FRED easy®

Automated external defibrillator (AED)
FRED easy® - SD Card
- Ethernet/Online
- Life

User Guide

SCHILLER
The Art of Diagnostics

Art. no.: 0-48-0013 Rev. m

Sales and service information

The SCHILLER sales and service centre network is world-wide. For the address of your local distributor, contact your nearest SCHILLER subsidiary.
In case of difficulty, a complete list of all distributors and subsidiaries is provided on our internet site:
http://www.schiller.ch
Sales information can also be obtained from:
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SCHILLER
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1 Safety Notes

1.1 User profiles

The following people may use the FRED easy:

- Physicians or other trained medical personnel
- other people (non-professionals) trained in early defibrillation
- other people not trained in early defibrillation, as long as they can understand and follow the spoken and displayed instructions.

Even though untrained people may use the device, training and instructions are recommended to guarantee an optimal resuscitation procedure.

1.2 Responsibility of the User

- ▲ Regulations on who is allowed to use devices like the **FRED easy®** and which training is required, are country-specific. In any case, legal regulations have to be observed.
- ▲ Before using the device, a SCHILLER representative must perform a presentation on the device's operation and safety measures, if it's required by the local regulations.
- ▲ The indications given by this equipment are not a substitute for the regular checking of vital functions.
- ▲ The numerical and graphical results as well as any interpretation suggested by the device must be examined with respect to the patient's overall clinical condition and the quality of the recorded data.
- ▲ Make sure that the user has read and understood the user guide, and especially these safety notes.
- ▲ Damaged or missing components must be replaced immediately.
- ▲ The device must be stored in a place inaccessible to children.
- ▲ Properly dispose of the packaging material and make sure it is out of children's reach.

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1.3 Intended Use

- The **FRED easy®** is an automated external defibrillator (AED) used for the treatment of ventricular fibrillation (VF) and ventricular tachycardia (VT).
- The device may be used with the appropriate electrodes on either adults or children.
- The device must only be used if the following symptoms are found:
  - not responsive
  - no respiration
  - no pulse
- The device must **not** be used if the patient:
  - is responsive
  - is breathing
  - has pulse
- The **FRED easy®** is an emergency device and must be ready for operation at any time and in all situations. Make sure that
  - the device is always equipped with a sufficiently charged battery and that a spare battery is at hand
  - An empty battery must not be reused and must be disposed of immediately.
- Only operate the device in accordance with the specified technical data.
- Do **not** use this device in areas where there is any danger of explosion or in the presence of flammable liquids, flammable anaesthetic agents or in places where the ambient air's oxygen concentration is higher than 25 %.

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1.4 Organisational Measures

- ▲ Before using the unit, ensure that an introduction regarding the unit functions and the safety precautions has been provided and understood.
- ▲ Keep these operating instructions in an accessible place for reference when required. Make sure that they are always complete and legible.

1.5 Safety-Conscious Operation

- ▲ **Danger of electric shock!** - Danger for user, rescuer and patient.
  The energy applied to the patient can be conducted through the patient to other persons, who may suffer a lethal electric shock. Therefore:
  - – do not touch the patient, the electrodes or other conducting objects during defibrillation.
  - – do not defibrillate the patient in a puddle of water or on other conducting surfaces,
  - – switch the device off when it is no longer used.
- ▲ **Danger of explosion! —** The device must not be used in areas where there is any danger of explosion . There might be a danger of explosion in areas where flammable products (petrol), flammable anaesthetic agents or products for skin cleaning/disinfection are in use, or where the ambient air's oxygen concentration is higher than 25 %.
- ▲ Immediately report any changes that impair safety (including operating behaviour) to the responsible person.
- ▲ Only use original SCHILLER electrodes.
- ▲ Before switching on, check that the unit's casing and electrode connections are not damaged.
- ▲ Immediately replace a damaged unit, or damaged cables and connections.
- ▲ Operating the device with a defective casing or damaged cables constitutes a danger to life. Therefore:
  - – immediately replace a damaged unit or damaged cables and connections.

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1.6 Operation with other Devices

- Accessory equipment connected to the analogue and digital interfaces must be certified according to the respective IEC standards (e.g. IEC/EN 60950 for data processing equipment and IEC/EN 60601-1 for medical equipment). Furthermore, all configurations shall comply with the valid version of the system standard IEC/EN 60601-1-1. Everybody who connects additional equipment to the signal input part or signal output part configures a medical system and is therefore responsible that the system complies with the requirements of the valid version of the system standard IEC/EN 60601-1-1. If in doubt, consult the technical service department or your local representative.
- Magnetic and electrical fields from X-ray or tomographic devices, portable radio equipment, HF radios and devices labelled with the  symbol can affect the operation of this device (see section 8.4) . Avoid using such devices or keep a sufficient distance from them.
- A 16.7 Hz filter allows to operate the FRED easy in the vicinity of a mains network with a frequency of 16.7 Hz (railway lines in some countries).
- **FRED easy®** is not intended to be operated while using high-frequency surgical devices.
- Interference with other devices - The charging of energy and the release of the defibrillation impulse can disturb other devices. Check these devices before their further use.
- Sensors and devices that are not defibrillation-proof must be disconnected from the patient before a shock is triggered.
- If the patient has an implanted pacemaker, be sure not to position the electrodes directly on top of it.

1.7 Maintenance

- **Danger of electric shock!** Do not open the device. No serviceable parts inside. Refer servicing to qualified personnel only.
- Before cleaning, switch the unit off and remove the battery.
- Do not use high-temperature sterilisation processes (such as autoclaving). Do not use E-beam or gamma radiation sterilisation.
- Do not use aggressive or abrasive cleaners.
- Do not, under any circumstances, immerse the device or cable assemblies in liquid.
- To ensure patient safety, the accuracy of displayed values and interference-free operation, only use original SCHILLER accessories. The user is responsible for the use of third-party accessories. The warranty does not cover damage resulting from the use of accessories or consumables other than those marketed by SCHILLER.

1.8 General Notes Regarding the Unit

A defibrillation can fail with certain disease patterns.

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1.9 Additional Terms

1.9.1 Implied authorisation

Possession or purchase of this device does not convey any express or implied license to use the device with replacement parts which would alone, or in combination with this device, fall within the scope of one or more patents relating to this device.

1.9.2 Terms of Warranty

Your SCHILLER **FRED easy®** is warranted against defects in material and manufacture for the duration of one year (as from date of purchase). Excluded from this warranty is damage caused by an accident or as a result of improper handling. The warranty entitles to free replacement of the defective part. Any liability for subsequent damage is excluded. The warranty is void if unauthorised or unqualified persons attempt to make repairs.

In case of a defect, send the device to your dealer or directly to the manufacturer. The manufacturer can only be held responsible for the safety, reliability, and performance of the apparatus, and assume the warranty, if:

- assembly operations, extensions, readjustments, modifications, or repairs are carried out by persons authorised by him,
- spare parts used for assembly operations, extensions, readjustments, modifications or repairs are recommended or supplied by SCHILLER, and,
- the SCHILLER **FRED easy®** and approved attached equipment is used in accordance with the manufacturer's instructions.

There are no express or implied warranties which extend beyond the warranties hereinabove set forth. SCHILLER makes no warranty of merchantability or fitness for a particular purpose with respect to the product or parts thereof.

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1.10 Display Symbols/Indicators

1.10.1 Symbols used in this user guide

The safety levels are classified according to ANSI Z535.6. The following overview shows the safety symbols and pictograms used in this user guide.
The terms Danger, Warning, and Caution are used in this User Guide to point out potential dangers and to indicate risk levels. Familiarise yourself with their definitions and significance.

⚠ DANGER	For a direct danger which could lead to severe personal injury or death.
⚠ WARNING	For a possibly dangerous situation which could lead to severe personal injury or to death.
⚠ CAUTION	For a possibly dangerous situation which could lead to personal injury. This symbol is also used to indicate possible damage to property.

For general safety notes as listed in this section.

For electrical hazards, warnings or precautionary measures when dealing with electricity.

Important or helpful user information.

1.10.2 Symbols used on the device

BF symbol. The device's signal input is defibrillation-protected.

Caution! High voltage!

Observe the user guide

CE 0459

CE-0459 marking (notified body LNE/G-MED)

Do not dispose of the **FRED easy®** and its accessories in the household waste.

Manufacturer symbol, manufacturing date

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1.10.3 Symbols used on the battery

The battery is recyclable

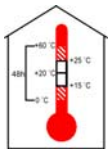
Do not recharge

Do not short-circuit

Do not incinerate

Do not cut

Do not crush



Battery storage:

- unlimited storage duration between +15°C and +25°C (within the limit of the specified expiry date),
- max. 48 hours between +25 °C and +60 °C as well as between +15 °C and 0 °C.

Battery must not be disposed of in the household waste.

Observe the user guide

Battery expiry date

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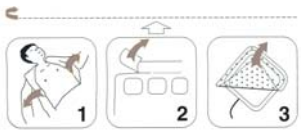
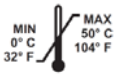
1.10.4 Symbols used on the electrode packaging



- Remove the patient's clothes
- Open the electrode packaging
- Peel off the protective foil

Disposable item; do not reuse

Do not bend packing



Storage temperature for the electrodes

Expiry date of the electrodes

An open package cannot be conserved more than one day.

Do not expose to sunlight

Does not contain latex

Do not expose to rain

Do not use the electrodes if the packaging is damaged

Consult the user guide

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2 Components and Operation

2.1 General Information

FRED easy® is an automated external defibrillator (AED).

AEDs are semi-automatic defibrillators or fully automatic defibrillators to be used by non-physicians.

FRED easy® is available as a semi- or fully automatic defibrillator.

The regulations governing the use and training requirements for AEDs such as **FRED easy®** differ from country to country. The laws and regulations for the use of automatic defibrillators need to be strictly observed.

Local laws and regulations regarding the use of an AED differs from country to country. While some countries allow laypersons to use AEDs without any special training, other countries restrict the use of AEDs to EMTs or First Responders after they have undergone special training.
For training purposes, SCHILLER offers the **FRED easy® TRAINER**.

Typical sites of operation for a **FRED easy®** are much-frequented places such as:

- airports
- train stations
- shopping centres
- public swimming pools
- sport centres
- public institutions

Biocompatibility

The parts of the product described in this user guide, including all accessories, that come in contact with the patient during the intended use, fulfil the biocompatibility requirements of the applicable standards. If you have any questions in this matter, please contact SCHILLER.

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2.2 Design

Defibrillator

FRED easy® is a defibrillator featuring the biphasic pulsed defibrillation impulse, ***Multipulse Biowave®***. The patient is defibrillated using disposable electrodes. The ECG signal is analysed using the same electrodes.
Moreover, the user is guided with acoustic and written instructions (display/loudspeaker). The device recognises the connected electrodes (adult or children electrodes) and selects the defibrillation energy accordingly.

Metronome

When the "metronome" is activated, the **FRED easy®** sets a configurable pace for the cardiopulmonary resuscitation (CPR).

Data memory

The device is equipped with a memory card (SD card). During the intervention, data can therefore be saved, including the analysed ECG data, ambient noise and events (see 5.1 SD card version, 5.2 Ethernet version and 5.3 Online version).

Data transmission

The **FRED easy®** SD card version features a removable SD memory card, facilitating data transmission to other devices. For the Ethernet and Online versions, data transmission is performed via Ethernet network (for these device versions, the memory card cannot be removed).

Power supply (standard)

The device is operated with a non rechargeable, disposable lithium battery. The battery capacity is sufficient for:

- 180 shocks at maximum energy (if the self-test is performed weekly), or,
- 3.75 hours operating (alternately 30 minutes ON and 30 minutes OFF).

Power supply (option)

A rechargeable NiCd battery is available as option. The capacity of a new and fully charged battery is sufficient for:

- 45 shocks at maximum energy, or
- 40 min operating

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Available versions and options

Version	Available options for automatic operation	Available options for semi-automatic operation
SD card	• Metronome • Rechargeable NiCd battery	• ECG display • Switchover to manual defibrillation • Metronome • Rechargeable NiCd battery • Silent mode
Ethernet	• Metronome • Rechargeable NiCd battery	• ECG display • Switchover to manual defibrillation • Metronome • Rechargeable NiCd battery • Silent mode
Online	• Metronome	• ECG display • Switchover to manual defibrillation • Metronome • Silent mode

FRED easy Life

Standard features for this device are the metronome and a non rechargeable Li/MnO2 battery. All other options listed above for semi-automatic operation are not available.

SCHILLER's service centre is able to configure various device functions by means of a dedicated PC connection (see 2.3 Function).

Patients with implanted pacemakers — **FRED easy®** features an electronic pacer pulse suppression algorithm and therefore, pacemaker pulses are not taken into account for the analysis. Depending on the pacemaker model and on the position of the electrodes, the compensation pulse following every pacer pulse may exceptionally not work and be considered as a QRS complex. In this case, the analysis can be distorted and inaccurate. It depends on the pacer pulse parameters whether or not the compensation pulse is counted as a QRS complex.

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2.3 Function

Immediately after a battery has been inserted, the **FRED easy®** performs a self-test of the device and battery. If this test is completed successfully, the green indicator starts blinking, showing that the device is ready for operation and the information is displayed.

Fig. 2.1 Button to switch the device on and off, and to start the analysis (only in semi-automatic operation)

Also, every time the device is switched on, a self-test is performed.

If a problem is detected in the course of this self-test:

- an acoustic alarm is issued,
- the green indicator stops blinking and
- an alarm message is displayed.

The acoustic alarm is issued until the battery is flat.

In addition, the device performs a daily or weekly self-test (this setting must only be configured by service personnel authorised by Schiller); the self-test is announced with a beep. If a problem is detected in the course of this self-test:

- an acoustic alarm is issued,
- the green indicator stops blinking, and
- A corresponding symbol or message is displayed when the device is switched on by pressing the green button .

When a rechargeable Ni/Cd battery (option) is inserted, the device performs a self-test every day.

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2.3.1 Overview on the configurable settings

Important!

- ▲ The “FRED CO” software is only available to service centres authorised by Schiller.
- ▲ Modifications that can be made via "FRED CO" are only performed if requested by the customer, or if required by legal requirements.
- ▲ These modifications need to be registered in the device documentation as well as communicated to all users.

SCHILLER's service centre can configure the following parameters:

Configurable parameters (by means of FREDCO®)
• Volume of language output
• Energy level for 1st, 2nd and 3rd shock (separate settings for adults and children)
• Manual or automatic start of the ECG signal analysis (only in semi-automatic operation)
• Activation/deactivation of the 16.7 Hz filter
• [a]Sound recording Yes/No
• Number of chest compressions for children (15 or 30)
• Self-test frequency (daily or weekly)
• Entering the device name
• Choice between "continuous chest compressions" or "alterning chest compressions/breathes" during CPR cycles
• Time and date On
• Update the software/change the device language

a. **Sound recording —** The owner needs to inform users that the device records ambient noise during interventions.

