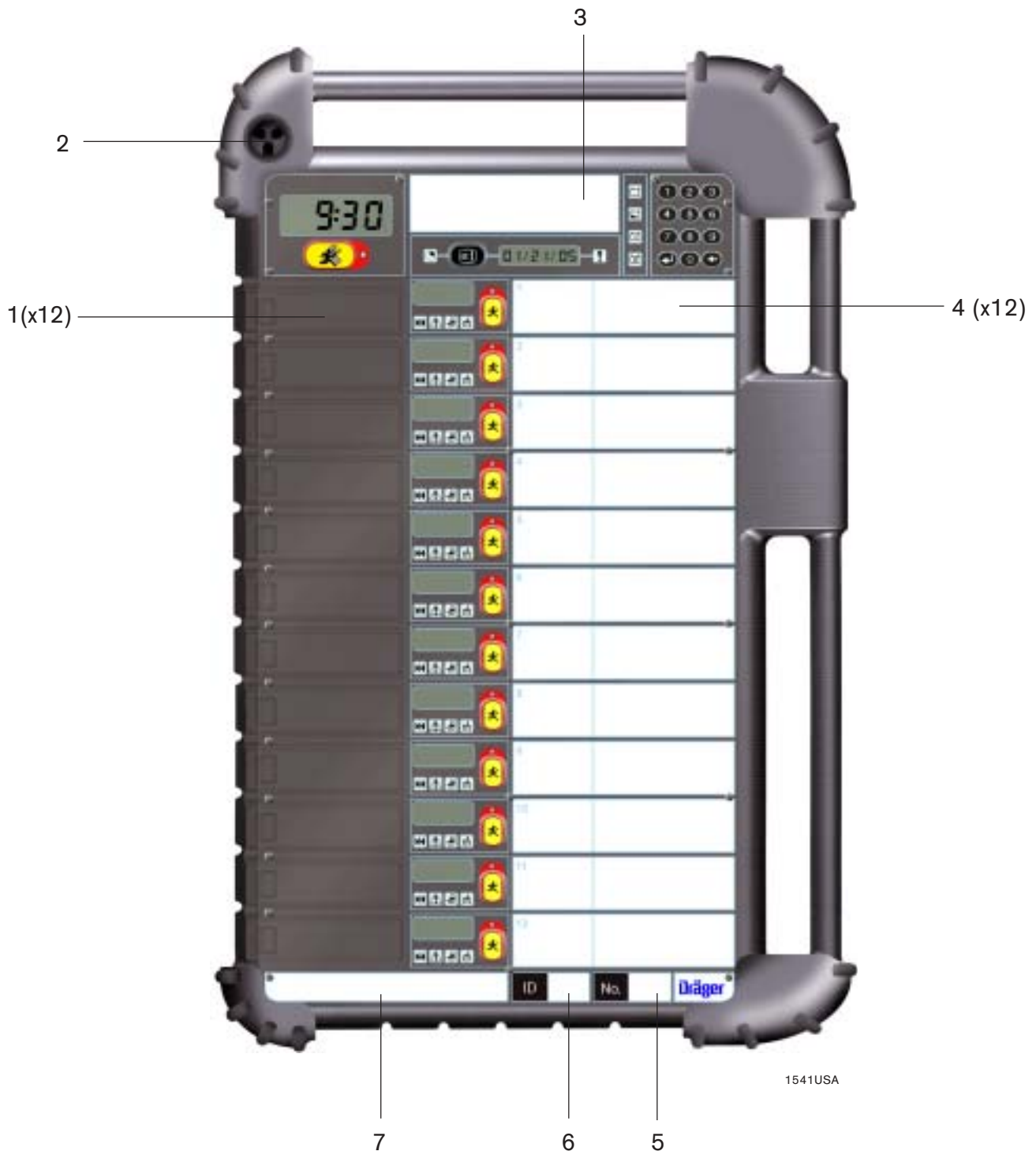
Manually Recorded Information

Adjacent to each of the channel screens is rectangular white panel areas. Using a waterproof marker (e.g. China Graph Pencil), these can be used to record any relevant data regarding any individual or defined teams, e.g. location of the wearer, location of the team, team reference etc.

If required the board can be photographed to provide any evidential requirement of an incident.



Entry Control Board - Front



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- 1 Tally Channel Slot
- 2 Audible Alert Sounder
- 3 Clear label (marker or slide in label)
- 4 Remarks Panel
- 5 Label - Board Identification Number
- 6 Label - User Identification Number
- 7 Clear Label (marker or slide in label)



Detail of Elements



LCD Time Clock Display Screen

Evacuation Button - All - Red



LED Display - Distress Signal from non logged on device - Red

LCD - Display Status Data Screen

Information Button - Display Status

Default - Time of Whistle (TOW)
or - Time to Whistle (TTW) - Green



LED Display - Charging - Green

LED Display - Low Battery - Amber

LED Display - Battery 1 - Fail - Red

LED Display - Battery 2 - Fail - Red



Numeric Key Pad

Backspace Key Function

Enter Key Function



LCD Display - SCBA Information

Single Evacuation/Acknowledgement Button

LED Display - Online Signal - Green

LED Display - Withdrawal Alert - Amber

LED Display - Panic Button Alarm - Red

LED Display - ADSU (Motion) Alarm - Red

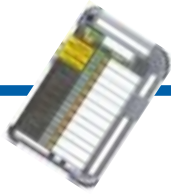


Entry Control Board - Back

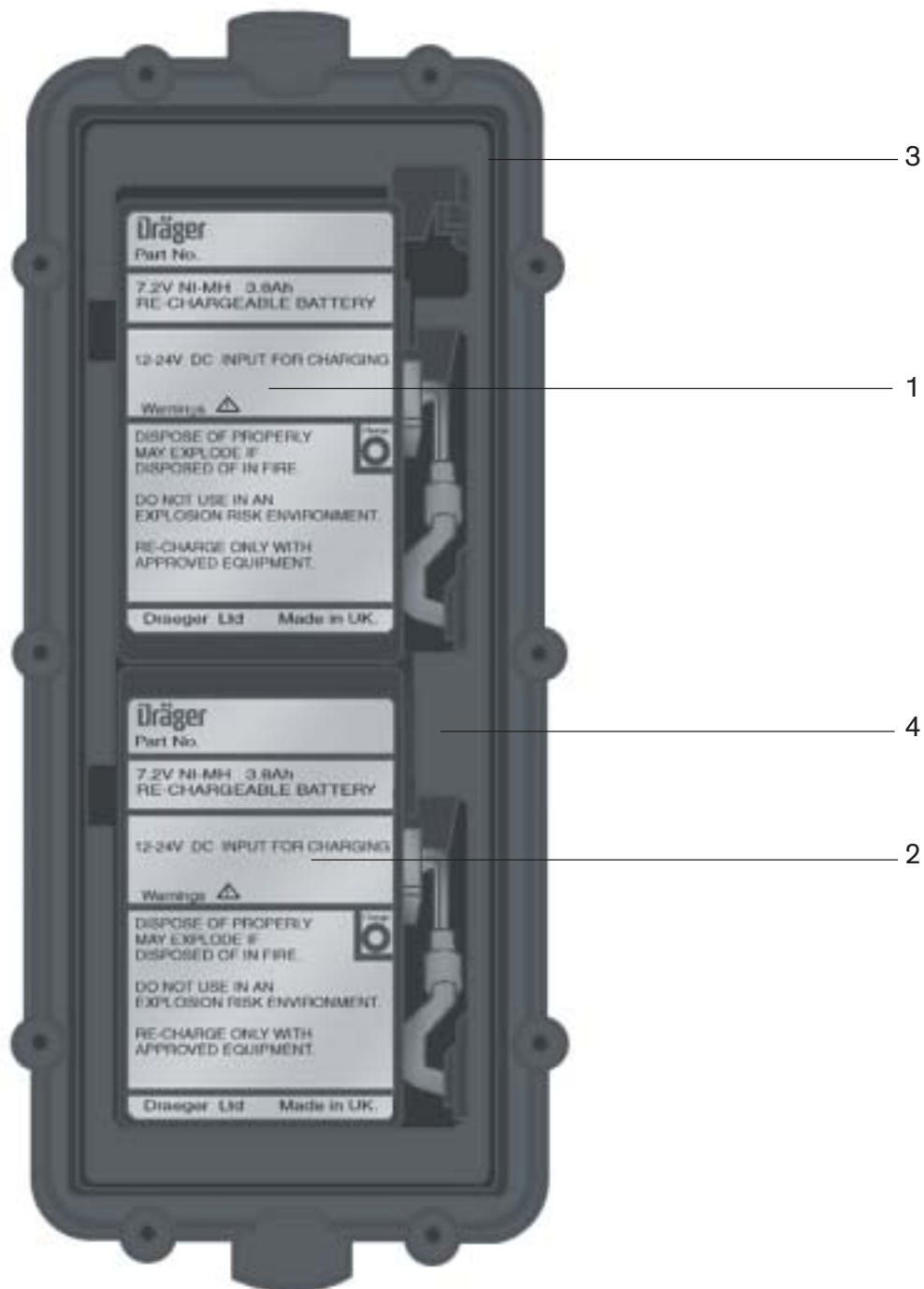


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- 1 Battery Cover
- 2 Connector - Charging
- 3 Connector - External Antenna