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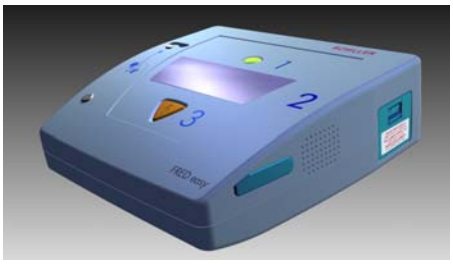
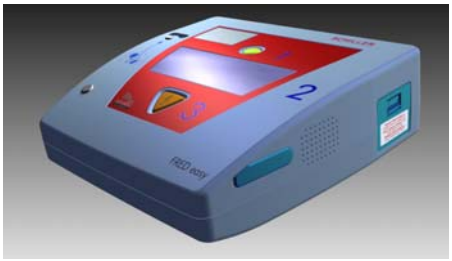
2.4 Operating and Display Elements

2.4.1 Overview on versions and operating modes

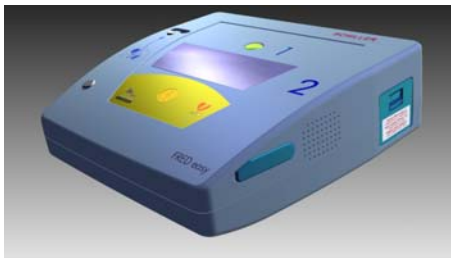
SD Card version



Semi-automatic operational mode



Semi-automatic operational mode with option for switchover to manual mode



Automatic operational mode

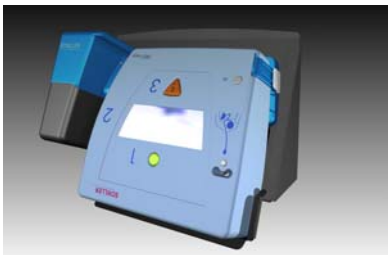
Semi-automatic operational mode with option for switchover to silent mode

Online/Ethernet version

The Online/Ethernet versions are available with the same operational modes as the SD card version:

- semi-automatic
- semi-automatic with option for switchover to manual mode
- Automatic
- Silent mode

FRED easy® Online



FRED easy® Online with docking station

Online with Ethernet adapter

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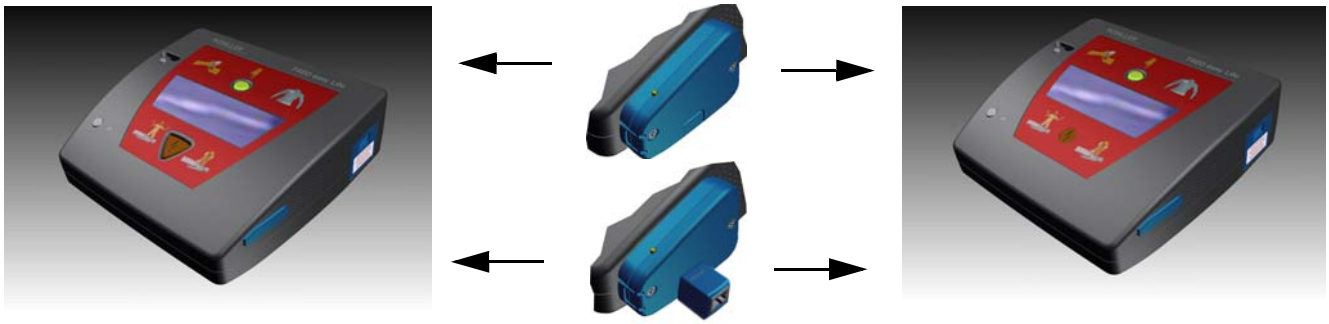
FRED easy Life

FRED easy Life has got the same functions as the versions listed above; the only exceptions are: different printing on the foil, not possible to switch to manual or silent mode.

SD card-Online-Ethernet version



SD card, semi-automatic operation | Online/Ethernet | SD card, automatic operation

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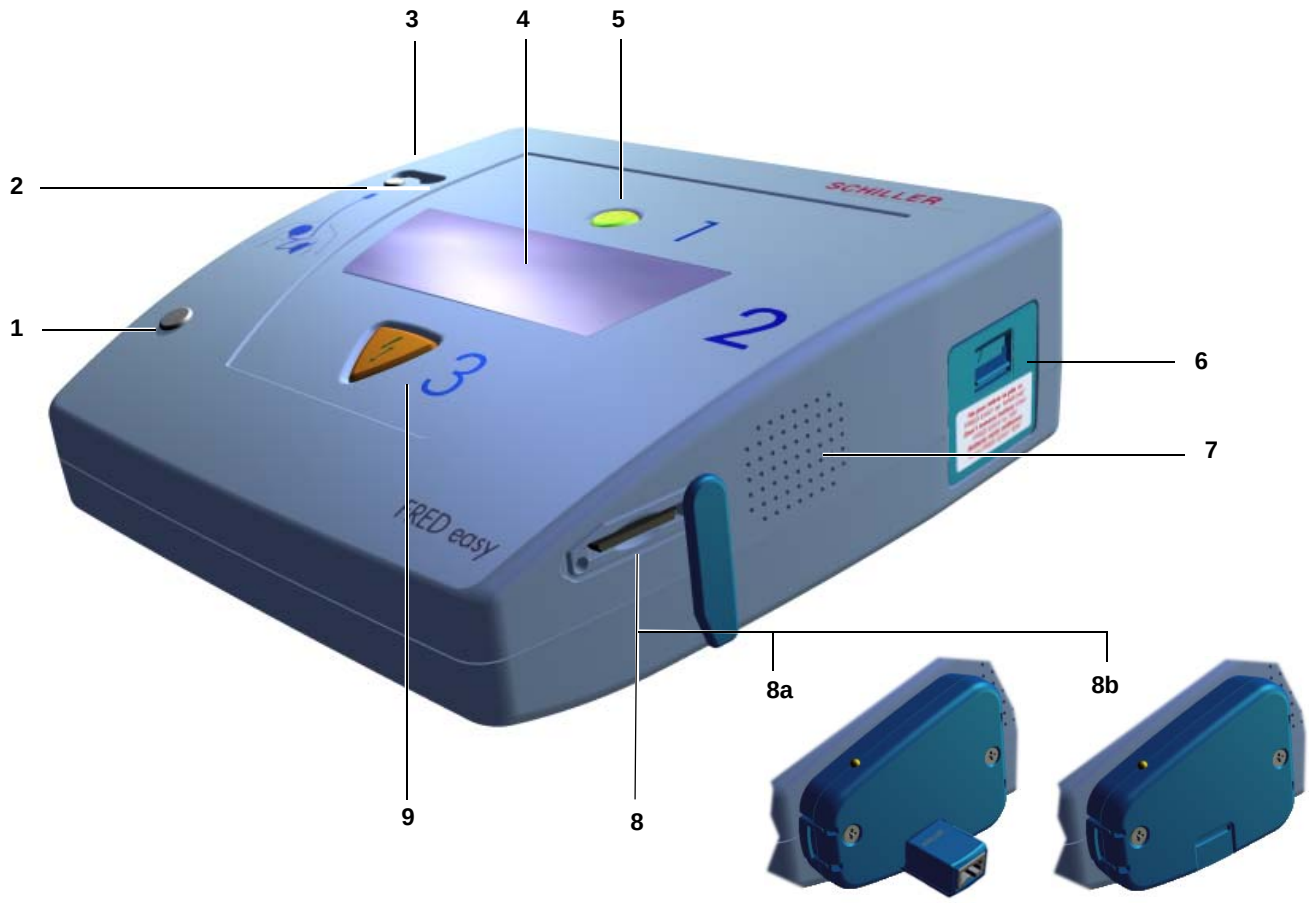
2.4.2 Operation and display



The **FRED easy®** versions SD Card (removable memory card), ETHERNET (with Ethernet adaptor) and ONLINE (with docking station) only differ from each other in point 8.

Fig. 2.2 Green indicator blinking

(1) The green indicator is blinking if no problem was detected during the last self-test (see Fig. 2.2 Green indicator blinking).

(2) The yellow indicator is lit when the device has not detected an acceptable resistance between the electrodes (i.e. when the electrodes are not applied and/or the electrode cable is not connected).

(3) Port for the adhesive pads.

(4) Display.

(5) The green button has got the following functions:

- Switch on the device (press for max. 1 second)
- Switch the device off (press and hold for 3 seconds)
- Start the analysis in semi-automatic mode (only press the button for 1 second!)

(6) Battery.

(7) Speaker.

(8) SD card slot.The Ethernet interface **(8a)** is used to connect the Ethernet adapter (Ethernet version) and to connect the device to the docking station **(8b)** (Online version).

(9) Orange button to trigger the defibrillation shock (in semi-automatic mode only).

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2.4.3 Display

Fig. 2.3 **FRED easy®** display

(1) Symbol display line.
(2) Text display lines. The written instructions issued by the **FRED easy®** are displayed on these 3 lines.

2.4.4 Symbols used on the display

	Number of shocks delivered since the device was turned on.
	Sufficient battery capacity (see 3.1 Inserting the battery).
	Low battery capacity (see 3.1 Inserting the battery).
	SD card detected, percentage of memory used.
	SD card not recognised (see 5.1 SD card version).
	Adult pads detected.
	Paediatric pads detected.
	Time elapsed since device was turned on (minutes : seconds).

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3 Initial operation

DANGER

Danger of explosion — The **FRED easy®** must not be used in areas where there is any danger of explosion. Areas may be susceptible to explosion if flammable substances (gas), flammable anaesthetics, or products used to clean or disinfect the skin are used. Moreover, the defibrillator must not be used in an environment that is favourable to combustion. This is the case when ambient air contains more than 25% oxygen or nitrous oxide (laughing gas). Oxygenation in the vicinity of the defibrillation pads must be strictly avoided. Less than 25% oxygen in the ambient air is considered safe. Dangerous, high oxygen concentrations can only occur in oxygen masks or in enclosed areas, such as hyperbaric chambers.

3.1 Inserting the battery

WARNING

Li/MnO2

- **Danger of explosion!** The battery must not be exposed to high temperatures or disposed of with household waste.
- Do not expose the battery to chemicals that could dissolve ABS, polypropylene, polyvinyl chloride, nickel, mylar or steel.
- Do not short-circuit, cut, destroy, burn or charge (Li/MnO2 battery) a battery.

Patient hazard! — **Incorrect battery capacity indication**

- A new battery is initialised by the device when inserting it and is allocated to this device. It must not be inserted in another device.
- Replace the battery if the device indicates a battery problem. A defective battery must not be used.
- Turn off the device before removing the battery.

CAUTION

Patient hazard — **Ensuring operational readiness!**

- Make sure that the device is always equipped with a sufficiently charged battery and keep a spare battery on hand.
- The expiration date of a new battery, stored in its original packaging at a temperature of 25°C, is indicated on its packaging. It must not be used beyond this date.
- The battery must remained packed in its original plastic packaging (blister) during the entire storage time. The plastic packaging must only be removed when the battery is used.
- Do not expose the **FRED easy®** to direct sunlight or to extreme hot or cold. An ambient temperature higher than 25°C has an adverse effect on the battery life.

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- The device is normally operated with a non rechargeable lithium battery.
- Alternatively, a rechargeable NiCd battery can be used (see 6.3 Rechargeable NiCd battery).
- Each time the device is turned on, it verifies that the battery is functioning properly.

Equipment damage —

▲ The connector in the battery compartment must only be used for maintenance purposes.

▲ Do not use rechargeable batteries to operate the **FRED easy® TRAINER** because its voltage is not suitable for this device.

▲ Do not use the lithium battery to power the **FRED easy® TRAINER**, because its voltage is not adapted to this device.

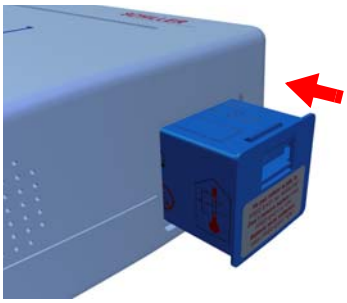

Fig. 3.1 Inserting the battery

→ Insert the battery as indicated in the illustration on the left.
  – Firmly press the battery into the battery compartment until it clicks into place.
  – As soon as the battery is inserted, the **FRED easy®** runs a self-test to check the condition of the device and the battery.
  – After this self-test, the date, time and IP configuration for the FRED easy Ethernet/Online can be set (see section 5.4.2 page 60).

If this test does not reveal any problems, the green indicator starts blinking and the information is displayed.

3.1.1 Switching device On and Off

Switching ON → Press the green button for max. 1 second.

Switching OFF → Press the green button and hold for 3 second.

Forced shutdown procedure

If the device cannot be switched off via the above procedure, remove the battery and inserting again.

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3.2 Battery monitoring

- The **FRED easy®** checks the capacity of the rechargeable NiCd battery or the lithium battery and warns the user when the battery is "low" or "depleted".
- The lithium battery ensures that the device stays fully operative (and performs the self-test) for several years (at a temperature between 15 °C and 25 °C), provided that the device is not being used.
- Battery service life depends on device use and ambient conditions.

▲ Whatever its remaining capacity, the battery must be replaced once the expiration date (indicated on the packaging) has been reached.

▲ The old battery must be recycled in accordance with local regulations.

3.2.1 Sufficient battery capacity

FRED easy® displays the ok symbol to indicate that the battery capacity is "sufficient".

The ok **FRED easy®**symbol remains displayed on the screen for as long as the battery capacity is "sufficient".

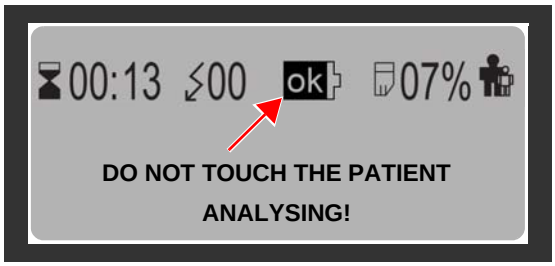

Fig. 3.2 Sufficient battery capacity

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3.2.2 Low battery capacity during use

- Despite the acoustic and written warnings, the device can still be used as normal and is still able to perform defibrillations.
- Always switch off the device before removing the battery.
- The remaining battery capacity depends on the use and ambient conditions.

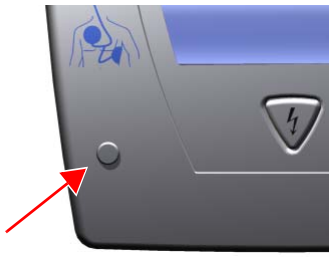

Fig. 3.3 The green indicator is not lit

If the battery capacity falls below the "low" threshold while the device is in use, the green indicator is turned off, the symbol starts blinking on the display and the device emits an audible signal.

These warnings are issued until the battery is replaced (or recharged). The battery must be replaced as quickly as possible.

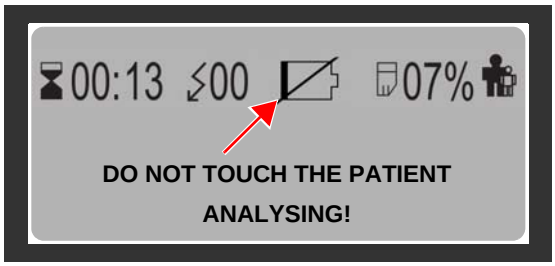

Fig. 3.4 Low battery capacity

Low battery capacity during self-test or after the battery has been inserted

- If low battery capacity is detected during a self-test or when the battery is inserted, the device emits an audible signal and the green indicator is not lit until the battery is replaced (see Fig. 3.3 The green indicator is not lit).

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3.2.3 Battery depleted during use, limited mode (CPR)

WARNING

Patient hazard — Defibrillation is no longer possible if a depleted battery is detected. The battery needs to be replaced immediately.

If a depleted battery is detected while the device is in use, a message is displayed prompting the user to replace the battery and to perform CPR. An audible signal is emitted and the indicator remains off until the battery is replaced (or charged).

The message stays displayed until the battery is replaced.


Green indicator is off

Depleted battery during self-test

- When a depleted battery has been detected, the green indicator is off and an audible signal is emitted.
- When the device is next switched on, a message is displayed, prompting the user to replace the battery and continue with CPR until the device is fully operational again.

Depleted battery after the battery has been inserted

- If a battery inserted in the device is identified as depleted, an audible signal is emitted, the green indicator is turned off and a message indicating that the battery must be replaced is displayed.

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4 Defibrillation

4.1 Instructions and Safety Notes

4.1.1 Instructions

- **FRED easy®** is a high-voltage electrotherapy device. Only personnel authorised by local law are permitted to use these devices. Improper use can endanger life.
- Non medical personnel is only permitted to use an AED such as the **FRED easy®** if local law approves of this practice. Make sure that the **FRED easy®** is only accessible to persons who are legally authorised to use an AED.
- The success of the defibrillation depends on the correct application of the defibrillator but also on the heart's condition. It is the physician's responsibility to decide about any additional measures (e.g. adrenaline).
- According to AHA/ERC guidelines, even children under 8 years may be defibrillated.
- The electrodes should be applied in the anterior-anterior position. With infants, anterior-posterior placement can be advised to prevent a short-circuit between the two defibrillation electrodes.
- A defibrillation can fail with certain disease patterns.

4.1.2 Safety notes for AED use

⚠WARNING

▲ Before each use, the user must verify that the device operates reliably and is in proper working order. It is especially important to check that connection cables are not damaged. Damaged cables and connectors must be replaced immediately.

▲ Changes, including concerning operational behaviour, affecting safety must be immediately reported to the responsible.

▲ Equipment damage! Sensors and devices that are not defibrillation-proof must be disconnected from the patient before a shock is triggered.

Shock hazard — for patients

▲ In unfavorable situations, the possibility of ECG analysis errors should not be dismissed. The device must therefore only be used if the following symptoms are found:

– not responsive,
– no respiration,
– no pulse.

▲ If, in the course of treatment, a patient spontaneously regains consciousness, a defibrillation shock that may have been advised just before must not be delivered.

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⚠WARNING

Shock hazard — for user and assistants

▲ Wear gloves when performing a defibrillation, if possible.

▲ Position the patient flat on a firm, electrically insulated surface.

▲ Make sure that there are no conductive connections between the patient and other persons during ECG analysis and defibrillation.

▲ The patient must not come into contact with metal parts, e.g. a bed or stretcher, in order to prevent secondary contacts or paths for the defibrillation current that could endanger the assistants. For the same reason, do not position the patient on a wet surface (rain, swimming pool accidents).

▲ Do not allow the defibrillation electrodes to come into contact with other electrodes or metal parts which are in contact with the patient.

▲ The patient's chest must be dry because moisture can cause unwanted pathways for the defibrillation current. For safety, wipe off flammable skin cleansing agents.

▲ The user and all assistants must be briefed regarding the defibrillation procedure (preparation and execution). The assistants' tasks must be clearly defined.

- During ECG analysis:
  - suspend CPR,
  - ensure that the patient lies as motionless as possible,
  - do not touch the patient, otherwise, artefacts may lead to incorrect analysis results.
- Immediately prior to the shock:
  - stop chest compressions and artificial respiration (CPR),
  - instruct bystanders to not touch the patient or conducting objects.

Risk of skin burns — for the patient

▲ Due to the high currents, there is a risk of skin burns at the electrode application site. This is why the electrodes must not be placed on or above:
  - the sternum,
  - the clavicle or,
  - the nipples.

Risk of malfunction of implanted pacemaker!

▲ Defibrillating a patient with an implanted pacemaker is likely to impair the pacemaker function or cause damage to the pacemaker.
For this reason:
  - defibrillation pads must not be positioned near the pacemaker,
  - have an external pacemaker at hand.

▲ The pacemaker must be checked for proper functioning as soon as possible after defibrillation.

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4.2 Defibrillation procedure

The user is informed of each step by a voice prompt as well as a text instruction on the display.

Both the voice prompts and text instructions can be issued as "**long instructions**" as well as "**short instructions**".

Contact your SCHILLER distributor for more information.

The following procedure is applicable when "**long instructions**" have been configured.

➢ **Switch on the device and call the emergency medical service**

Once the device is turned on (by pressing thre green button), an instruction text reminds the user to call the emergency medical service.

➢ **Assess the patient's condition**

The device then prompts the user to assess the patient's condition.

DANGER

The device must only be used if the following symptoms are found:

- not responsive,
- no respiration,
- no pulse.

➢ **Preparing the patient**

Once you made sure that the patient does not show any signs of circulation, you are prompted to remove the clothes from the patient's upper body.

The patient's chest may be shaved, if necessary.

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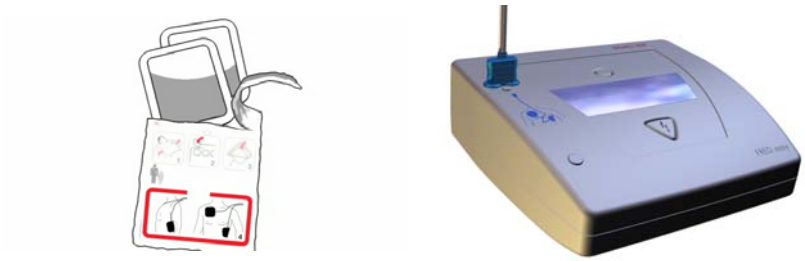
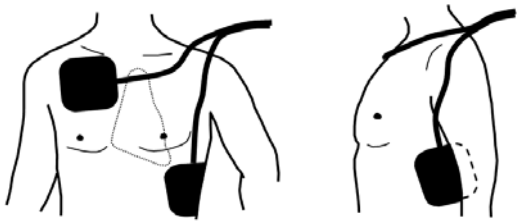
➢ **Open the electrode packaging and connect the electrodes**

Open the electrode packaging and connect the electrodes to the device (unless the electrodes are pre-connected).



➢ **Applying the electrodes**

FRED easy® prompts the user to apply the electrodes on the patient's chest.



- The yellow indicator is lit and the device repeats the instructions twice until the electrodes are applied, or until the electrode connector is connected to the device, respectively, and the electrode-skin resistance (impedance) has reached an acceptable level.
- After the second prompt to apply the electrodes, the device recommends to perform a cardiopulmonary resuscitation cycle. The device will switch off if it has not detected an acceptable impedance between the two electrodes after 5 minutes of CPR.

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➢ **ECG analysis**

Before each analysis, the device informs the user that the patient must not be touched.

In semi-automatic mode, the device prompts the user to start an ECG analysis by pressing the green button.

- If no analysis has been initiated after a few seconds following the prompt to start the analysis, the device recommends to perform a cardiopulmonary resuscitation cycle. At the end of the CPR cycle, the device repeats the prompt to start the analysis.
- The semi-automatic **FRED easy®** can be configured to automatically start the ECG analysis without pressing the green button.

In automatic as well as semi-automatic mode (with automatic analysis activated), the **FRED easy®** informs the user that the analysis is going to be performed. The ECG analysis is started without any intervention by the user.

The analysis takes approximately 10 seconds.

• **Motion detection**

During ECG analysis, the patient must lie as still as possible and the user must suspend CPR; otherwise, artefacts may lead to an incorrect analysis.

The **FRED easy®** includes a motion detection function. When the ECG analysis is disturbed by CPR or patient movements, the device informes the user via a voice prompt and a written message on the display. The analysis is automatically resumed as soon as the cause of disturbance has been eliminated.

If no correct analysis has been obtained by the time the instruction has been repeated 5 times, the device recommends to perform a cardiopulmonary resuscitation cycle.

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➢ **Shock advised**

The device has detected a shockable rhythm.

Before each shock delivery, the device warns the user not to touch the patient.

If the analysis algorithm detects a shockable rhythm, the device will automatically charge the required defibrillation energy. Once the energy is charged, the user is prompted to deliver the shock by pressing the orange button (only in semi-automatic mode).

In automatic mode, the device alerts the user that the shock will be delivered, and then delivers the shock without user intervention.

Then the **FRED easy®** informs the user via spoken and written message that the shock has been delivered.

Shockable conditions include:

– ventricular fibrillation or
– ventricular tachycardia with a rate higher than 150 bpm.

⚠WARNING

If the device detects a shockable rhythm, the shock must only be released if the patient does not show any signs of circulation.

If the device detects that the patient's heart rhythm has changed to an non shockable rhythm, the previously recommended shock is immediately cancelled and the energy is discharged internally. **FRED easy®** informs the user that the shock has been cancelled.

• **Each shock is followed by CPR**

The **FRED easy®** informs the user that the patient can be touched again and prompts the user to perform a cardiopulmonary resuscitation cycle.

According to the configuration of the device, a CPR cycle consists of:

– performing chest compressions during the set period of time, or
– performing alternatively 30 chest compressions and 2 breathes during the set period of time.

Before each CPR cycle, the device informs the user that the patient can be touched.

The device indicates the position of the hands and the rhythm of chest compressions with beeps ("metronome"), if applicable.

- For children, the number of chest compressions can be configured to 15 or 30 using **FREDCO®**. The device recognises the connected electrodes (adult or child electrodes) and selects the number of chest compressions accordingly.
- CPR duration can be configured in **FREDCO®** and is the same for adults and children: it can be set between 30 seconds and 7.5 minutes, in steps of 30 seconds.

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- **Followed by a new analysis**

  Once the CPR cycle has been finished, the device prompts the user to run a new ECG analysis (in semi-automatic mode).

  In automatic as well as semi-automatic mode (with automatic analysis activated), this new analysis starts without any intervention required of the user.

  If the device again detects a shockable rhythm, it will automatically charge the defibrillation energy necessary for the 2nd or 3rd shock. For all subsequent shocks, the energy remains the same for the 3rd shock.

  The energy levels can be configured by SCHILLER's customer service (see 8 Technical Data).

- **Successful shock followed by CPR**

  After a successful shock (no further shocks advised by the ECG analysis), **FRED easy®** prompts the user to perform CPR.

➢ **No shock advised**

The device has not detected a shockable rhythm.

If the analysis algorithm does not detect a shockable rhythm, the **FRED easy®** informs the user that no shock is necessary and prompts him or her to perform CPR.

According to the configuration of the device, the user may be asked to check the presence of pulse before performing the CPR cycle.

➢ **Finishing the therapy**

Once the therapy has been finished, the defibrillation pads must be removed from the patient's chest and disconnected from the device. The defibrillation pads are not reusable.

The device can then be switched off by pressing and holding the green button for 3 seconds.

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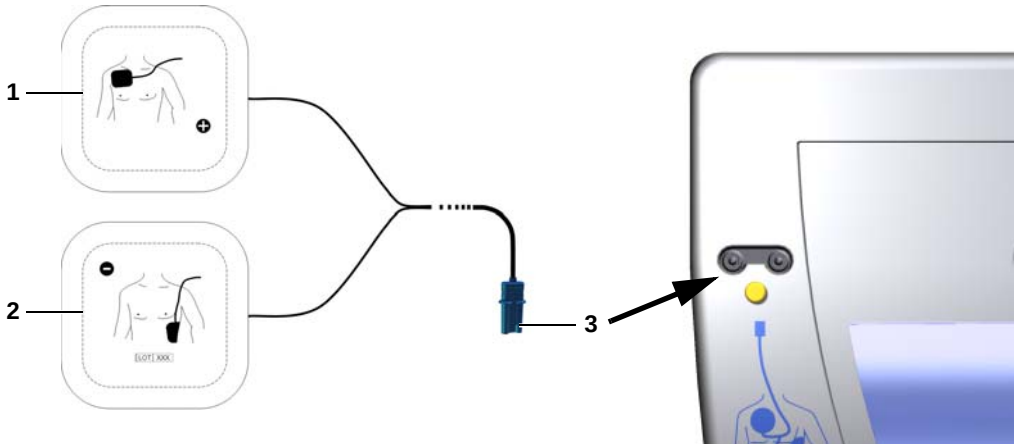
4.3 Applying the adhesive electrodes

4.3.1 General information

- ▲ Only use the pads up to their expiration date. Please note that the expiration date of the pads only applies if the vacuum pack is intact.
- ▲ The pads are sufficiently pre-gelled. Do not use extra contact agent.
- ▲ Do not reuse the pads.

After having removed the clothes from the patient's upper body, perform the following steps:

- open the electrode packaging, connect the electrode cable to the device
- and apply the electrodes to the patient's chest.



(1) Defibrillation pad to be placed at the right sternal edge at the level of the 2nd intercostal space.

(2) Defibrillation pad to be placed at the left axillary line at the level of the 5th intercostal space.

(3) Electrode connector, to be inserted into the electrode port.

Fig. 4.1 Yellow indicator

- The yellow indicator is lit and the device repeats the instructions twice until the electrodes are applied, or until the electrode connector is connected to the device, respectively, and the electrode-skin resistance (impedance) has reached an acceptable level.
- After the second prompt to apply the electrodes, the device recommends to perform a cardiopulmonary resuscitation cycle. The device will then switch off if it has not detected an acceptable impedance between the two electrodes after 5 minutes of CPR.

- If using "pre-connected" pads, it is only necessary to apply the pads to the patient's chest.

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4.3.2 Apply the adhesive electrodes and connect them to the device

Step 1

Open the electrode packaging

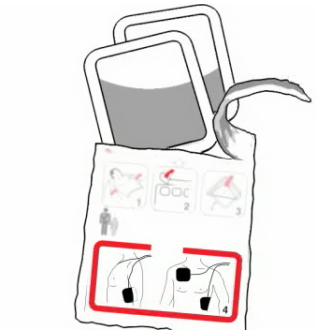

Fig. 4.2 Opening the electrode packaging

⚠ CAUTION

▲ Risks for the user and the patient — The packaging of pre-connected electrodes is welded to the electrode cable. Do not remove the packaging from the electrode cable (risk of damaging the cable).

When using pre-connected electrodes, go directly to Step 3 Applying the electrodes to the patient's chest.