Battery Compartment



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- 1 Battery 1
- 2 Battery 2
- 3 Gasket
- 4 Foam Insert



The Data Radio Unit

The **DrägerMan PSS® Merlin®** Data Radio Unit is a battery-powered unit incorporating an integral digital radio transmitter and receiver with associated antenna. A cable and connector from the radio module connects to an infrared interface to a **DrägerMan Sentinel**. The integrated assembly is able to transmit data to communicate audible and visual alarm signals to the associated **DrägerMan PSS® Merlin®** Entry Control Board.

The radio of the Data Radio Unit is programmed with an identification code for the unit (radio) together with a unique identity code (e.g. Fire Brigade Identity Code or a User Code).

Supplied with each Data Radio Unit is a matching transponder 'Tally Key' that is encoded with the same codes as the corresponding Data Radio Unit. A label on the 'Tally Key' identifies the users identification code for the corresponding radio.

Included on the 'Tally Key' are markings with spaces that allow the following information to be added to the tally using a suitable waterproof marker:

1. The name of the wearer.
2. The cylinder contents pressure on activation of the Sentinel is shown.
3. The actual 'Time In' to the risk area – shown on the clock of the Entry Control Board.

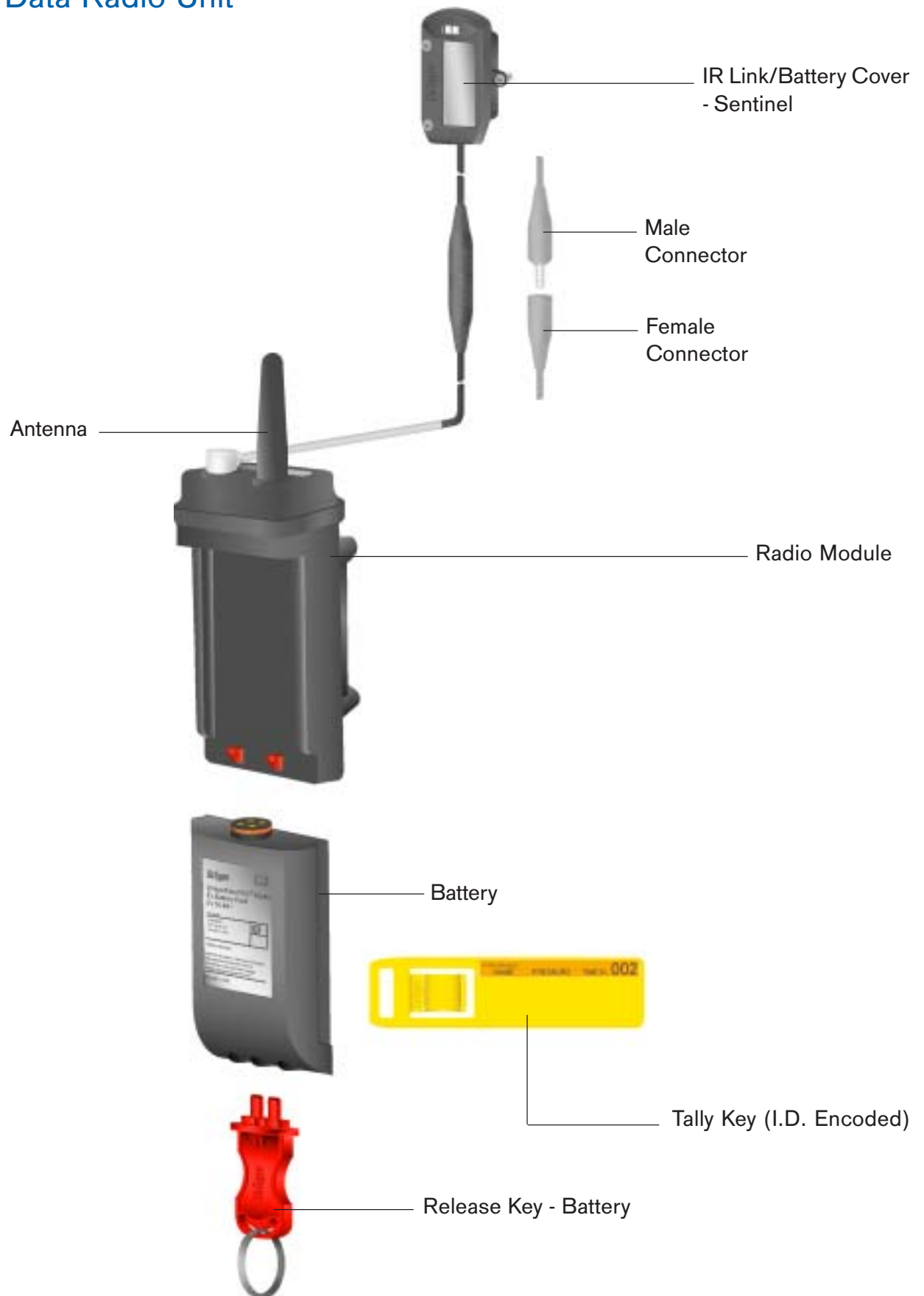
In the case of incidents where a possibility of radiation risk may be present, a Dosimeter reading (prior to entry and after exit) may be recorded if necessary on the reverse side of the tally.

When the 'Tally Key' is inserted into any of the available channels of the Entry Control Board, the ECB identifies the associated Data Radio Unit/Sentinel combination and the digital communication link is activated. The 'Green' and 'Red' LEDs of the IR Link Unit on the rear of the Sentinel 'flash' intermittently.

A release key is available to unlock and detach the battery pack from the radio module.



The Data Radio Unit



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Getting Started

The Entry Control Board

Power Supply

The battery compartment at the rear of the entry control board (ECB) provides space for two 7.2V rechargeable nickel hydride (NiMH) batteries each running in parallel and providing 3.8Ah of power. Continuous operating time is a minimum of 8 hours between recharge.

If necessary the ECB can be operated with the charging connector in place and connected to an independent power source.

Charging the Batteries

The Entry Control Board is supplied without the batteries charged or fitted. A screw-lock connection plug is provided in the recess in the rear panel of the entry control board to charge the batteries when they are assembled in the board.

Important Note: The battery must be charged before initial use.

The batteries can however be charged individually. Refer to the Service Instructions - Fitting/Removal of the batteries.

The following charging accessories are available:

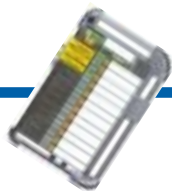
- Universal Power Supply (AC) Pack
- Power Cord for Universal Power Supply (AC) Pack connection.
- Charging Lead including screw adaptor and with socket for jack plug (direct to ECB).
- Charging Lead including twin plug adaptor and with socket for jack plug (direct to battery).

Refer to the label attached to the Universal Power Supply (AC) to check that the electrical main supply voltage corresponds to the specified voltage requirement indicated on the label.

Important Note: The temperature of the battery is measured by a thermistor in the battery cell. To protect the battery, the charging process will stop if the temperature of the battery is below 32°F (0°C) or exceeds 113°F (45°C).

Optional charging kits are available for use with vehicle charging installations. Contact Dräger for details.

Safety Note: Charging units are not approved to the same intrinsic safety standard as is applied to the wearer Data Radio Unit. Do Not attempt to charge batteries underground or in an area designated as, or subject to an explosion hazard.



Charging Procedure – Single Battery

- Connect the plug adaptor of the charging lead to the battery. The Green charge LED on the front panel of the battery will illuminate.
- When the LED begins 'flashing' —■—■—■—■— this indicates either:
 1. Full 14 hour charge has been applied OR
 2. Main charging has been suspended due to the battery cell temperature being either below 32°F (0°C) or above 113°F (45°C).
- After charging, press and hold the release tab of the connection plug adaptor of the charging lead and remove the plug from the battery connector. See the Service Section for instructions on fitting and removing the battery.

Note: The battery can remain connected to the charger without any damage to the battery.

Charging Procedure – ECB

- Refer to the Service Instructions - Fitting/Removal of the batteries.
- Unscrew the protective cap from the charging connection then connect the screw adaptor of the charging lead.
- During charging, the Green LED  on the front panel will illuminate continuously and the date display changes to indicate the level of charge as shown by a series of 'dash/dot' elements.
- A 'flashing' LED —■—■—■—■— indicates a full charge, and the number of 'dash - dot' elements provide an indication of the level of charge, e.g. eight 'dash/dot' elements indicate 100% charge. Disconnect the screw adaptor of the charging lead and refit the protective cap

Important Note: If only six or less 'dash/dot' elements are shown at the end of the charge, this indicates that one or both batteries are in suspect condition. Replace both batteries.

Note: The ECB can remain connected to the charger without any damage to the batteries. If necessary the ECB can be operated (telemetry mode) with the charging connector in place when connected to an independent power source. In telemetry mode the charging will be suspended and the Green LED 'flashes'.

Important Note: The red LED  or  will illuminate identifying a 'Failure' of the appropriate battery. Replace the indicated faulty battery. Failure could also indicate that the battery is not connected, not connected correctly or the connecting cable is defective.



Sleep Mode

When the entry control board is not in use, i.e. 'Sleep Mode', the two screens at the top of the ECB will continuously display the Time and Date information.

Both the Time and Date can be reset as described in the Service Section.

In 'Sleep Mode', it is also possible to access the charge condition indicator for the battery pack. See the following instruction.



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Charge Condition Indicator

- With the ECB in 'Sleep Mode' - press and hold the information button . The date display changes to show the level of charge as indicated by a series of 'dash/dot' elements.

e.g. eight elements indicate 100% charge.
four elements indicate 50% charge.

- Release the information button . The display will change to show the date information.



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The Data Radio Unit

Power Supply

Important Note: Refer to the User Instructions for the DrägerMan Sentinel for instructions on fitting/replacing the battery of the Sentinel.

The Data Radio Unit is powered from a single 6.5V rechargeable nickel hydride (NiMH) battery. Continuous operating time is approximately 8 hours between recharge.

Charging the Battery

The Data Radio Module is supplied without the battery charged or fitted. The battery must therefore be charged before initial use.

Safety Note: The charging unit is not approved to the same intrinsic safety standard as is applied to the Data Radio Unit. Do Not attempt to charge the battery underground or in an area designated as, or subject to explosion hazard.

The following charging accessories are available:

- Universal Power Supply (AC) Pack
- Power Cord for Universal Power Supply (AC) Pack connection.
- Multi-Charger Module with socket for jack plug (four batteries per module).

Refer to the label attached to the Universal Power Supply (AC) to check that the electrical main supply voltage corresponds to the specified voltage requirement indicated on the label.

Important Note: The temperature of the battery is measured by a thermistor in the battery cell. To protect the battery, the charging process will stop if the temperature of the battery is below 14°F (5°C) or exceeds 104°F (40°C).

When the charged battery is connected to the Data Radio Unit, the 'Green' LED of the IR Link Unit on the rear of the Sentinel, momentarily illuminates indicating satisfactory contact.

Optional charging kits are available for use with vehicle charging installations. Contact Dräger for details.



Charging Procedure – Battery

- Connect the jack plug of the AC Adaptor to the multi-charger module.
- Insert the battery into an available pocket. The associated LED on the panel will illuminate continuous 'Green' indicating commencement of main charging.

Important Note: If the LED 'flashes red' —■—■— (‘charge pending’) this indicates,

1. The battery is in a state of very low charge.
Continue charging until main charging starts.
2. The temperature of the battery is below 41°F (5°C) or exceeds 104°F (40°C).

- When the 'Green' LED begins 'flashing' —■■—■■— this indicates a fully charged battery pack. Remove the battery and assemble the battery to the Data Radio Module. See the Service Section for instructions on fitting and removing the battery.

Note: *The battery can remain connected to the charger without any damage to the battery.*



In Use

An Entry Control Officer (ECO) is a competent person nominated to control and monitor an Entry Control Board (ECB) and to direct and instruct all wearers of Breathing Apparatus (SCBA) at an incident.

A safe and secure entry control point (ECP) for the ECB should be established from which the ECO is able to effectively control the adopted procedures. At this point the ECB can be mounted to a tripod to provide positive support and ease of use at an incident.

The operational control procedures adopted should be in line with the requirements defined by the user or by national legislation in the country of use. In the case of professional users, e.g. Fire Brigades, these guidelines are in addition to their own guidelines for command and control procedures.

The following instructions cover the basic operational procedures and the In Use functional features of the [DrägerMan PSS® Merlin®](#) Telemetry System.

Pre – Entry Procedure

The Data Radio Unit - SCBA

- Having put on the SCBA and carried out all functional checks as described in the User Instructions for the apparatus, the Wearer should activate the Sentinel to 'operational mode'. The 'Green' LED on the front of the Sentinel flashes at one-second intervals and the 'Red' LED on IR Link cover also flashes. The wearer is now available for entry to the risk area.



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Note: When the Sentinel is activated to operational mode, this 'Wakes Up' the radio of the Data Radio Unit into 'stand by mode' waiting for a signal from the entry control board, i.e. Log On request .



The Entry Control Board - Making Contact

- With the Sentinel activated in 'operational mode' the wearer of the SCBA must pass the encoded 'Tally Key' to the ECO with the following information written on the tally using a suitable waterproof marker;

1. The name of the wearer.
2. The cylinder contents pressure – shown on the Sentinel.

If necessary, the ECO can check that the radio identification number on the label of the tally corresponds to the radio identification number on the label of the data radio module. Using a suitable waterproof marker, the ECO can then write and record the following remaining data onto the tally;

3. The actual 'Time In' to the risk area – shown on the clock of the Entry Control Board.

Note: *In the case of incidents where a possibility of radiation risk may be present, a Dosimeter reading (prior to entry and after exit) may be recorded on the reverse side of the tally.*

- The ECO fully inserts the 'Tally Key' into an available channel slot. The following rapid automatic activation and transmission sequence starts;

1. The ECB immediately 'Wakes Up'. A double sharp 'Bleep' sounds.

Note: *The double sharp 'Bleep' sounds only when the first tally is inserted.*

2. A sensor in the selected channel reads and verifies the code in the transponder of the tally.
3. The radio in the ECB transmits a signal to the same coded Data Radio Unit requesting to 'Log On' the unit onto the ECB.
4. The Data Radio Unit transmits an acknowledgement signal to the ECB.
5. The ECB receives the 'Log On' acknowledgement – the data exchange starts.
6. The initial TTW value transmitted from the Sentinel is added to the actual time shown on the real time clock to determine the 'Time of Whistle' (TOW).
7. The ECB starts the 'Time Elapsed' count (minutes).

Note: *If the ECB is defaulted to show TTW, the ECO should observe the time to whistle (TTW) reading of the associated Sentinel display and add this time (minutes) to the 'Time In' to establish an estimated 'Time of Whistle' (TOW). Using a suitable waterproof marker, the estimated 'Time of Whistle' should be recorded in the rectangular white area on the control board adjacent to the selected channel slot in the ECB or over the tally area.*



- During the 'Log On' sequence the following visual changes take place on the ECB and the Sentinel:

- The channel screen momentarily displays the data radio identification number, followed by the time count display (E :00), then changes to the default - 'Time of Whistle' (TOW).