Step 2

Connecting the electrode cable to the device

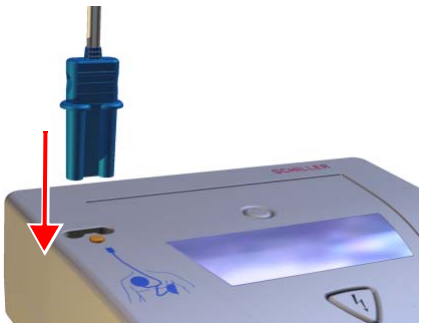

Fig. 4.3 Inserting the connector into the port

i

Pre-connected electrodes, which are already connected to the device, only need to be applied to the patient's chest (Step 3). In this case, Step 2 is not required. Electrodes that are not pre-connected, need to be connected (Step 2) and applied (Step 3).

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Step 3 Applying the electrodes to the patient's chest

⚠WARNING

- ▲ Risk of skin burns/equipment damage — Do not apply the defibrillation pads on top of:
  - – the sternum or clavicle,
  - – the nipples,
  - – an implanted pacemaker or defibrillator device.
- ▲ Skin covered in sea water, sand, sunscreen, or skin or body care products may impair electrode contact or cause the electrodes to become disconnected.

Adult and paediatric electrodes

Large electrodes

The large adult electrodes with a surface area of 80 cm² are used for adults and children weighing 25 kg or more.

Small electrodes

The small paediatric electrodes with a surface area of 42 cm² are used for children weighing less than 25 kg (younger than 8 years of age).

Electrode placement is the same for adults and for children (see Fig. 4.5 Electrode application sites for children). The device automatically distinguishes between adult electrodes and paediatric electrodes.

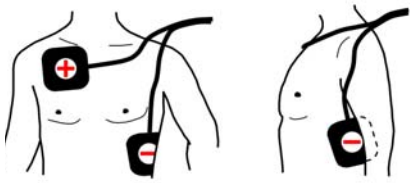

Fig. 4.4 Electrode application sites

1. Before applying the adhesive electrodes, verify that the application sites on the patient's chest are clean and dry.
2. The skin must be cleaned by rubbing the application points vigorously with a dry cloth. Do not use alcohol or alcohol wipes. This could significantly increase the contact impedance between the electrodes and the skin.
3. Carefully shave the application sites if the patient's chest is hairy.
4. Apply the positive electrode at the right sternal edge at the level of the 2nd intercostal space. Do **not** apply the positive electrode on top of the clavicle (uneven surface).
5. Apply the negative electrode on the left axillary line at the level of the 5th intercostal space.

The electrodes must have good contact with the patient's skin. Air bubbles under the electrodes must be avoided. To avoid air bubbles, place one edge of the adhesive electrode to the patient's chest, then gradually smooth it out toward the other edge to remove any air.

Fig. 4.5 Electrode application sites for children

6. Place the electrodes on the patient's chest so that the connections point to either side of the patient in order not to hinder CPR.

When defibrillating small children, it is recommended to choose the anterior-posterior position to avoid short-circuiting the electrodes.

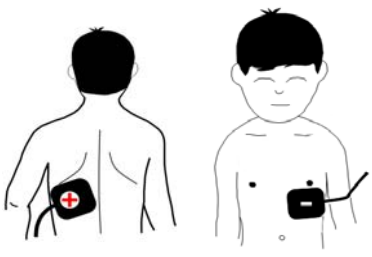

Fig. 4.6 Application sites for small children

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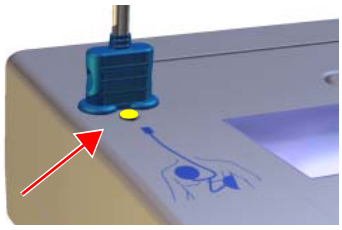
4.3.3 Checking the electrodes



If the resistance (impedance) reaches an unacceptable value, the device interrupts and prompts the user to check the electrode application and connection*(*CHECK CONNECTOR IS FITTED AND ELECTRODE APPLIED ON CHEST*)*. In addition, the yellow indicator is lit.

This can occur if:

– the cable is diconnected from the device and/or,
– if the electrodes are not properly applied to the patient's chest.

- Then the device recommends to perform a cardiopulmonary resuscitation cycle.
- The device resumes the intervention where it has been interrupted when it detects that the resistance between both electrodes is again acceptable.
- The device switches off if it still does not detect acceptable resistance between both electrodes after 5 minutes of CPR.

Follow these steps to check the electrodes:

1. insert the connector as specified in Step 2 on page 35.
2. press strongly one after the other the defibrillation pads to the patient's chest to find which one makes the yellow indicator switched off,
3. Carefully press this electrode on the patient's skin.

If the electrode defect is not corrected:

1. remove both electrodes,
2. wipe the remaining contact agent off with a cloth,
3. shave both application points to improve the contact between the electrodes and the skin,
4. apply new defibrillation electrodes.

To remove the electrodes from the patient's chest, see 4.8 Finishing the therapy.

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4.4 Semi-automatic defibrillation

WARNING

Patient hazard — The guidelines given in 4.1 Instructions and Safety Notes must be observed.

Semi-Automatic Defibrillation

Step 1

Switching on and preparing the device

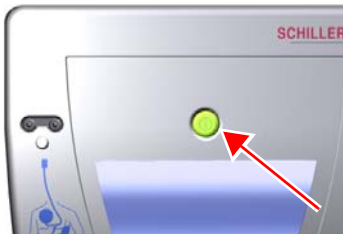

Fig. 4.7 Button to turn the device on/off and to start analysis

1. Briefly press the green button (max. 1 second) to switch on the device.
2. Assess the patient's condition (see 4.2 Defibrillation procedure).
3. Connect the electrode cable to the device (see 4.3 Applying the adhesive electrodes).
4. Apply the defibrillation electrodes to the patient's chest (see 4.3 Applying the adhesive electrodes).

Step 2

Analysing the ECG signal

5. Briefly press the green button (max. 1 second). A message prompts the user to stay clear of the patient.

CAUTION

Briefly press the green button (max. 1 second) to start the analysis. Otherwise, the device will switch off.

- The semi-automatic version of the **FRED easy®** can be configured so that the ECG analysis is initiated automatically. In this case, the device prompts the user to connect the electrodes and then automatically runs the analysis without any intervention by the user.
- If the device detects ventricular fibrillation or ventricular tachycardia with a heart rate exceeding 150 bpm, Step 3 Shock delivery follows; otherwise, continue with Step 4, Performing cardiopulmonary resuscitation.

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Step 3

Shock delivery

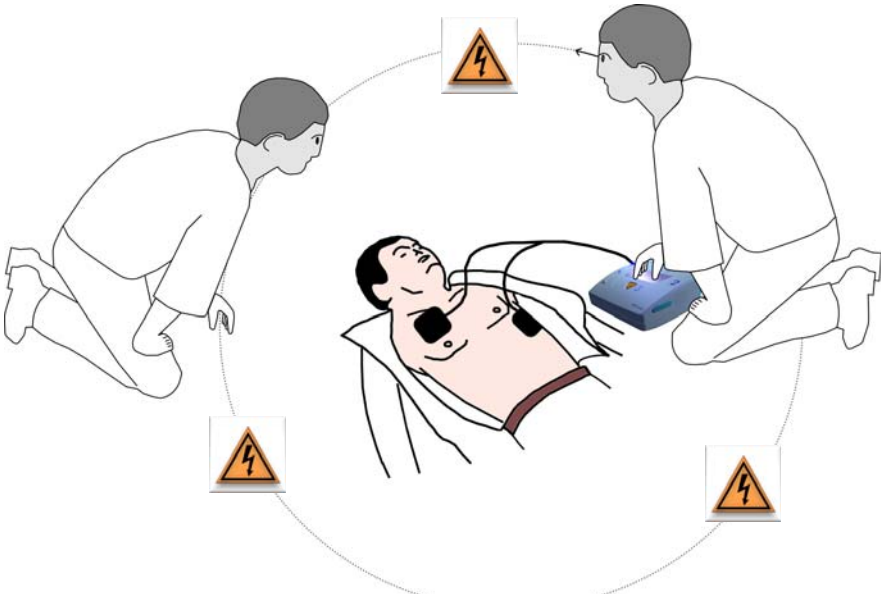
Fig. 4.8 Button to deliver the shock

When the energy is charged, the user is prompted to trigger the shock by pressing the lit orange button.

⚠ GEFAHR

Shock hazard!

- ▲ Do not, under any circumstances, touch the patient during shock delivery.
- ▲ Make sure that the patient does not touch any conducting objects.



6. Deliver the shock by pressing the button .
   After the shock delivery, proceed with Step 4 Performing cardiopulmonary resuscitation.

Step 4

Performing cardiopulmonary resuscitation

7. Perform a CPR cycle. According to the configuration of the device, a CPR cycle consists of:
   – performing chest compressions for the set period of time, or
   – alternately performing 30 chest compressions and 2 breathes for the set period of time.
   After the CPR cycle, the device continues with Step 2 Analysing the ECG signal.

If the device is configured to start the ECG analysis automatically, the device will not require any action from the user to run the ECG analysis.

Finishing the therapy

See 4.8 Finishing the therapy.

Art. no.: 0-48-0013 Rev. m

4.5 Automatic defibrillation

The laws and regulations for the use of automatic defibrillators differ from country to country. While some countries allow laypersons to use automatic defibrillators without any special training, other countries restrict the use of AEDs to EMTs or First Responders who have undergone special training.

4.5.1 Functional description of automatic AEDs

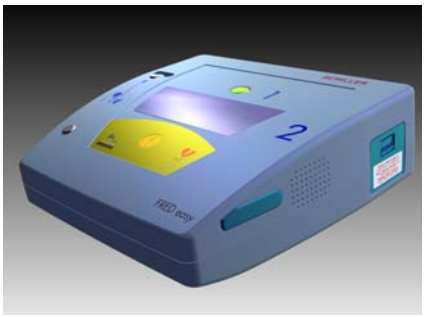


Fig. 4.9 **FRED easy®** Automatic

This device delivers defibrillation shocks automatically, i.e. there is no need to start the analysis or trigger the shock.

Voice and text prompts displayed on the screen keep the user informed regarding the therapy.

If a shock is advised, the energy is automatically charged. A countdown accompanies the last 3 seconds before the shock is delivered.

4.5.2 Safety notes for automatic defibrillation

DANGER

Risks for patient, users and assistants!

Once the device has been switched on with the green button and the electrodes have been applied, the ECG analysis is started automatically and a shock is delivered automatically if a shockable rhythm is present. The user is informed of an ongoing analysis or shock release via written and acoustic messages.

- ▲ Touching or transporting the patient during analysis may lead to an incorrect analysis. Analysis results are only valid if the patient remained unconscious during the entire analysis and was not touched.
- ▲ For this reason, chest compressions and artificial respiration must be suspended during the analysis.
- ▲ The patient must not be touched or transported (e.g. stretcher) during analysis and shock delivery.
- ▲ The notes in section 4.1 Instructions and Safety Notes page 27 must be observed.

Art. no.: 0-48-0013 Rev. m

Automatic defibrillation

Step 1

Switching on and preparing the device

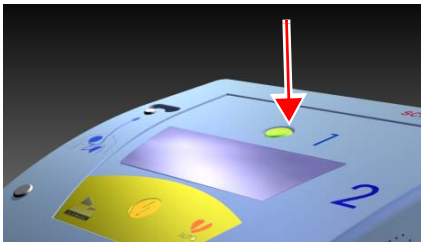


Fig. 4.10 Button to turn the device on/off and to start analysis

1. Briefly press the green button (max. 1 second) to switch on the device.
2. Assess the patient's condition (see 4.2 Defibrillation procedure).
3. Connect the electrode cable to the device (see 4.3 Applying the adhesive electrodes).
4. Apply the defibrillation electrodes to the patient's chest (see 4.3 Applying the adhesive electrodes).

Step 2

Automatic ECG analysis

The analysis is automatically triggered, without user intervention. A message prompts the user not to touch the patient.

If the device detects ventricular fibrillation or ventricular tachycardia with a heart rate exceeding 150 bpm, Step 3 Automatic shock deliveryfollows; otherwise, continue with Step 4, Performing cardiopulmonary resuscitation.

Art. no.: 0-48-0013 Rev. m

Step 3

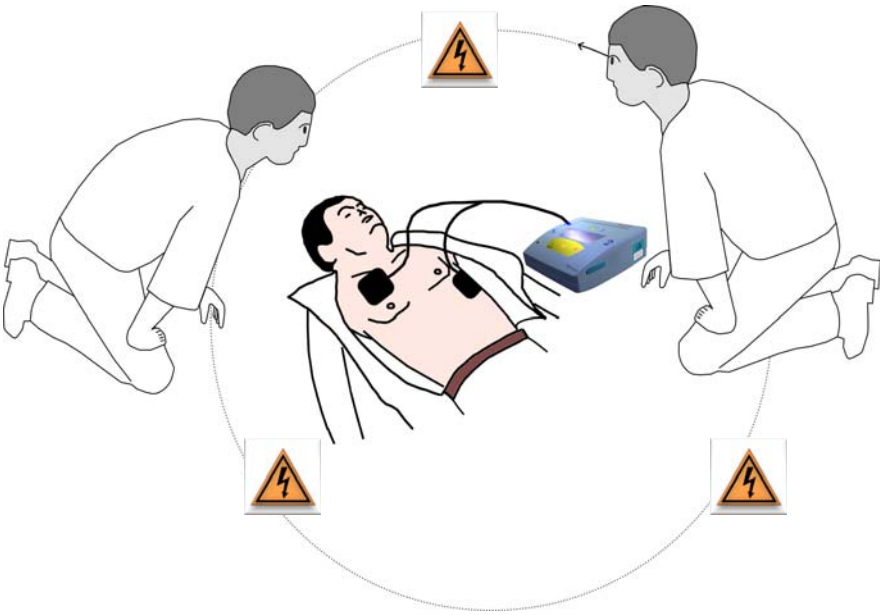
Automatic shock delivery

As soon as the energy charge is completed, the device automatically delivers the shock, without user intervention. A countdown is displayed on the screen and the orange button blinks until the shock is delivered.

⚠ DANGER

Shock hazard!

- ▲ Do not, under any circumstances, touch the patient during shock delivery.
- ▲ Make sure that the patient does not touch any conducting objects.



After the shock delivery, proceed with Step 4 Performing cardiopulmonary resuscitation.

Step 4

Performing cardiopulmonary resuscitation

5. Perform a CPR cycle. According to the configuration of the device, a CPR cycle consists of:
   - performing chest compressions for the period of time configured, or
   - performing alternatively 30 chest compressions and 2 breathes during the period of time configured.

   After the CPR cycle, the device proceeds with Step 2 Automatic ECG analysis.

Finishing the therapy

See 4.8 Finishing the therapy.

Art. no.: 0-48-0013 Rev. m

4.6 Manual Defibrillation (option)

The option to switchover to manual mode is only available for the semi-automatic version of **FRED easy®**.

The **FRED easy®** with manual mode is indicated by a red foil on the casing. If the user does **not** activate the manual mode after switchon, the unit remains in semi-automatic mode. The defibrillation will then be carried out as described in section 4.4.