Note: The time to whistle (TTW) value is shown in the display of the Sentinel.

- The On-Line data radio  icon illuminates 'Green' continuously, confirming a successful radio link with the Sentinel.

Important Note: If the channel screen momentarily shows a Fault Code 'Et' then changes to E :00 display, the 'Log On' has been unsuccessful and initially indicates a defective transponder in the tally. Refer to the next section - Making Contact – Manual.

- The date display changes to show a series of 'dash/dot' elements that provide an indication of the charge condition of the batteries.
e.g. eight elements indicate 100% charge.

- The 'Green' and 'Red' LED's of the IR Link Unit on the rear of the Sentinel 'flash' alternately confirming:

- a successful radio link with the ECB - flashing 'Green'.
- a satisfactory charge condition of the Data Radio Unit battery - flashing 'Red'.



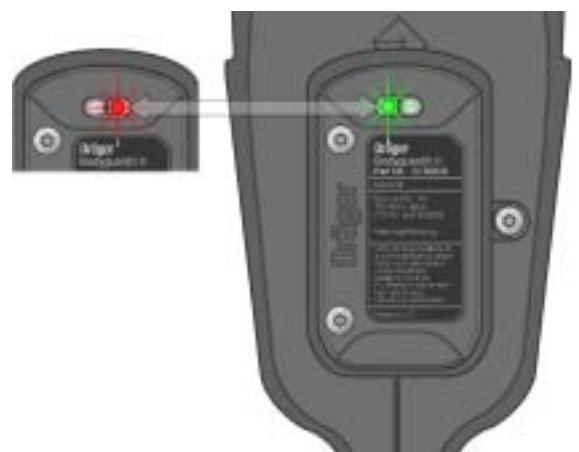
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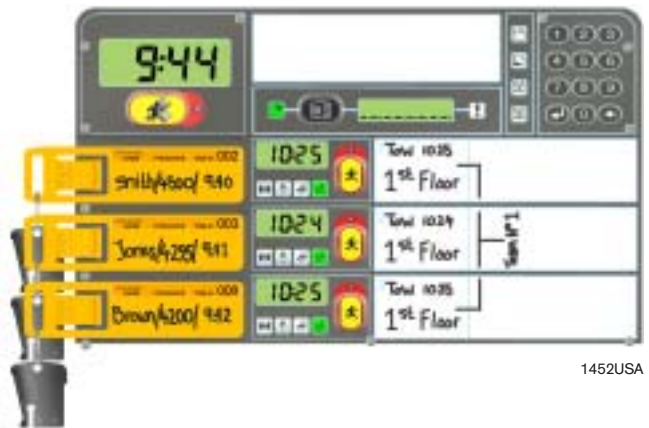


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Note: An intermittent short 'flash' Off of the Red LED  signals a low charge condition of the radio battery. Fit a fully charged battery.



- This Log On procedure can be repeated to achieve a Log On of up to a further eleven wearers (Data Radio Units) to the remaining channel slots.
- The wearer is now released for entry to the risk area.

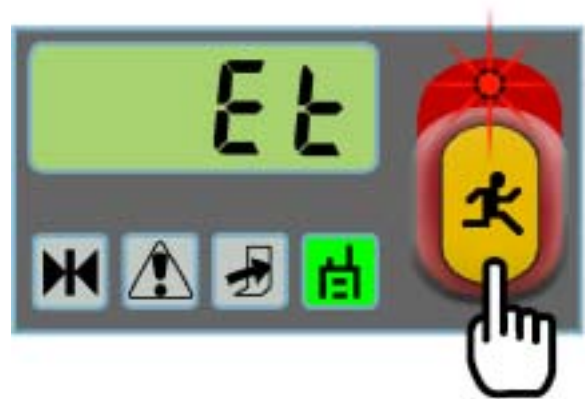


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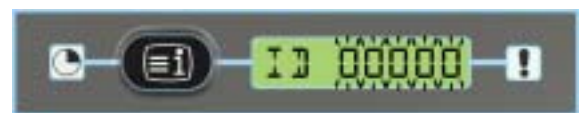
Making Contact - Manual

An unsuccessful 'Log On' identified by an initial momentary display of the fault code 'Et' followed by the display changing to E :00 (time count), indicates a probable defective transponder in the tally. A single audible 'Bleep' alarm is emitted until the manual 'Log On' is started. To manually start the activation and transmission sequence to 'Log On' the Data Radio Unit/Sentinel combination to the ECB the following procedure should be followed.

- To acknowledge the 'Et' Fault Code, press the channel evacuation key . The 'Red' LED above the button icon will illuminate and begin flashing. The main display will change to show 'ID 00000' with the numeric characters 'flashing'.
- Refer to the label of the tally, or the label of the data radio module to confirm the data radio code. Enter the data radio code by pressing the appropriate numeric keys of the keypad. The numeric characters will stop 'flashing' and the ID will change from the right as the numbers are entered.

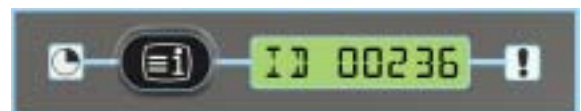


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Example Code



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Note: Commence input of the radio code beginning with the first whole number – ignore the prefixed zero(s).

- When the data radio code is entered, check again that the displayed code corresponds to the code shown on the label of the tally, or the label of the data radio module. If incorrect, use the backspace key to delete the incorrect digit(s) then proceed to input the correct number(s). When the codes match, press the key. The following visual changes take place on the board and the Sentinel:



1. The channel screen displays momentarily the radio identification number and then changes to 'Time of Whistle' (TOW).

Note: *The time to whistle (TTW) value is shown in the display of the Sentinel.*

2. The On-Line radio icon  illuminates 'Green' continuously, confirming a successful radio link with the Sentinel. Refer to Important Note.
3. The 'Green' and 'Red' LED's of the IR Link Unit on the rear of the Sentinel 'flash' intermittently, confirming a successful radio link with the ECB.

- The wearer is now released for entry to the risk area.

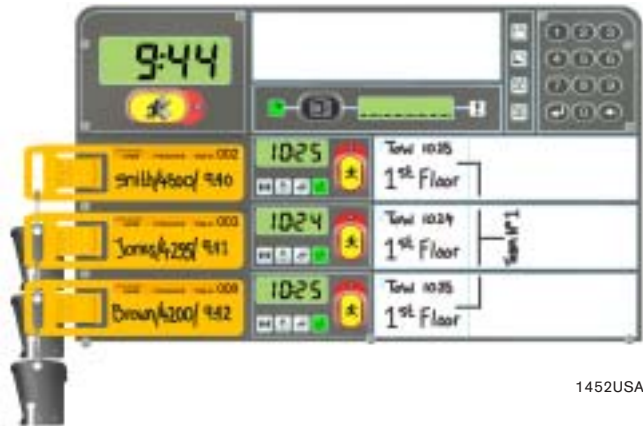
Important Note: Following the incident and after Log Off, a faulty tally must be reported and replaced as soon as possible.



In Use

Monitoring Data – Entry Control Board

Updated data is received every 20 seconds from each 'Logged On' Data Radio Unit and is displayed on the associated channel screen of the ECB. The 'Time of Whistle' information (as shown) is the standard default data displayed and the clock icon  display illuminates 'Green' continuously.



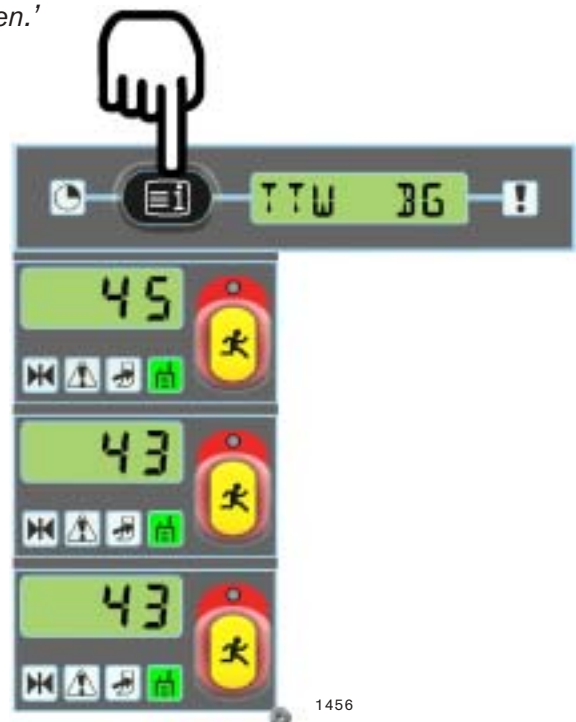
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The following additional data is available to the controller:

- Time to Whistle.
- Pressure.
- Temperature of the Sentinel.
- Time Elapsed.
- etc. Contact Dräger for more details

By repeatedly pressing the information key,  within 10 seconds of each data change, the controller is able to scroll between the standard default 'Time of Whistle' (TOW), and the above data, for all active channels. After 10 seconds, all the active channel screens will default back to Time of Whistle. A single sharp audible 'Bleep' signal sounds each time the key is pressed.

Note: The clock icon  illuminates only when the default time display is shown, i.e. 'Time of Whistle', or 'Time to Whistle' data is displayed on the channel screen.'

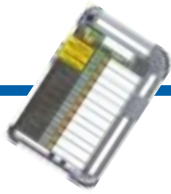


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Time to Whistle

- Repeatedly press and release the  key until the information screen shows 'TTW BG' (time to whistle of the Sentinel).

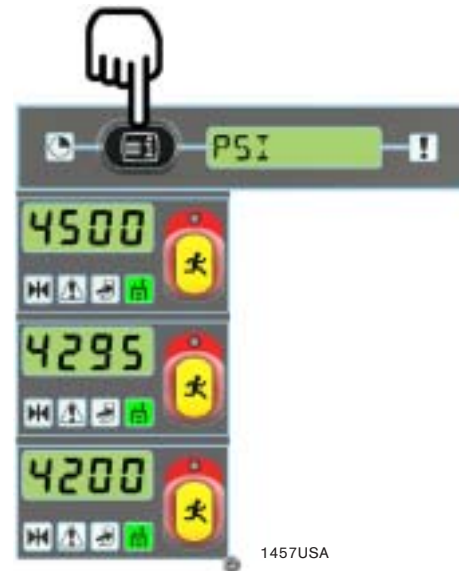
All the active channel screens change to show the actual time to whistle status for each of the logged on portable units. After 10 seconds, all the active channel screens will default to Time of Whistle.



Pressure

- Repeatedly press and release the  key until the information screen shows 'PSI' (pressure).

All the active channel screens change to show the actual pressure status for each of the logged on Data Radio Unit. After 10 seconds, all the active channel screens will default to Time of Whistle.

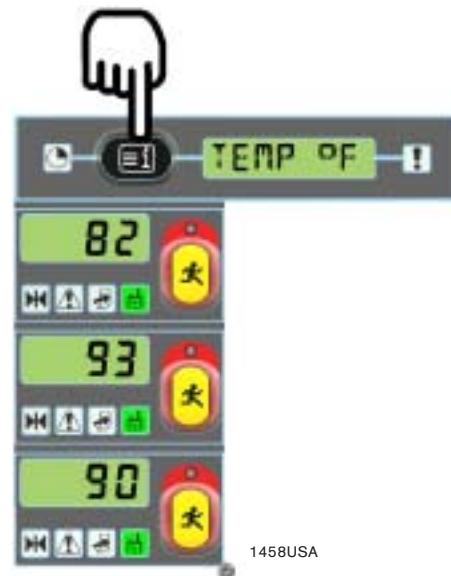


1457USA

Temperature

- Repeatedly press and release the  key until the information screen shows 'TEMP °F' (temperature °F of the Sentinel).

All the active channel screens change to show the temperature status for each of the logged on Sentinels. After 10 seconds, all the active channel screens will default to Time to Whistle.

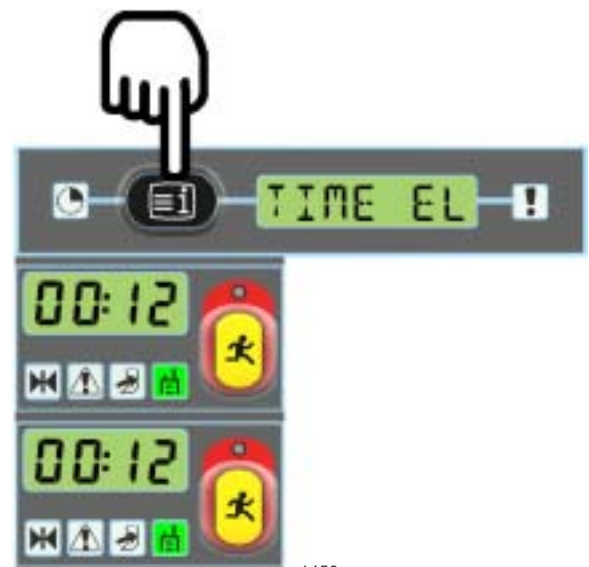


1458USA

Time Elapsed

- Repeatedly press and release the  key until the information screen shows 'TIME EL' (actual time elapsed since activation of the Sentinel).

All active channel screens change to show the actual time elapsed for each of the logged on Data Radio Units. After 10 seconds, all the active channel screens will default to Time of Whistle.



1459



Whistle Warning Activation

An audible and visual warning signal is available on the ECB that will alert the ECO of the imminent activation of the whistle warning of a 'Logged On' Sentinel.

Unless otherwise requested at the commissioning process, this first alarm default activates 10 minutes before the activation time of the whistle.

The ECO is also alerted to the actual activation of the whistle warning of the Sentinel.

Both alarms are recognised by a single double 'Bleep' and the associated channel display continuously 'flashing'.

Note: *During the commissioning process it is possible to program the first alarm timing to meet customer requirement.*



In Use - Communication

From ECB to Sentinel

Evacuation Signal - Selective

This procedure allows the ECO to select and signal to a specific logged on Data Radio Unit, or a designated number of units (team), to evacuate the risk area and return to the control point.

- ECO - Press and hold the selected channel evacuation key  until the 'Red' LED above the button illuminates and begins 'flashing', and a double sharp 'Bleep' is emitted indicating the signal is being transmitted. If required repeat this sequence for any additional units.
- Sentinel – The selected unit(s) will emit a repeating audible 'Bleep' alarm and the 'running man' icon will appear in the display of the Sentinel.

To acknowledge the evacuation request the wearer must press the RH button of the Sentinel – a single 'Bleep' is emitted. Immediately release the button and the display will change to 'operational mode'.

- ECO – On acknowledgement of the evacuation signal from the wearer, a short 'trill' alarm is activated on the ECB. The 'Red' LED above the button stops 'flashing' and illuminates continuously indicating that the signal has been received and acknowledged by the selected Sentinel. The 'Red' LED will remain illuminated.



1460



1461USA



1448USA

Note: This sequence can be repeated as many times as required until the wearer has returned to the control point.



Evacuation Signal – All

This procedure allows the ECO to signal to 'All' logged on Data Radio Units to immediately evacuate the risk area and return to the control point.

- ECO - Press and hold the evacuation key  until the 'Red' LED above the button illuminates and begins 'flashing', and a double sharp 'Bleep' is emitted. The 'Red' LED above the button of each of the 'logged on' units will also begin 'flashing' indicating the signal is being transmitted.
- Sentinel – All units will emit a continuous audible 'Bleep' alarm and the 'running man' icon will appear in the display of the Sentinel.

To acknowledge the evacuation request each wearer must press the RH button of the Sentinel – a single 'Bleep' is emitted – immediately release the button the display will change to 'operational mode'.

Important Note: If the 'running man' icon reappears, again press the RH button. The display will change to 'operational mode'.

- ECO – On acknowledgement of the evacuation signal from each wearer a short 'trill' alarm is activated on the ECB. The 'Red' LED above the evacuation key  of each acknowledged channel will stop 'flashing' and illuminate continuously indicating that the signal has been received and acknowledged by the selected Sentinel.

The 'Red' LED to the right of the evacuation button  will remain 'flashing' until the evacuation request has been acknowledged by all logged on units.