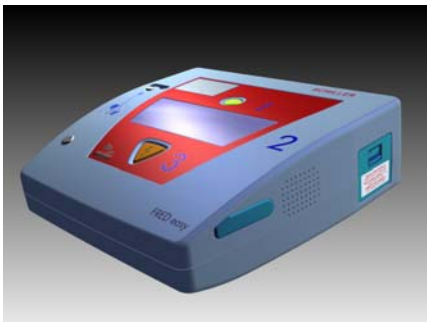


Fig. 4.11 **FRED easy®** semi-automatic with manual option

Even though non physicians are legally authorised to use semi-automatic defibrillators, the **FRED easy®** must not be used by non physicians when it is in manual mode.

In some countries, however, the option to switch from semi-automatic mode to manual mode is made available to EMTs and medical personnel (non physicians). In this situation, individual protocols must be determined in cooperation with the EMTs. These protocols must be based on AHA or ERC protocols or on the regulations of the country in question. Furthermore, the emergency service is required to ensure that the procedures established are observed and that the staff is trained accordingly.

- The device cannot be turned on directly in manual mode.
- It is not possible to switch to manual mode while the device is powering on. Therefore, do not press the orange button while the device is powering on.
- It is not possible to switch the defibrillator to manual mode while a defibrillation procedure is in progress (analysis, charging, shock delivery).
- The patient's ECG signal is automatically displayed when the **FRED easy®** is switched to manual mode.

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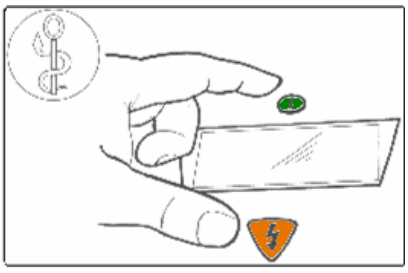
4.6.1 Manual defibrillation - description

The user is informed of each step by a voice prompt as well as text instructions on the display.

➢ **Turning on the device and switching to manual mode**



Press the green button to switch on the device.

Wait until the device has fully started up and is prompting you to connect and apply the electrodes.

Simultaneously press the green and orange button + . You are prompted to press the buttons a second time to confirm switchover to manual mode. You need to confirm this within 5 seconds.

Connect the electrode cable and apply the electrodes to the patient's chest (see section 4.3 Applying the adhesive electrodes).

The patient's ECG signal is automatically displayed when the **FRED easy®** is switched to manual mode.

➢ **Defibrillator charging**

In manual defibrillation, the energy values of the first 3 shocks are those defined for the semi-automatic mode. For all subsequent shocks, the energy level of the 3rd shock is used.

The device prompts the user to press the green button to charge the energy. The charging progress is displayed on the screen.

➢ **Shock delivery**

As soon as the set energy is charged, the orange button is lit and the user is prompted to deliver the shock (by voice prompt as well as written instructions).

Once the shock is delivered, the device repeats the prompt to charge the energy for the following shock.

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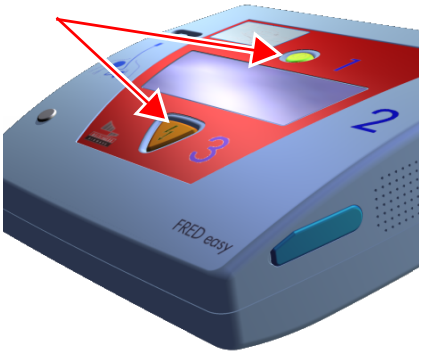
4.6.2 Manual defibrillation procedure

WARNING

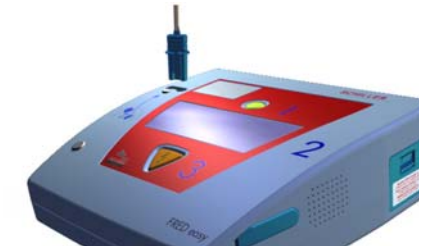
Patient hazard — Only a physician is allowed to enable manual mode. Observe the instructions given in section 4.1 Instructions and Safety Notes.

Step 1

Switching on and preparing the device



1. Briefly press the green button (max. 1 second) to switch on the device.
2. Switch to manual mode by simultaneously pressing the green and orange buttons + . Confirm the switching by simultaneously pressing these same buttons a second time.



3. Connect the electrode cable to the device.
4. Apply the electrodes on the patient's upper body (see 4.3 Applying the adhesive electrodes).

Step 2

Charging the energy

5. Briefly press the green button (max. 1 second).

CAUTION

Patient hazard — Press the green button only briefly (max. 1 second) to start the energy charging. If you press the button for too long, the device is switched off.

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Step 3

Shock delivery

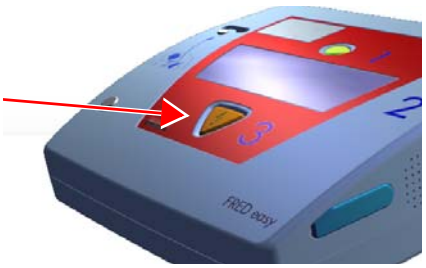


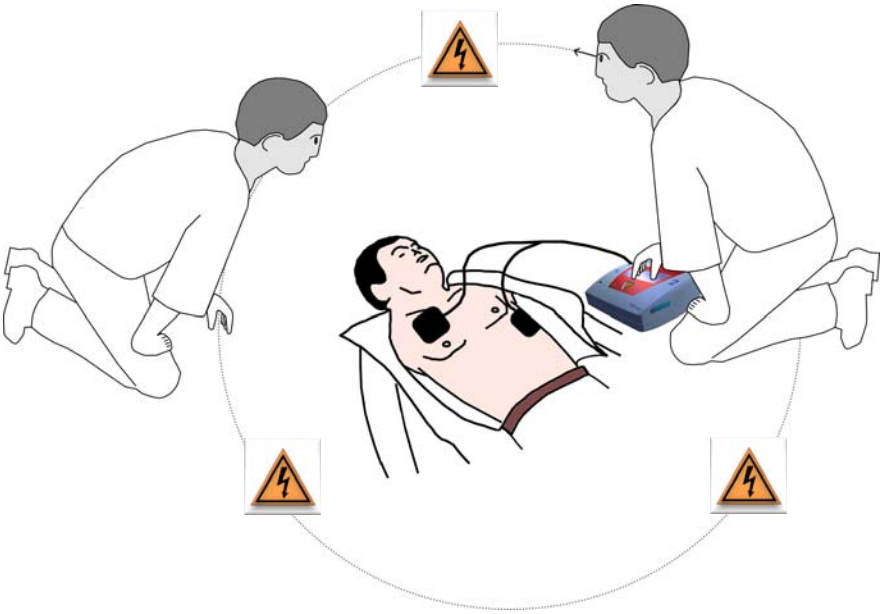
Fig. 4.12 Button to deliver the shock

As soon as the energy is charged, the device prompts the user to deliver the shock by pressing the orange button. The orange button remains lit until the shock is delivered.

⚠ DANGER

Shock hazard!

- ▲ Only deliver a shock when a shockable heart rhythm is present.
- ▲ Do not, under any circumstances, touch the patient during shock delivery.
- ▲ Make sure that the patient does not touch any conducting objects.



6. Deliver the shock by pressing the button.
   After the shock delivery, proceed with Step 2 Charging the energy.

Finishing the therapy

See 4.8 Finishing the therapy.

4.6.3 Switching to semi-automatic operational mode

To return to semi-automatic mode, turn off the **FRED easy®** and leave it turned off for at least 5 minutes before switching it on again.

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4.7 Internal safety discharge

WARNING

▲ If the device's behaviour differs from the description given in this user guide, the device is defective and must be repaired.

An internal safety discharge ensures that the stored energy is discharged within the device every time a defibrillation shock was not delivered correctly. An internal discharge is performed if:

- after the defibrillation energy has been charged, the heart rate changes into a non shockable rhythm
- the shock has not been delivered within the 20 seconds following the end of defibrillation energy charging
- an electrode error is detected
- the battery voltage is insufficient
- the device is defective
- the device is switched off before the shock is delivered.

4.8 Finishing the therapy

- Switch off the device once the therapy has been completed (press and hold the green button for approx. 3 seconds).
- Disconnect the electrode cable.
- Carefully peel the pads off the patient's skin (see Fig. 4.13 Removing the adhesive pads).
- Recycle the disposable pads immediately after use to keep them from being reused by mistake (hospital waste).

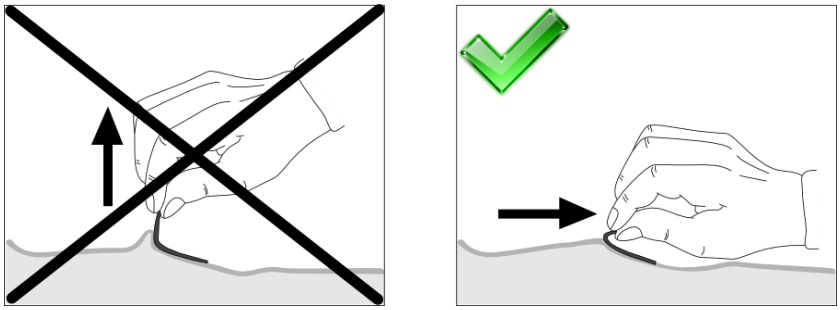

Fig. 4.13 Removing the adhesive pads

- 5 minutes after the device has been switched off, the number of shocks delivered as well as the time elapsed since the device was turned on, are reset to zero.
- If the device is turned off for less than 5 minutes, all data is stored (even if the battery is removed), and the device continues to count the number of shocks delivered, to measure the time elapsed since the device was turned on, and to store intervention events from the point at which the device was turned off.

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5 Versions

5.1 SD card version

Equipment damage hazard —

- ▲ The memory card slot must always be covered with the rubber cover. This is to prevent moisture penetrating the device.
- ▲ Always turn off the device before inserting or removing the SD card.
- ▲ Do not insert the Ethernet adapter into the SD card slot.

Malfunction hazard —

- ▲ The SD card must only be used in one single device.
  Before being used in another device, the SD card must be reformated with the Schiller data viewing software; otherwise, the recorded information will be incorrect.
- ▲ Only use SD cards supplied by SCHILLER.

Operating principle

This version records all defibrillation-related events on a removable SD card.

The SD card is able to record:

- 2 hours of ECG signal,
- 2 hours of sound recording (if this parameter has been activated using **FRED-CO®** and unless ambient noises are too loud).
- 500 events concerning the intervention (see table below).

Overview of recorded events, with date and time:
• Power on
• Movement detection (beginning and end)
• Operating mode
• Start of analysis
• Analysis result
• Defibrillator charging
• Defibrillation shock
• Defibrillation shock cancelled
• Internal discharge[a]
• Electrode alarm
• "Battery low" alarm
• Critical error
• Power off

a. This event is only recorded when the defibrillator has switched to "limited mode" due to a technical problem.

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5.1.1 Inserting the SD card

1. Make sure that the SD card is not write-protected.
2. Switch off the device before inserting the card.
3. Insert the card as shown in Fig. 5.2 SD card inserted (text facing up, in the direction indicated by the arrow). Otherwise, the device will not recognise the card and the symbol is displayed.

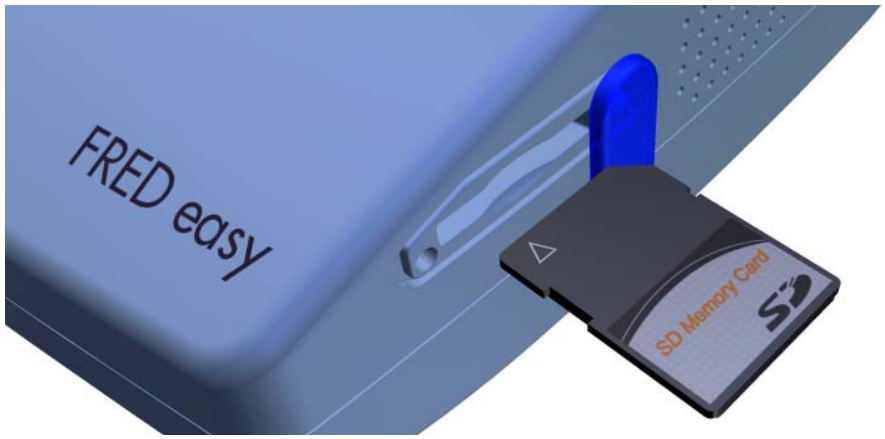

Fig. 5.1 Inserting the memory card

4. Once the card is inserted, close the rubber cover of the card slot.

If the symbol is not displayed even though the card has been inserted, check that the card has been recommended by SCHILLER for the use in this type of device.

Inserting the SD card automatically activates the memory function and the symbol is displayed (see Fig. 5.2 SD card inserted).

Fig. 5.2 SD card inserted

The symbol starts blinking when the SD card is full. No further data is stored; however, previously recorded data remains stored on the card.

SD cards can be read on a PC using the Schiller data viewing and "**LifeDataNet®**" software.

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5.2 Ethernet version

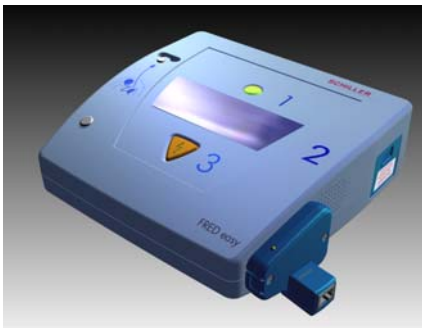

Fig. 5.3 Ethernet version

Operating principle

This version is able to send intervention data (stored on the internal memory) as well as detailed device configuration data to the **LifeDataNet®** web server.

The data is transmitted via a network infrastructure.

The internal memory is able to record:

- 2 hours of ECG signal,
- 2 hours of ambient noise (if the sound recording parameter is activated using **FREDCO®**),
- 500 events concerning the intervention.

Once the internal memory (SD card) is full, the symbol starts blinking and no more data can be stored. Stored data will be cleared once it has been transmitted. Transmitted data can be viewed using **LifeDataNet®**.

- The memory card cannot be removed for the **FRED easy®** Ethernet version.
- All events transmitted by the device are listed on page 48.
- In order to protect other electrical devices from interference during data transmission, a ferrite core must be placed on the Ethernet cable in close proximity to the Ethernet adapter (see 5.2.3 Installing the ferrite core).

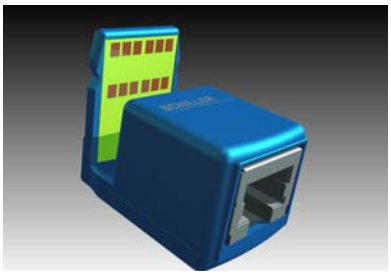

Fig. 5.4 Ethernet adapter

To ensure correct data transmission:

1. the "Network" and "Online" sections of the device settings must first be configured using the **FREDCO®** software program (see 5.2.1 Connecting the Ethernet adapter and 5.4.2 Configuring the "Online" Tab),
2. the Ethernet adapter must be connected to the network hosting the **LifeDataNet®** web server, via an Ethernet cable,
3. the Ethernet adapter must be inserted in the Ethernet interface of the device (see 5.2.1 Connecting the Ethernet adapter).

5.2.1 Connecting the Ethernet adapter

The Ethernet adapter needs to be inserted in the Ethernet interface (see Fig. 5.5 Inserting the Ethernet adapter in the Ethernet interface).