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From Sentinel to ECB

Voluntary Withdrawal Signal

Should the wearer of the breathing apparatus make a decision to withdraw from an incident, a signal can be transmitted to the ECB by pressing and holding the RH button of the Sentinel until the radio icon  is displayed. On observing the radio icon, the wearer should release the RH button. The display of the Sentinel will change back to 'operational mode'.

- ECB – The voluntary withdrawal icon  of the associated channel will begin 'flashing' (Amber) and an intermittent alarm will sound indicating that the signal has been received from the Sentinel.
- ECO – Having been alerted, and the wearer identified, the ECO can confirm the alarm by pressing the  button of the appropriate channel. The sounder alarm stops, the alarm icon  stops 'flashing' and illuminates continuously indicating that the signal has been received and acknowledged.
- Sentinel– On acknowledgement from the ECO the Sentinel emits a short audible alarm, during which time the radio icon  is displayed. When the alarm stops the display of the Sentinel will change back to 'operational mode'.

Note: This sequence can be repeated as many times as required by the wearer.



1463USA



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Distress Signal (Automatic – ADSU) - Motion Sensor

Refer also to the User Instructions for the Sentinel.

A motion sensor is incorporated in the Sentinel. If movement is not detected for 23 seconds, the instrument emits an audible 'pre-alarm' to the wearer (not to the ECB). This alarm is automatically cancelled if movement is detected within a further 8 seconds.

If no movement is detected after the 8 seconds of 'pre-alarm' then a higher level 'main alarm' is activated. The screen of the Sentinel displays the motion icon  and a signal is transmitted to the ECB.

- ECB – The motion alarm icon  of the associated channel will begin 'flashing' (Red) and an intermittent alarm will sound indicating that the signal has been received from the Sentinel.



- ECO – Having been alerted, and the wearer identified, the ECO can confirm the alarm by pressing the  button of the appropriate channel. The sounder alarm stops, the alarm icon  stops 'flashing' and illuminates continuously indicating that the signal has been received and acknowledged.



1465

- Sentinel - on acknowledgement from the ECO, the Sentinel interrupts the 'main alarm' with a short audible tone, during which time the radio icon is displayed. Following the short acknowledgement tone the Sentinel reverts back to the 'main alarm'.

Important Note: The ECO can now make a decision as to what action is necessary in line with established guidelines and control procedures.

- ECB - if the ADSU (main alarm) is cancelled at the Sentinel, then the alarm icon at the ECB is switched 'Off' - only if acknowledged.



Distress Signal (Manual) – Panic Button

Should the wearer of the breathing apparatus become distressed and/or require assistance then pressing the 'panic button' of the Sentinel will activate the main audible alarm to the wearer and a signal is transmitted to the ECB. The screen of the Sentinel displays the panic icon  and a signal is transmitted to the ECB.

- ECB – The distress signal icon  of the associated channel will begin 'flashing' (Red) and an intermittent alarm will sound indicating that the signal has been received from the Sentinel.



- ECO – Having been alerted, and the wearer identified, the ECO can confirm the alarm by pressing the  button of the appropriate channel. The sounder alarm stops, the alarm icon  stops 'flashing' and illuminates continuously indicating that the signal has been received and acknowledged.



1466

- Sentinel – The Sentinel will remain in 'full alarm' condition until the tally is inserted in the Sentinel.
- Sentinel - on acknowledgement from the ECO, the Sentinel interrupts the 'main alarm' with a short audible tone, during which time the radio icon is displayed. Following the short acknowledgement tone the Sentinel reverts back to the 'main alarm'.

Important Note: The ECO can now make a decision as to what action is necessary in line with established guidelines and control procedures.

- ECB - if the ADSU (main alarm) is cancelled at the Sentinel, then the alarm icon at the ECB is switched 'Off' - only if acknowledged.



Loss of Radio Contact (ECB to PU)

If there is a loss of radio contact between the radio of the ECB and the Data Radio Unit then the On-line radio icon  of the affected channel of the ECB will begin to flash. The 'Green' LED at the rear of the associated Sentinel will stop flashing and the 'lost' communication icon will be displayed on the Sentinel accompanied by an audible 'bleep' tone. During the communication failure the 'lost' communication icon will be displayed alternating with the clock (operation) icon - as shown. If at any time radio contact is re-established then the On-line radio icon of the ECB will illuminate 'Green' continuously and the 'Green' LED of the Sentinel will begin flashing and the 'lost' communication icon will be cancelled. The associated channel screen data will be updated at the next data signal transmission from the Sentinel.



1906

During loss of radio contact the following should be noted:

- The On-line radio icon  of the affected channel of the ECB will continue to flash.
- The 'Green' LED at the rear of the associated Bodyguard will stop flashing and the 'lost' communication icon will be displayed.
- The associated channel screen will no longer show the result of the dynamic data transmitted from the Sentinel. Data will change against real time as follows;

TTW - If ECB is programmed at Time to Whistle (TTW) the data screen time will count down at one-minute intervals from the time shown at the point of loss of radio contact.

TOW - If ECB is programmed at Time of Whistle (TOW) the data screen time will remain at the time shown at the point of loss of radio contact.

Important Safety Note: In the case of possible permanent loss of radio contact then the ECO and the wearer of the Sentinel must take appropriate actions in line with established user guidelines and control procedures.



After Use

All wearers of breathing apparatus that are Logged On to an ECB must return to the Entry Control Point (ECP) to ensure that the Log Off procedures are followed. The procedures must be carried out under the supervision and control of the Entry Control Officer (ECO).

Log Off Procedure

- The compressed air breathing apparatus is to be shut down by the wearer as described in the After Use section of the User Instructions supplied with the equipment, i.e. remove facepiece, close cylinder valve, vent the system of pressure. The display of the Sentinel will show '0' PSI and '0' TTW. The ECB will emit two short audible 'Bleeps' and the associated channel screen of the ECB will 'flash' the Time of Whistle data that will now correspond to the time shown on the Time Clock.

Note: *The Sentinel will remain in 'operating mode' until it is switched 'Off' (deactivated).*

- At the ECB the ECO will identify the wearer then remove the tally from the associated channel and hand it over to the wearer. On removing the tally, and after up to 20 seconds the channel screen will begin to alternate between displaying the data radio identification number and the Time of Whistle data.
- The wearer should switch 'Off' the Sentinel. A Log Off signal will be transmitted from the Data Radio Unit to the ECB. After up to 20 seconds the channel screen will switch 'Off' and the associated Data Radio Unit will return to 'Sleep Mode' - ensure all IR link LED's are 'Off'.
- Repeat the above procedure for all Logged On units. The ECB will not return to 'Sleep Mode' until all other Data Radio Units have been Logged Off.

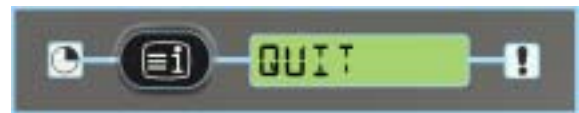
Important Note: If during an incident a permanent breakdown in communication has occurred between the ECB and a 'Logged On' Data Radio Unit, it will be necessary to initiate a Force Log Off procedure. See section 'Forced Log Off Procedure'.



Forced Log Off Procedure

A breakdown in communication between the ECB and a Logged On Data Radio Unit will cause the illuminated 'Green' On-Line radio icon of the associated channel to begin to 'flash'. The channel screen will display the last value transmitted before failure of the signal. This may only be a temporary communication failure due to the wearer becoming out of range of the ECB. When the data radio unit comes back in range, the On-Line radio icon will return to illuminate continuously, confirming that the radio link has been re-established. If however the breakdown in communication is permanent, it will be necessary on the return of the wearer to the Entry Control Point for the ECO to initiate the following Force Log Off procedure. This procedure is necessary to return the ECB to 'Sleep Mode'.

- Press and then release the  key of the keypad. The display changes to show 'QUIT' status.



1467

Note: A single sharp audible 'Bleep' signal sounds each time a key is pressed.

- Repeatedly press the  or  keys of the keypad to scroll the display until 'LOGOFF' is displayed and then press the  key. The main display will change to show 'CHAN 00' with the numeric characters 'flashing'.



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- Check the Channel number to be Logged Off and then enter the number by either:
 - pressing the appropriate numeric keys of the keypad. The numeric characters will stop 'flashing' and will change from the right as the number(s) is entered.
 - or
 - pressing the evacuation button  of the appropriate channel. The channel number will be entered automatically on the display.

- Remove the tally – press the  key the main screen changes to the selected channel, e.g. 'CHAN04 N' with the 'No' symbol 'flashing'. Using the  or  keys of the keypad toggle between the 'Yes' and 'No' symbol. When 'CHAN04 Y' is displayed again press the  key, the display will change to 'LOGOFF'. Repeat the procedure for any further Data Radio Units requiring a Forced Log Off.



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1472



Important Note: If the tally has not been removed, and the  key has been pressed, the display will not change but will remain at 'CHAN04 N' with the 'No' symbol 'flashing'. Remove the tally then using the  or  keys of the keypad toggle between the 'Yes' and 'No' symbol until 'CHAN04 Y' is displayed. When displayed press the  key, the display will change to 'LOGOFF'.

- When the display shows 'LOGOFF', repeatedly press the  or  keys of the keypad to scroll the display until the 'QUIT' status is displayed. When displayed - press the  key – the display will change to show the current date information. If all other Data Radio Units have been Logged Off the board is now returned to 'Sleep Mode'.
- The tally should be passed to the wearer of the associated Data Radio Unit. The wearer should refit the tally to the Sentinel to switch 'Off' the instrument.



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Important Note: Following the incident and after Log Off, the fault must be reported.



Service Information

Setting Time Display

- With the ECB in 'Sleep Mode' - press and then release the  key of the key pad. The 'clock' display and the 'date/information' display will illuminate. The date display changes to show 'QUIT' status and will remain illuminated for a preset period.

Note: A single sharp audible 'Bleep' signal sounds each time a key is pressed.

- Repeatedly press the  or  keys of the key pad to scroll the display until 'SET TIME' is displayed, then press the  key. The current time is shown in the display with the first (hour) character 'flashing'.
- Enter the required numeric value by pressing the appropriate key of the key pad - the next character will begin 'flashing'. Repeat the procedure until all the required characters are set.

Note: If an error is made, press the 'backspace' key  to return to the previous digit location and enter the correct number.

- When the required time is displayed - press the  key to confirm the selection. Repeatedly press the  or  keys to scroll the display until 'QUIT' status is displayed (or if required go to 'SET DATE'). When 'QUIT' status is displayed press the  key. The 'clock' display will change to show the updated time information.

Setting Date Display

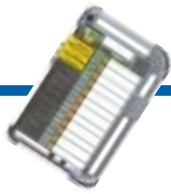
- With the ECB in 'Sleep Mode' - press and then release the  key of the key pad. The 'clock' display and the 'date/information' display will illuminate. The date display changes to show 'QUIT' status and will remain illuminated for a preset period.

Note: A single sharp audible 'Bleep' signal sounds each time a key is pressed.

- Repeatedly press the  or  keys of the key pad to scroll the display until 'SET DATE' is displayed, then press the  key. The current date is shown in display with the first character 'flashing'.
- Enter the required numeric value by pressing the appropriate key of the keypad - the next character will begin 'flashing'. Repeat the procedure until all the required characters are set.

1. Note: In the case of single figure day or month then first press  key.

2. Note: If an error is made, press the 'backspace' key  to return to the previous digit location and then enter the correct number.



- When the required date is displayed - press the  key to confirm the selection. Repeatedly press the  or  keys to scroll the display until 'QUIT' status is displayed (or if required go to 'SET TIME'). When 'QUIT' status is displayed press the  key. The display will change to show the updated date information.

Display Test - ECB

This test allows the user to check that all LCD's, LED's, sounder, backlight and keys are functioning.

- With the ECB in 'Sleep Mode' - press and then release the  key of the key pad. The date display will change to show 'QUIT' status.
- Repeatedly press the  or  keys of the key pad to scroll the display until 'TEST' is displayed, then press the  key. All LCD's, LED's, and the backlight will begin to 'flash'.
- Visually check that all features are functioning. Press and release each key (not the  key). A single sharp 'Bleep' signal should sound each time a key is pressed. Record any features that are faulty then contact Dräger Service.

Note: Pressing the  key at any time will return the date screen to show 'TEST'. The Display Test will however automatically default to 'Sleep Mode' after two minutes.

- Repeatedly press the  or  keys of the key pad to scroll the display until 'QUIT' is displayed, then press the  key. The display will change to show the date - 'Sleep Mode'.



Encoding a Tally

The following instruction details the procedure for encoding the transponder of a new tally with both the identification code of the associated Data Radio Unit and the unique user identity code, (e.g. Fire Brigade Identity Code, or a User Code). This procedure can only be successfully activated with the tally inserted in the first channel (Channel 1) of the ECB.

The unique user identity code is already encoded into the associated ECB. The final action of entering and encoding the identification code of the Data Radio Unit will signal the ECB to also encode the user identity code to the tally.

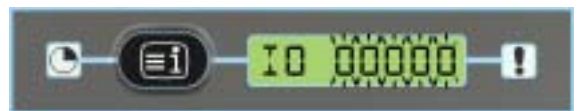
- With the board in 'Sleep Mode' - press and then release the  key of the key pad. The 'clock' display and the 'date/information' display will illuminate. The date display changes to show 'QUIT' status and will remain illuminated for a preset period.

Note: A single sharp audible 'Bleep' signal sounds each time a key is pressed.

- Repeatedly press the  or  keys of the key pad to scroll the display until 'TALLY WR' is displayed (i.e. write to tally) and then press the  key. The display will change to show 'ID 00000' with the numeric characters 'flashing'.



1473

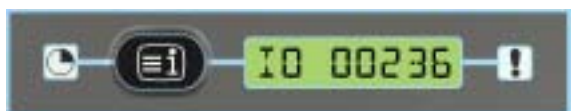


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- Check the radio identification number on the label of the Data Radio Unit then enter the radio code by pressing the appropriate numeric keys of the key pad. The numeric characters will stop 'flashing' and the ID will change from the right as the numbers are entered.

See example.

Example Code



1475

Note: Commence input of the data radio code beginning with the first whole number – ignore the prefixed zero(s).

- When the data radio code is entered, check again that the displayed code corresponds to the code shown on the label of the Data Radio Unit. If an error is found, use the backspace key  to delete the incorrect digit(s) then proceed to input the correct number(s).
- When the codes match, select and insert fully a new tally into the first channel (Channel 1) of the ECB then press the  key.



Note: If the tally is not inserted into the first channel within 18 seconds, the ECB will return to 'sleep mode'.

- On pressing the key the radio identification number is encoded to the transponder of the tally and at the same time, the unique user identity code is automatically encoded to the transponder from the ECB. The main screen changes to 'TALLY WR'.

Important Note: The identification codes can only be encoded to the tally when the tally is inserted into Channel 1. It is not possible to carry out this procedure with no tally inserted or with the tally inserted in any other channel. If the enter key  is pressed, with no tally inserted in Channel 1, the display will show 'TALLY NO'. Press the enter key  the display will change to 'TALLY WR'. Proceed to correctly repeat the encoding procedure.

- Remove the encoded tally – the main screen remains at 'TALLY WR'. If required, proceed to encode another tally, or - repeatedly press the **2** or **8** keys to scroll the display until the 'QUIT' status is displayed. When displayed - press the  key. The display will change to show the current date information. The board is now returned to 'Sleep Mode'.
- Using a suitable permanent marker, write and add the data radio identification code and the unique user identity code number in the spaces provided on the label of the new tally. Ensure the coded tally is allocated and stored with the associated Data Radio Unit/Sentinel combination.



Removing/Fitting Battery Packs

Entry Control Board

Tools Required

3mm AF Hexagon Socket Key

- Unscrew and remove the ten (10) socket set screws from around the battery cover. When all screws have been removed, use fingers in the slots at the top and bottom of the back cover of the ECB to lift and remove the battery cover.
- Carefully lift the first battery from the compartment until the connection plug in the side of the battery is accessible. **Do Not** pull on the cable.
- Press and hold the release tab of the plug and remove the plug from the battery connector.
- Fit fully charged battery. Insert the connection plug into the connection socket of the battery. Carefully insert the battery into the battery compartment.
- Repeat with the second battery.
- Align and locate the battery cover and using the ten (10) socket set screws, secure the cover to the ECB. **Do Not** overtighten the socket set screws (0.37 to 0.44ft lbs).