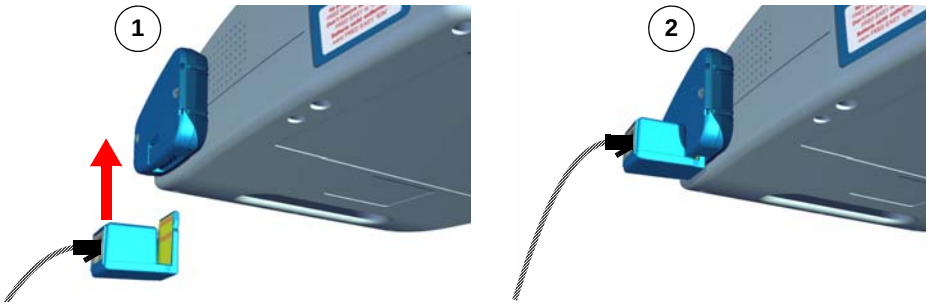

Fig. 5.5 Inserting the Ethernet adapter in the Ethernet interface

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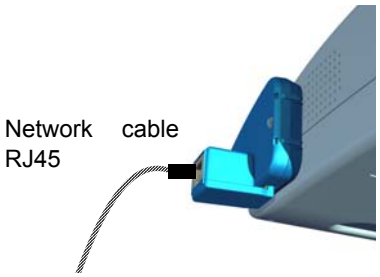
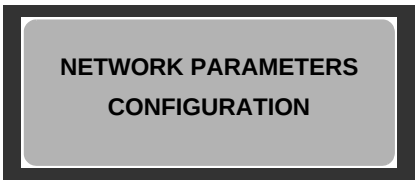
5.2.2 Data transmission procedure



1. Switch off the device and disconnect the electrode cable.
2. Connect the FRED easy to a network to establish a connection to the **LifeDataNet®** web server.

.

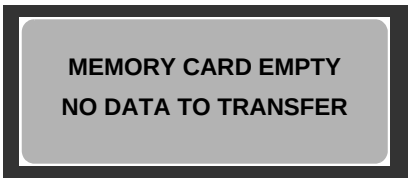
The defibrillator is switched on automatically and enters data transmission mode.



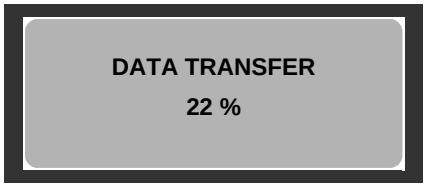
If the device is configured with a static IP address, the following message is displayed: **NETWORK CONFIGURATION**

The device configures the necessary parameters, logs on and sends its authentification information to the server on which **LifeDataNet®** is installed.

Once a connection has been established, the internal time of the **FRED easy®** is synchronised with the server clock.



If the message “**MEMORY CARD EMPTY**” is displayed, the device can be switched off and the Ethernet adapter can be removed. If the device is not switched off by the user, it switches off automatically after one minute.



If information is stored on the internal memory, the transmission starts automatically and the percentage of data transmitted is displayed.

Once the transmission is finished, the message "**CLOSE SESSION**" is displayed .

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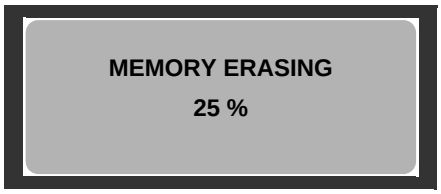
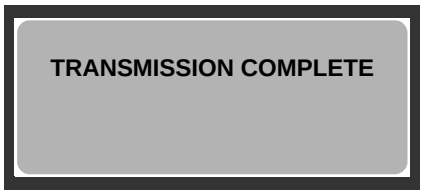


After transmission, the data is deleted from the internal memory. The percentage of data removed is indicated.

The data stored on the internal memory is deleted once the transfer of the entire data record is completed.
If the transfer is interrupted, data remains stored on the internal memory and the transfer can be restarted.



At the end of the transmission procedure, the following message is displayed:
You can switch off the device and remove the Ethernet adapter.

FRED easy automatically aborts the connection 5 minutes after the data transfer has been completed, or if the Ethernet connection is interrupted.

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5.2.3 Installing the ferrite core

Fig. 5.6 Installing the cable within the ferrite core

Fig. 5.7 Reducing the loop

Fig. 5.8 Correctly installed ferrite core

1. Form a loop and route the Ethernet cable through the open ferrite core (see Fig. 5.6 Installing the cable within the ferrite core).
2. Shut the ferrite core – without closing it completely – and check the cable position.
3. Reduce the size of the loop to place the ferrite core as closely as possible to the Ethernet plug. To do so, pull the long end of the cable (see Fig. 5.7 Reducing the loop).
4. Close the ferrite core (see Fig. 5.8 Correctly installed ferrite core).

FRED easy® Ethernet accessories

Part No.	Description
1-58-5303	Ethernet adapter
5-30-0003	Ethernet cable (3 m, category 5)
4-33-0002	Ferrite core
0-05-0026	Ethernet cable (3 m, with ferrite core)

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5.3 Online version

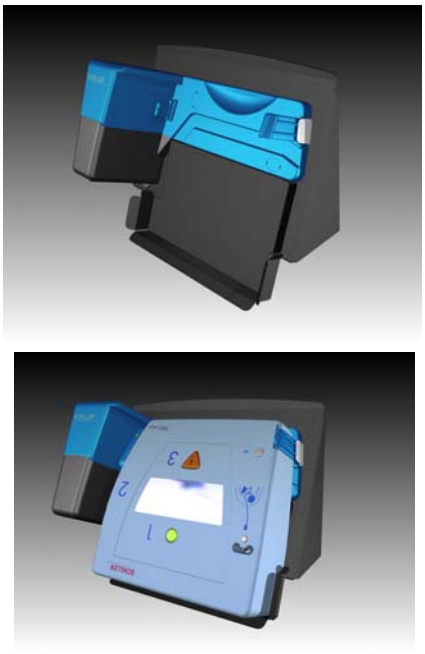

Fig. 5.9 Online version with docking station

Operating principle

This version is intended to ensure communication between the device and the **LifeDataNet®** web server.

Just as with the Ethernet version, this version is able to send intervention data (stored on the internal memory) as well as detailed device configuration data to the **LifeDataNet®** web server. It also allows a total remote control of the **FRED easy®** using **LifeDataNet®** (see table below).

Communication takes place via a network infrastructure using the SNMP (Simple Network Management Protocol) communication protocol.

- The SD card is not removable in the **FRED easy®** Online version.
- All events transmitted by the device are listed on page 48.

Overview of actions that may be performed remotely, using LifeDataNet®:
• Monitoring of battery capacity and self-test result
• Update of device's software
• Modification of device configuration
• Modification of device language
• Triggering of audible alarms or visual indications on the devices
• Viewing the device status
• Geographic location of devices (Google Maps)

The internal memory is able to record:

- 2 hours of ECG signal,
- 2 hours of ambient noise (if the sound recording parameter is activated using **FREDCO®**),
- 500 events concerning the intervention.

Once the internal memory is full, the symbol starts blinking and no more data can be stored. Stored data will be cleared once it has been transmitted.

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5.3.1 Ensuring data transmission

The user and installation handbook for the docking station (part no. 0-48-0156) provides further information on the use of the docking station and configuration of the **FRED easy®** Online.

- The "Network" and "Online" sections of the device settings must be configured using the **FREDCO®** software program,
- The **FRED easy®** Online needs to be inserted in the docking station (see section 5.3.2 page 56).
- Only use lithium batteries with the Online version. Do not use rechargeable NiCd batteries.
- Do not remove the battery from the device while the device is inserted in the docking station.
- Turn off the device before inserting it in the docking station. Otherwise, no data will be transmitted.

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5.3.2 Placing the FRED easy® in the docking station

1. Switch off device.
2. Position the device as shown in illustration (1).
3. Push the device into the docking station (2) until it clicks into place (3).

Fig. 5.10 Inserting the device into the docking station

– The device switches on and starts transmitting the data from its internal memory in the same way as the Ethernet version (see 5.2.2 Data transmission procedure).
– The indicator (see Fig. 5.11 Communication indicator) is blinking when the device is able to communicate with the data network.
– The same screens are displayed as during data transmission with the Ethernet version (see 5.2.2 Data transmission procedure).

Once all data has been transmitted, the display illumination switches off and the message "FREDeasy Online READY" is displayed. This message is displayed whenever the device is able to communicate with the data network. In addition, the indicator is blinking (see Fig. 5.11 Communication indicator).

Fig. 5.11 Communication indicator

If communication is interrupted, the message "
NO SERVER" is displayed and the indicator remains lit.

You can read and edit the transmitted data using the **LifeDataNet®** web server.

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5.3.3 Activating the maintenance mode

While inserted in the docking station, the device can be switched to maintenance mode. To do so, simultaneously press the buttons  and  . The message "**MAINTENANCE IN PROGRESS**" is displayed.

While in maintenance mode, the device can be removed from the docking station for service purposes. In this case, the server recognises that the device was not removed for defibrillation purposes and does not generate any alarms.
After the device has been returned to the docking station, maintenance mode must be switched off by again simultaneously pressing both buttons.

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5.4 Configuration Ethernet/Online using FRECO

A password provided by SCHILLER must be entered to access the network parameters.

5.4.1 Configuring the "Network" tab

- Start the **FREDCO®** software program and select the "Network" tab (**1**).

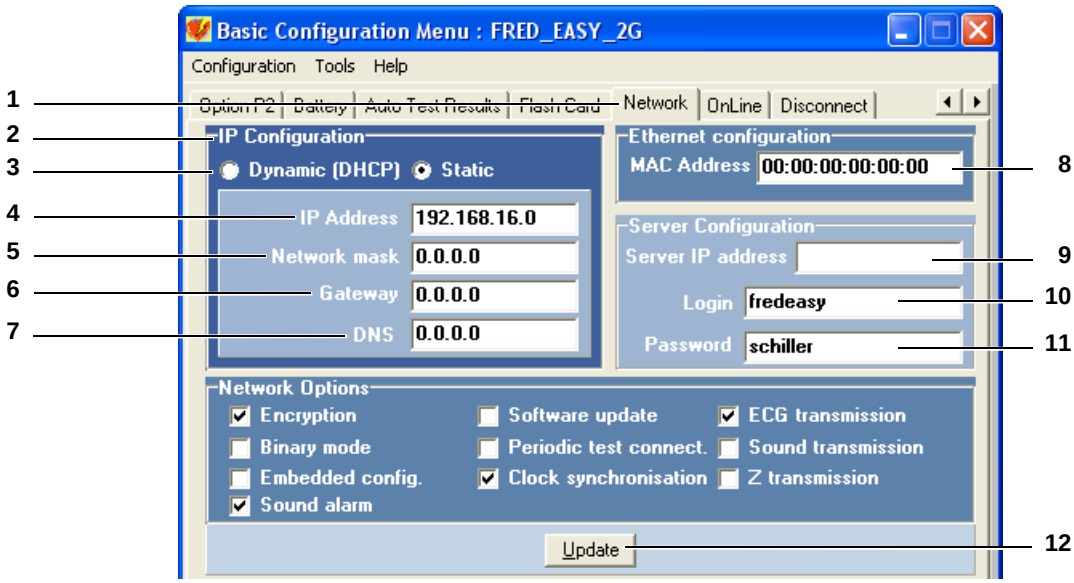

Fig. 5.12 Network configuration ("Network" tab)

(1) "Network" tab in **FREDCO®**
(2) IP address configuration section
(3) Selection of IP address configuration mode: dynamic or static
(4) IP address of the **FRED easy®** Ethernet version
(5) IP address of the network mask (depends on the network infrastructure)
(6) IP address of the network gateway (depends on the network infrastructure)
(7) IP address of the domain name system (depends on the network infrastructure)
(8) MAC address of the **FRED easy®** Ethernet version (located on the label on the underside of the device)
(9) IP address of the server's network interface, used by **FRED easy®** to connect and transmit data
(10) Login of a user with access to the server on which **LifeDataNet®** is installed
(11) User password
(12) Confirmation of "Network" tab configuration

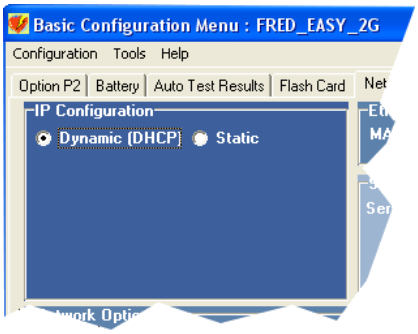

Fig. 5.13 Configuring the dynamic mode

- The parameters of the "IP Configuration" section (**2**) depend on the network infrastructure:
  - in "Static" mode (**3**), your network administrator will provide this information and you are required to fill in (**4**), (**5**), (**6**), and (**7**).
  - In "Dynamic" mode (**3**), the 4 parameters are automatically configured (see Fig. 5.13 Configuring the dynamic mode).

- Check that the "MAC Address" (**8**) displayed on the screen is identical to the address indicated on the underside of the device.

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- Fill in the Server IP address field (**9**).
- Enter a login (**10**).
- Enter the password (**11**).
- Click the "Update" button (**12**) to apply any changes.

- Login (**10**) and password (**11**) can be freely changed but they must be the same as those specified in the "SNMP Parameters" tab of **LifeDataNet®** (see user manuel of **LifeDataBox/LifeDataNet®** (0-48-0117)). By default, the login is "fredeasy" and the password is "schiller".
- To apply any changes to the parameters, click the "Update" button (**12**).
- Once the battery is inserted, **FRED easy®** Ethernet offers the option to manually configure the IP addresses without using **FREDCO®**, if configured so.

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5.4.2 Configuring the "Online" Tab

- Start the **FREDCO®** software program and select the "Online" tab (**1**).

A password provided by SCHILLER must be entered to access the network parameters.

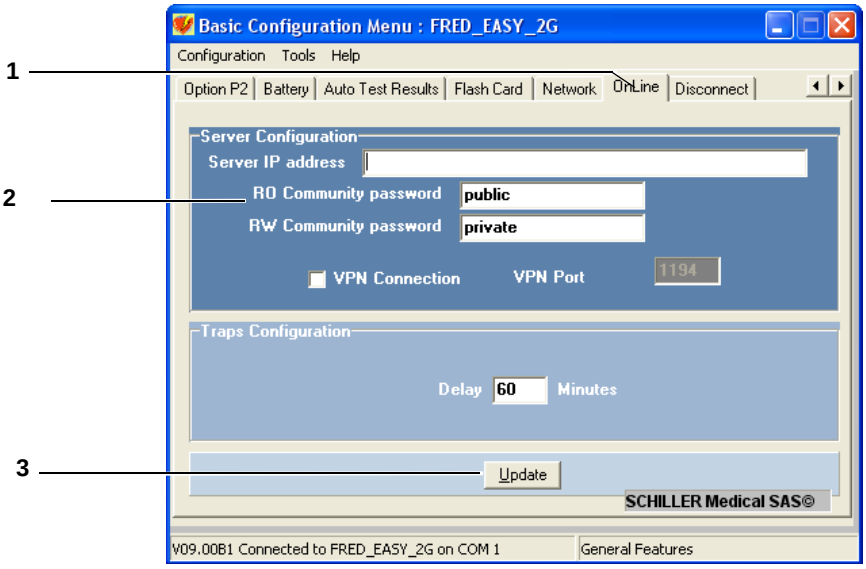

Fig. 5.14 Network configuration ("Online" tab)

(1) "Online" tab in **FREDCO®**.
(2) "RO and RW Community" password.
(3) Confirmation of "Online" tab configuration.

- Enter the "RO and the RW Community" password (**2**). You can choose any password, but it must be identical to the password entered in the "**FREDeasy®**" section of the "SNMP Parameters" tab in **LifeDataNet®** (see Fig. 5.15 SNMP parameter in LifeDataNet®).

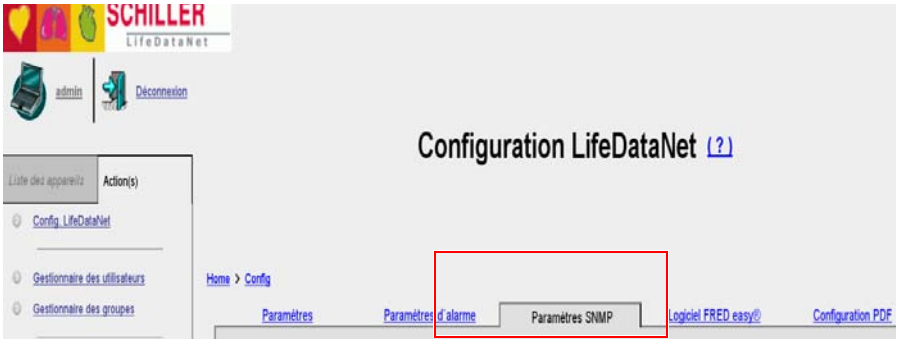

Fig. 5.15 SNMP parameter in **LifeDataNet®**

- Click the "Update" button (**3**) to apply any changes.

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5.4.3 Configuring the date and time as well as IP addresses without using FREDCO®

- Date and time setting can also be done on **non Ethernet/Online** devices if the parameter has been activated in FREDCO.
- When the battery has been inserted, a self-test is performed. If no errors are detected during this self-test, the date and time as well as IP address for the Ethernet/ Online version can be set, if configured so.
- If the green button is not pressed within a couple of seconds, the message disappears automatically and the device status indicator starts blinking. (For the Online and Ethernet version, the device first recommends configuring the IP address before the message disappears).

Setting the date/time and/or IP address for Ethernet/Online versions

This is only available if the parameter "Setting date and time" and/or “IP Address” has been activated in FREDCO®.

1. Insert the battery and wait for the prompt to set the date and time and/or to configure the IP address.
2. Press the green button. Three fields are displayed: date, time, summer/winter and/or 3 IP address fields.
3. Press the orange button to change the value.
4. Press the green key to jump to the next value.
5. Press the green button to jump to "Apply" and press the orange button to confirm and apply the changes.

When you have confirmed the values, the menu disappears and the device can be switched on.

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6 Options

6.1 ECG display

When the "ECG Display" option is activated, the ECG signal obtained by the electrodes is displayed on the screen (see Fig. 6.1 ECG display).

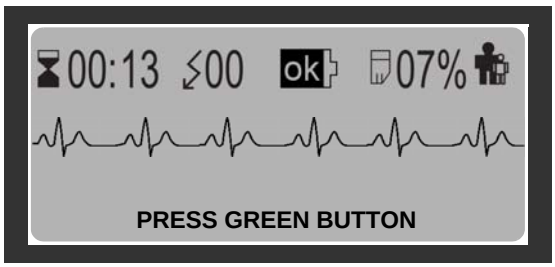

Fig. 6.1ECG display

- The "ECG Display" option is only available for the **FRED easy®** semi-automatic.
- This option is automatically activated when the **FRED easy®** is switched to manual mode.
- When the ECG signal is displayed, messages are only displayed on one single line.

6.2 Metronome

When the "Metronome" is enabled, the device sets the rhythm for chest compressions during CPR at 100 bpm.

The **FREDCO®** software program allows you to:

– set the metronome frequency to a value between 80 and 150 bpm (in steps of 5 bpm).
– the metronome can be set to signal to the user to give 2 rescue breaths (the metronome is stopped for 8 seconds after 30 chest compressions).

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6.3 Rechargeable NiCd battery

The battery must remained packed in its original plastic packaging (blister) during the whole storage time. The plastic packaging must only be removed when the battery is used.

WARNING

- **Danger of explosion!** The battery must not be incinerated, exposed to high temperatures, or disposed with household waste.
- Do not expose the battery to chemicals that could dissolve ABS, polypropylene, polyvinyl chloride, nickel, mylar, or steel.
- Do not short-circuit, cut, destroy or incinerate the battery.

Fig. 6.2 NiCd battery charging unit

As an alternative, a rechargeable NiCd battery (12 V, 650 mAh) is available for the defibrillator. The capacity of a new, fully charged battery is sufficient for:

– 45 shocks at maximum energy, or
– 40 minutes operating

Like the lithium battery, the device warns the user when the NiCd battery has reached the "low" battery threshold. The device will still allow the user to perform defibrillation, but the battery must be recharged/replaced as soon as possible.

The **FRED easy®** also detects when the NiCd battery is "depleted". In this case, the device does not allow the user to perform defibrillation and instead prompts him or her to perform CPR. The battery must be recharged/replaced immediately.

For further details, see 3.1 Inserting the battery.

- This option is only available for the **FRED easy®** SD Card and Ethernet versions.
- This option is only available for **FRED easy®** devices that have a 2nd generation CPU board.
  These devices can be recognised by their 12-digit serial number.

When charging NiCd batteries, make sure to observe the values 100 – 240 V, 50 – 60 Hz (see 9.1 Order Information). The charging time is max. 1 hour.

When the device is equipped with a NiCd battery, it runs a daily self-test.

Battery service life — Unused batteries (whether or not inserted in the device) should be charged at least every 2 months.

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6.4 Silent mode

The FRED easy with silent mode option is intended for locations where a quick transferral to a hospital cannot be guaranteed. If in Silent mode a change in the cardiac rhythm is detected the device reactivates the AED mode and the user will be prompt to check the patient.

In silent mode, operating time is approx. 6.5 hours if no analysis or defibrillation is performed.

6.4.1 Silent mode

If a patient has been successfully defibrillated or if the device does not detect a shockable rhythm, the device can be switched to silent mode in order to detect changes of the patient's cardiac rhythm without the user or patient being disturbed by the AED's repeated voice prompts.

If the device detects a change in the cardiac rhythm or if the green button is pressed, silent mode is abandoned and voice prompts instruct the user about the next steps to be taken.

Moreover, the heart rhythm is recorded and can be transmitted via network with the FRED easy Ethernet/Online (see 5.2.2 Data transmission procedure).

⚠ CAUTION

- ▲ Even though the device issues voice prompts if a change in rhythm occurs, this is not a substitute for the regular checking of the patient's vital functions.
- ▲ Silent mode must only be activated if the device does not detect a shockable rhythm and if the patient is responsive.

i

- ▲ The silent mode must not be carried out while the device is starting up.
- ▲ The silent mode must not be carried out during an analysis or defibrillation.

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6.4.2 Switching to silent mode

Defibrillation is performed according to the safety notes in section 4.1 Instructions and Safety Notes and the procedure in section 4.4 Semi-automatic defibrillation.

Switchover to silent mode can be done at the earliest after **Step 2**, as long as no shockable rhythm has been detected, or after a successful defibrillation **(Step 3)** followed by a "normal" cardiac rhythm.

2 x 

After **Step 2, or 3, respectively,** simultaneously press the green button and the orange button until the message **"Confirm Silent Mode"** is displayed. Immediately release both buttons and press shortly them again to confirm the silent mode.

Procedure for semi-automatic defibrillation

Step 1

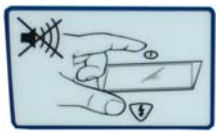
Switching on and preparing the device

See section 4.4 Semi-automatic defibrillation.

Step 2

ECG analysis

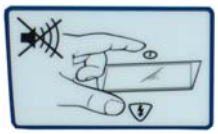
- Press the green button for max. 1 second.
  - If the device detects ventricular fibrillation or ventricular tachycardia with a heart rate exceeding 150 bpm, Step 3 Shock delivery follows.
  - If the device does not detect a shockable rhythm, the user is prompted to continue with cardiopulmonary resuscitation.

2 x 

➜ In this case, the device can be switched to silent mode if the patient is responsive.

Step 3

Shock delivery

2 x 

Once the shock has been delivered, the user is prompted to continue with cardiopulmonary resuscitation.

➜ If the therapy has been successful and if the patient is responsive, the device can be switched to silent mode.

⚠ CAUTION

▲ Even though the device issues voice prompts if a change in rhythm occurs, this is not a substitute for the regular checking of the patient's vital functions.

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6.4.3 Deactivating silent mode

⚠ CAUTION

▲ If the patient is no longer responsive (i.e. loses consciousness), immediately press the green button (max. 1 second) to deactivate the **silent mode** and again start an analysis (Step 2).

6.4.4 Erasing the memory card

The function "Erasing memory" without transferring the data is only available in silent mode.

In silent mode, since the heart rhythm is recorded over a prolonged period of time, the message "Not enough memory" might be displayed. To ensure further recording of the ECG signal, the data can be transmitted via Ethernet (see page 51); the data is automatically deleted after transmission.

Alternatively, you can erase the memory during recording in silent mode as follows:

2 x

Simultaneously press the green button and the orange button until the message **"Erase memory?"** is displayed. Immediately release both buttons and press them again to erase the memory.

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6.5 Special operating conditions

The device may be approved for special operating conditions in consultation with the manufacturer and/or the inspecting authority, as long as all guidelines and regulations are observed (e.g. for the maritime sector).

6.5.1 Maritime use

The following device is approved for maritime use:

- FRED easy with silent mode
- Basic wall mounting without mains connection
- Sufficient spare batteries
- LAN cable for the transmission of the ECG

Accessory that is not included in the scope of delivery and needs to be provided by the owner:

- Insulating mat for defibrillation on conducting surfaces.

The device needs to be stored before use (incl. inserted battery, electrodes and spare batteries) according to the technical data.

Ambient conditions for storage before use

In order to guarantee operational readiness of the device and accessories, the device preferably needs to be stored in a climatised room below deck, in the following climatic conditions:

Temperature 15...25 °C Ensures operational readiness as well as maximum battery life.

Temperature -5...40 °C Ensures operational readiness but reduces battery life. (This is compensated by spare batteries).

Ambient conditions for operation

Temperature -5...40 °C Operation is guaranteed if the storage conditions listed above are met for the storage before use.

If higher or lower temperatures prevail during use, a limited operation time of up to one hour is possible if the device incl. electrodes has been stored at a temperature of 15...25 °C. It is recommended to store spare batteries and spare electrodes at a temperature of 15...20 °C.

Operating conditions on deck

- For the defibrillation, the patient needs to be placed on a dry and non conducting surface to prevent leakage currents that could endanger the rescuers. Therefore, the patient needs to be placed on an insulating mat.
- If the patient's skin is wet, it needs to be dried completely with a cloth so as not to reduce the shock's efficiency.
- In extreme weather conditions such as rain and wind, the patient must not be treated on deck.

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Operating conditions below deck

In addition to the operating conditions on deck, the following regulations apply:

- If the patient is lying on a conducting surface (e.g. metal floor in the engine or storage room), the patient needs to be positioned on an insulating mat prior to defibrillation.
- Make sure that even the patient's arms and legs are positioned on the insulating mat.

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7 Maintenance

7.1 Maintenance Intervals

- **FRED easy®** is an emergency device that must always be in proper working order. The device must be serviced on a regular basis. The test results must be recorded and compared to the values in the accompanying documents (see 9.5 Inspection report).
- These checks and replacements can be performed within the framework of a maintenance contract by SCHILLER technical department or an authorised distributor.
- The following table indicates the intervals and competence of the maintenance work required.

Interval	Maintenance - replacement	Responsible
Before each use	• Visual inspection of the device and accessories, see 7.1.1 Visual inspection of the device and accessories. • Check that the green indicator is blinking, see 7.1.2 Green indicator	➢ User
Once a Week/Month	• Visual inspection of the device and accessories. • Check that the green indicator is blinking, see 7.1.2 Green indicator.	➢ User
Every 3 years	• Technical safety inspections according to SCHILLER documentation (available for technical departments authorised by SCHILLER), see 7.1.3 Functional check.	➢ Service staff authorised by SCHILLER
Every 6 years	• Replacement of internal backup battery.	➢ Service staff authorised by SCHILLER

7.1.1 Visual inspection of the device and accessories

Before each use, inspect visually the device and the cables in order to detect possible mechanical damages.

Check that he important safety labels are legible. The lacking or illegible ones must be replaced.

If you observe damages or dysfunctions which can endanger the safety of the patient or user, only use the device once it has been serviced.

Points to inspect:

- Check that the green indicator is blinking, see 7.1.2 Green indicator
- Device casing undamaged?
- Cables not twisted, without wear signs due to friction or deterioration?
- No excessive clogging or damage?
- All the signal inputs in perfect condition?
- Legible nameplate at the rear of the device?
- Legible inscriptions on the front face of th device?
- Expiration date of the accessories elapsed?

▲ Electrodes past their expiration date must be replaced immediately.
▲ Defective units or damaged cables must be replaced immediately.

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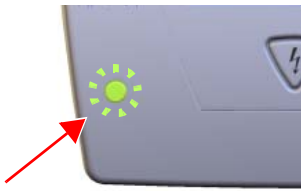
7.1.2 Green indicator



If the device is defective or if problems have been detected by the device during the self-test (green indicator not blinking), the device must be repaired before use.

Fig. 7.1 Blinking green indicator

7.1.3 Functional check

WARNING

Patient hazard — If the device's behaviour differs from the description given in this user guide, the device is defective and must be repaired.

CAUTION

- ▲ In case of intensive use of the device, SCHILLER recommends that these inspections be performed at shorter interval.
- ▲ The regulations in force in each country regarding inspection frequency must be observed (if shorter intervals than those recommended by SCHILLER are imposed).

Points to inspect:

- Visually inspect the device and the accessories (see 7.1.1 Visual inspection of the device and accessories).
- Check for proper functioning.
- Measure the leakage current.
- Measure the energy delivered at 50 Ohms.

7.1.4 Internal backup battery

The internal backup battery must be replaced at least every 6 years by SCHILLER technical support department or an authorised distributor.

The old battery must be recycled in accordance with local regulations.

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7.2 Cleaning and disinfection

DANGER

Shock hazard — Remove the battery before cleaning the device. This ensures that the device will not be turned on inadvertently while you are cleaning it.
Risk of death! Disconnect the defibrillation pads before cleaning the device.

Risk of shock, equipment damage — Liquids must not enter the device. If a liquid has penetrated the device, it must not be reused until it has been checked by a service technician.