Data Radio Unit

Tools Required

Release Key

3351827

- To remove the battery - insert the pins of the release key into the two holes in the base of the Data Radio Unit. Press the key into the module until the locking mechanism is released and the battery retracts (approx. 0.2in). Remove the key and then slide and remove the battery.

Note: Before fitting the charged battery check that the O ring seal of the boss is in position and not damaged and that the dovetail guide of the battery and the radio module are clean.

- To fit the battery, locate the battery to the dovetail guide of the data radio pack then slide the battery pack along the guide until a positive audible 'click' is heard. The 'Green' LED of the IR Link Unit on the rear of the Sentinel momentarily illuminates indicating satisfactory contact. Correct retention is indicated when the 'Red' indicators are visible in the two release key holes in the base of the Data Radio Unit. To further ensure positive retention, grip the battery and attempt to remove - there must be no movement.



Care

The Entry Control Board and the Data Radio Unit do not require any routine attention by the user.

Do Not immerse the Entry Control Board or the Data Radio Unit in cleaning fluids. When considered necessary by the user, remove dirt and contaminants by carefully cleaning using a clean lint free cloth dampened in a mild soap solution then apply a proprietary antistatic cleaning agent to a clean lint free cloth and clean the surface of the units, especially the clear fascia panel of the ECB.

If necessary, the clear fascia panel can be removed for cleaning of the inner surface of the fascia, the electronic membrane and the channel slots of the main board. **Do Not** use abrasive cleaning agents on the fascia or the electronic membrane.

Apply a proprietary antistatic cleaning agent to a clean lint free cloth and carefully clean the electronic membrane and the surface of the inner surface of the fascia, then reassemble the fascia to the main board. **Do Not** overtighten the screws (0.3ft lbs maximum).

Ensure that the dovetail guide of the battery and the Data Radio Unit are clean and not damaged and that the antenna is secure.

Safety Note: Do Not use organic solvents, such as Acetone, Alcohol, White Spirit, Trichloroethylene or similar or abrasive cleaning agents.



Faults - Causes - Solutions

Entry Control Board

Faults	Causes	Solutions
8 character display fault code: ● CLK ERR ● RDIO ERR ● FLSH ERR ● KEY ERR ● SYST ERR ● CH ERR ● LOW BCKP ● SHUTDOWN	Key held down too long Backup battery discharged Excessive low battery condition Both batteries removed	Contact Dräger Service Contact Dräger Service Contact Dräger Service Release key Contact Dräger Service Contact Dräger Service Charge for 24 hours Charge for 24 hours Fit charged batteries
 Flashing amber/alarm	Low batteries	Charge batteries
Time clock display incorrect	Incorrect setting	Reset as pe User Instructions
Date clock display incorrect	Incorrect setting	Reset as pe User Instructions
Unable to reset time and/or date	Key pad malfunction Display failure	Contact Dräger Service Contact Dräger Service
Digital clock - colon not 'flashing'	Display failure	Contact Dräger Service
Sleep Mode - No time and/or date displayed. Main batteries removed or discharged	Backup battery discharged	Charge for 24 hours
Sleep Mode - No time and/or date displayed. Main batteries charged	Circuit failure	Contact Dräger Service
Cannot read tally	Transponder failure Transponder failure (ECB) Magnet failure Reed switch failure (ECB)	Replace tally Contact Dräger Service Replace tally Contact Dräger Service
Cannot write to tally	Tally inserted in wrong channel Tally not inserted Transponder failure Magnet failure Reed switch failure (ECB)	Insert tally into channel 1 Insert tally into channel 1 Replace tally Replace tally Contact Dräger Service
No display on channel screen following insertion of tally	Magnet failure Reed switch failure (ECB) Circuit failure	Replace tally Contact Dräger Service Contact Dräger Service



Data Radio Unit

Faults	Causes	Solutions
Green LED of IR link does not momentarily illuminate on connection of battery to radio	Battery discharged Dirty terminals on battery/radio IR link not connected to radio IR link damaged Faulty radio	Charge battery Clean terminals Do Not use abrasives Connect IR link Replace IR link Replace radio
Intermittent short 'flash' Off of the 'Red' LED 	Low battery	Charge battery
Battery will not charge	Dirty charge terminals on battery Deep discharge Spent battery	Clean terminals Do Not use abrasives Charge for a minimum of 24 hours - recheck Replace with new
Battery will not assemble to radio	Dirty dovetail guides Damaged dovetail guides Locking pins jammed	Clean battery and radio Inspect and replace damaged item Check action using release key
Battery will not spring back (detach) on insertion of the release key	Broken pin(s) on release key. Dirty dovetail guides Dirty/damaged locking mechanism	Use new key Insert the release key and pull battery away manually Clean battery and radio Contact Dräger Service

Entry Control Board and Data Radio Unit

Faults	Causes	Solutions
Loss of contact between ECB and data radio unit	Location (building etc.) Batteries discharged Radio failure - ECB Radio failure - data radio unit	Consider repeater unit Charge batteries Contact Dräger Service Replace radio
Unable to log on	Wrong tally Faulty tally (Et code was displayed during attempt to log on).	Select the correct tally corresponding to the radio Try again Perform manual log on Encode a new tally

In the event of faults occurring that the user is unable to remedy, contact Dräger Service.



Technical Data

Environmental

Operating Temperature

Portable Radio Unit	-22°F to +167°F
Entry Control Board	+5°F to +131°F

Telemetry

Range	1000ft (nominal)
Frequency	450-470 MHz

Portable Radio Unit

Dimensions

Radio (excluding antenna)	
Height (inches)	5.16
Width (inches)	3.03
Depth (inches)	2.16

Antenna

Length (inches)	2.36
Diameter (inches)	0.55

Battery

Height (inches)	3.74
Width (inches)	2.83
Depth (inches)	0.67

Tally

Length (inches)	5.71
Width (inches)	1.50
Depth (inches)	0.16

Weights

Radio (including battery) lbs	1.2
Battery lbs	0.4
IR Interface lbs	0.18
Tally lbs	0.05

Battery Details

Battery Type	
6.5V NiMH (nickel hydride) battery pack, re-chargeable.	
Battery Life	8 hours min.
Charged Temperature Range	41°F to +104°F

Certification

EN137
For use with all Dräger SCBA

Entry Control Board

Dimensions

Entry Control Board

Height (inches)	30.71
Width (inches)	19.50
Depth (inches)	2.36

Battery

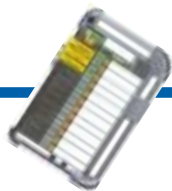
Height (inches)	5.55
Width (inches)	3.15
Depth (inches)	1.53

Weight

Entry Control Board (including batteries)	18.8lbs
Battery Pack	1.1lbs Single Pack (2 per ECB)

Battery Details

Battery Type	
7.2V NiMH rechargeable battery pack.	
NOT Ex APPROVED	
Battery Life	8 hours min.
Charging temp. range	32°F-113°F



Order List

The System

Entry Control Board 450-470MHz	3354270
Sentinel Telemetry Upgrade Kit 450-470MHz	3354328
Repeater Unit 450-470MHz	335xxxx

Replacement Batteries

ECB	
7.2V Rechargeable NiMH Battery	335xxxx
Radio	
6.5V Rechargeable NiMH Battery	335xxxx

Requirements for Operation

Universal Power Supply Unit	3351804
Power Supply Cord - USA	3351807
Charging Adaptor Kit - ECB	3351819
Radio Battery - Multi Charger Module (up to four batteries)	3351815
Radio Battery Release Key (Kit of 4)	3351902
Motor Vehicle Charging Kit - ECB	3351810
Motor Vehicle Charging Kit - (Quick Release) ECB	3354349
Motor Vehicle Charging Kit - Portable Radio Unit	3351681

Accessories

Tripod for ECB	3351802
ECB Support Bracket for Tripod	3351803
Protective Cover – ECB	3351812
Pouch for Data Radio Unit	3351811
Blank Tallies (Pack of 12)	3351828
Chinagraph Pencils (Pack of 12)	3351237
Software for Datalogging (MS-DOS)	335xxxx
Telemetry Datalink Cable	3351898