Equipment damage! Do not clean the surface of the device with phenol-based disinfectants or peroxide compounds.

Device casing

→ Wipe the device with dampened cloth; make sure no liquid enters the device. All cleaning or disinfection products commonly used in hospitals and containing alcohol (maximum 70 %) are appropriate. If liquids enter the device, it can only be re-operated after it has been checked by the technical support department.

Cables, electrodes

→ Discard the disposable electrodes immediately after use to prevent their reuse (hospital waste).

7.3 Accessories and disposables

WARNING

Risk to Persons, Equipment Damage — Always use SCHILLER replacement parts and disposables, or products approved by SCHILLER. Failure to do so may endanger life and/or invalidate the warranty.

Your local representative stocks all the consumables and accessories for the **FRED easy®**. A full list of all SCHILLER representatives can be found on the SCHILLER website (www.schiller.ch). In case of difficulty, contact our head office in Switzerland. Our staff will be pleased to help process your order or to provide details for all SCHILLER products.

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7.4 Disposal information

7.4.1 Battery Disposal

- ▲ Danger of explosion! The battery must not be incinerated, exposed to high temperatures or disposed of with household waste.
- ▲ Do not expose the battery to chemicals that could dissolve ABS, polypropylene, polyvinyl chloride, nickel, mylar or steel.
- ▲ Do not cut, destroy, or incinerate the battery.
- ▲ Danger of acid burns! Do not open or heat up the battery.

The battery is to be disposed of in municipally approved areas or sent back to SCHILLER AG.

7.4.2 Disposal of accessories that come into contact with the patient

Disposable articles (e.g. pads, etc.) must be disposed of as hospital waste.

7.4.3 Disposal at the end of its useful life

At the end of their service life, the device and its accessories must be recycled in compliance with local regulations. Apart from the internal and plug-in batteries, the device does not contain hazardous material and can be recycled like any other piece of electronic equipment. In accordance with national law, the battery must be disposed of at an appropriate waste disposal station or returned to SCHILLER.

According to European legislation, this device is considered as electronic waste equipment. It can be returned to the distributor or manufacturer where the device will be disposed of in compliance with legal requirements. The customer must bear the shipping costs. This unit must be disposed of in a municipally approved collection point or recycling centre when no longer used.

If no such collection point or recycling centre is available, you can return the unit to your distributor or the manufacturer for proper disposal. In this way, you contribute to the recycling and other forms of utilisation of old electrical and electronic equipment. Improper disposal harms the environment and human health due to the presence of dangerous substances in electrical and electronic equipment.

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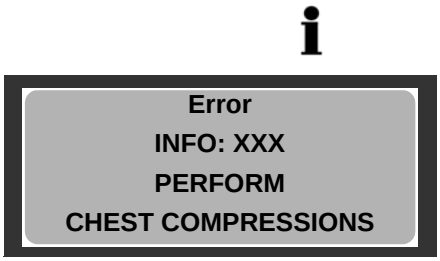
7.5 Trouble Shooting



- If it is not possible to get the device back into operating condition within a reasonable period of time, continue cardiopulmonary resuscitation until the rescue service arrives.
- If the device switches to Limited mode (CPR) due to an error, the alarm messages may differ.

Forced shutdown procedure

- If the device cannot be switched off via normal OFF procedure (press and hold the green button for approx. 3 seconds), remove the battery and inserting again.

7.5.1 Error messages

Error message	Possible cause	Remedy
	• Technical errors that may occur during function tests:	➢ Switch the unit off and then on again to confirm. If the message still appears, the device must be repaired immediately.
• xxx = – ADC – EEPROM – RTC – LCD – OKI – DSP – SHOCK BUTTON – CHARGE DEFIBRILLATOR – COMMUNICATION DEFIBRILLATOR – 5 WEEKS CHARGE 150J		
	• Technical problems that can occur during defibrillation	➢ Switch the unit off and then on again to confirm. If the message still appears, the device must be repaired immediately. Continue cardiopulmonary resuscitation until the rescue service arrives.
• xxx = – CPU DEFI – CRC DEFI – SAFETY DEFI – REF VOLTAGE DEFI – ADC DEFI – DEFI DISCHARGE – DEFI EPROM – DEFI SHOCK KEY		

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Error message	Possible cause	Remedy
Error INFO: FREDEASY ONLINE Error	• Technical problem – The device has detected an error after having been placed in the docking station.	➢ Switch the unit off and then on again to confirm. If the message still appears, the device must be repaired.
Error TIME AND DATE RESET TO 01/01/98 >REINSERT BATTERY	• Wrong date	➢ Turn device off and reconfigure. (see page 60)
REPLACE BATTERY 30 COMPRESSIONS THEN 2 BREATHS	• Battery depleted during use	➜ Turn device off and insert a new battery (see page 26).
EMPTY BATTERY >REPLACE BATTERY	• Battery depleted	➢ Turn device off and insert a new battery.
CONFIGURATION LOST RESTORE DEFAULT CONF >REINSERT BATTERY	• Battery problem	➜ Turn device off and insert a new battery.
CRITICAL ERROR PLEASE SWITCH OFF	• Technical problem	➜ Switch the unit off and then on again to confirm. If the message still appears, the device must be repaired.
MANUEL MODE FORBBIDEN AT START, RELEASE SHOCK BUTTON	• The device was switching on while the orange and green button have been pressed.	➜ Do not press the orange and green button while the device is switching on.
-!!LIMITED MODE!!-	• The device has detected a charge transistor error	➜ Switch the unit off and then on again to confirm. If the message still appears, the device must be repaired.

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7.5.2 Transmission error Ethernet/Online FRED easy®

If the connection to the network fails, an error message is issued. Potential error messages include the following:

Error message	Cause	Remedy
TRANSMISSION FAILURE ERROR CODE : 001 SD CARD READING	• Error reading SD card	➢ Disconnect and reconnect the device to confirm. If the message still appears, the device must be repaired.
TRANSMISSION FAILURE ERROR CODE : 002 NOT ENOUGH MEMORY	• Technical problem	➢ Disconnect and reconnect the device to confirm. If the message still appears, the device must be repaired.
TRANSMISSION FAILURE ERROR CODE : 003 NETWORK CONFIGURATION	• Incorrect network IP configuration or DHCP server not available	➢ Verify the network configuration; if message is still displayed, the device must be repaired.
TRANSMISSION FAILURE ERROR CODE : 004 ADAPTER DISCONNECTED	• Ethernet adapter not inserted in the Ethernet interface case	➢ Turn device off and connect the Ethernet adapter; if the message is still displayed, replace the Ethernet adapter. If the message still appears, the device must be repaired.
TRANSMISSION FAILURE ERROR CODE : 005 PATIENT DETECTED	• The pads are connected to the device and are placed to the patient	➢ Disconnect the pads from the device.
TRANSMISSION FAILURE ERROR CODE : 006 BATTERY LEVEL	• Battery is empty	➢ Insert a new battery.
TRANSMISSION FAILURE ERROR CODE : 007 TIME OUT INACTIVITY	• Device not used for more than 3 minutes	➢ Disconnect and reconnect the device to confirm. If the message still appears, the device must be repaired.
TRANSMISSION FAILURE ERROR CODE : 008 SESSION OPENING	• The device is not able to connect to the server	➢ Check the connection to the server and the network configuration, then restart data transmission; if the message is still displayed, the device must be repaired.

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Error message	Cause	Remedy
TRANSMISSION FAILURE ERROR CODE : 009 SESSION OPENING	• The device is not able to connect to the server	➢ Check the connection to the server, the network configuration and check that the device is added in the "Device Manager" of **LifeDataNet®** ; if the message is still displayed, the device must be repaired.
TRANSMISSION FAILURE ERROR CODE : 010 SESSION OPENING	• The device is not able to connect to the server	➢ Check the connection to the server and the network configuration, then restart data transmission; if the message is still displayed, the device must be repaired.
TRANSMISSION FAILURE ERROR CODE : 011 SESSION CLOSING	• The device is not able to connect to the server	➢ Check the connection to the server and the network configuration, then restart data transmission; if the message is still displayed, the device must be repaired.
TRANSMISSION FAILURE ERROR CODE : 012 SESSION CLOSING	• The device is not able to connect to the server	➢ Check the connection to the server, the network configuration and check that the device is added in the "Device Manager" of **LifeDataNet®**; if the message is still displayed, the device must be repaired.
TRANSMISSION FAILURE ERROR CODE : 013 DATA TRANSMISSION	• Erroneous data transmission	➢ Check the connection to the server and the network configuration, then restart data transmission; if the message is still displayed, the device must be repaired.
TRANSMISSION FAILURE ERROR CODE : 014 DATA TRANSMISSION	• Erroneous data transmission	➢ Check the connection to the server, the network configuration, and the **LifeDataNet®** configuration, then restart data transmission; if the message is still displayed, the device must be repaired.
TRANSMISSION FAILURE ERROR CODE : 015 DATA TRANSMISSION	• Erroneous data transmission	➢ Check the connection to the server, the network configuration, and the **LifeDataNet®** configuration, then restart data transmission; if the message is still displayed, the device must be repaired.
TRANSMISSION FAILURE ERROR CODE : 017 DATA ERASING	• Erroneous erasing of the SD card	➢ Disconnect and reconnect the device to confirm. If the message still appears, the device must be repaired.

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Error message	Cause	Remedy
TRANSMISSION FAILURE ERROR CODE : 021 SUPERVISION START REQ	• The device is not able to connect to the server	➢ Check the connection to the server, the network configuration, and the **LifeDataNet®** configuration, then restart data transmission; if the message is still displayed, the device must be repaired.
TRANSMISSION FAILURE ERROR CODE : 022 SUPERVISION START ACK	• The device is not able to connect to the server	➢ Check the connection to the server, the network configuration, and the **LifeDataNet®** configuration, then restart data transmission; if the message is still displayed, the device must be repaired.
TRANSMISSION FAILURE ERROR CODE : 023 SUPERVISION STOP REQ	• The device is not able to connect to the server	➢ Check the connection to the server, the network configuration, and the **LifeDataNet®** configuration, then restart data transmission; if the message is still displayed, the device must be repaired.
TRANSMISSION FAILURE ERROR CODE : 024 SUPERVISION STOP ACK	• The device is not able to connect to the server	➢ Check the connection to the server, the network configuration, and the **LifeDataNet®** configuration, then restart data transmission; if the message is still displayed, the device must be repaired.

- These errors are not applicable for the **FRED easy®** SD Card version.
- Error 004 (ADAPTER DISCONNECTED) only applies to the **FRED easy®** Ethernet version.
- Errors 023 and 024 (SUPERVISION STOP REQ and SUPERVISION STOP ACK) only apply to the **FRED easy®** Online version.

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7.5.3 Trouble Shooting

Forced shutdown procedure

If the device cannot be switched off via normal OFF procedure (press and hold the green button for approx. 3 seconds), remove the battery and inserting again.

Problem	Possible causes	Remedy
The green "OK" standby indicator does not blink and/or the device cannot be turned on.	• Battery defect.	→ Replace the battery.
	• No battery inserted, or battery not correctly inserted.	→ Insert the battery correctly.
	• Device defective.	→ Have the device repaired.
The yellow indicator at the electrode connector does not go out.	• The pads are past their expiration date.	→ Use new electrodes.
	• Dry contact agent.	→ Use new electrodes.
	• High contact impedance between the pads and the skin.	→ Apply the pads exactly as described. Shave the electrode application area.
	• Device defective.	→ Have the device repaired.
The device prompts the user to check that the electrodes are properly applied and connected.	• Short-circuit between the pads.	→ Apply the pads exactly as described.
	• Poor pad contact.	→ Firmly press down on the pads.
	• The pads are past their expiration date.	→ Use new electrodes.
	• Dry contact agent.	→ Use new electrodes.
	• Device defective.	→ Have the device repaired.
The device cannot be turned off.	• On/Off button was pressed less than 3 seconds.	→ Hold down the on/off button for at least 3 seconds.
	• Software hangs	→ Remove battery and inserting again
	• Device defective.	→ Have the device repaired.
Incorrect analysis result (e.g. the device does not detect a shockable rhythm, even though the patient exhibits ventricular fibrillation).	• Insufficient ECG signal quality.	→ Repeat chest compressions.
	• Electromagnetic waves disturb the ECG signal.	→ Turn off the source of interference (e.g. radio transmitter, cellular telephone). Position the patient outside the range of interference.
	• Patient moved during analysis.	→ Do not move patient during the analysis.
	• Device defective.	→ Have the device repaired.
Defibrillation shock cannot be delivered.	• Insufficient battery charge level.	→ Replace the battery.
	• CPR caused a pad error.	→ Re-apply the pads.
	• Cardiac rhythm has changed.	→ Repeat the analysis.
	• Device defective.	→ Have the device repaired.
The alarm tone does not stop.	• Battery defect.	→ Replace the battery.
	• Device defective.	→ Have the device repaired.
Message "ERROR xxx".	• Device defective.	→ Have the device repaired.
Battery capacity indicator blinks.	• Battery almost depleted.	→ Replace the battery.
No data recorded on the SD card.	• Card defect.	→ Replace the card.
	• Device defective.	→ Have the device repaired.

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Problem	Possible causes	Remedy
The SD card symbol is not displayed, or the symbol is displayed.	• No SD card is inserted.	➜ Switch the device off and insert the card the right way around.
	• The card is inserted the wrong way.	➜ Switch the device off and insert the card the right way around.
	• The card was inserted with the device turned on.	➜ Switch the device off and then on again.
	• SD card write-protected.	➜ Turn off the device, remove the SD card, unlock the write protection, and re-insert the card. Then, restart the device.
	• Device defective.	➜ Have the device repaired.
Incorrect date and time stored on SD card.	• Internal clock error.	➜ Have the system parameters updated by an authorised person using the configuration/downloading kit.
	• Device defective.	➜ Have the device repaired.

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7.5.4 Measures to prevent electromagnetic interferences

"Non-ionic electromagnetic radiation"

The user can help avoid electromagnetic disturbances by keeping the minimum distance between portable and mobile HF telecommunication devices (transmitters) and the **FRED easy®**. The distance depends on the output performance of the communication device as indicated below.

HF source	Transmitter frequency [MHz]	Power P [W]	Distance d [m]
Radio telephone (microcellular) CT1+, CT2, CT3	885-887	0.010	0.23
Cordless DECT telephone, WLAN, UMTS phone	1880-2500	0.25	1.17
Mobile phone USA	850/1900	0.6	1.8
Mobile phone - GSM900, - GSM850, NMT900, DCS 1800	 900 850,900,1800	 2 1	 3.3 2.3
Walkie-talkie (rescue service, police, fire brigade, service)	81-470	5	2.6
Mobile telephone system (rescue service, police, fire brigade)	81-470	100	11.7

It can be deducted from the table that **portable** HF telecommunication devices must not be used within a radius of 3 m from the **FRED easy®** and its cables.

Further measures to prevent electromagnetic interferences:

The user can take the following measures to prevent electromagnetic interferences:

- Increase distance to the source of interference
- Turn the device to change the angle of radiation.
- Only use original accessories.

For more detailed information, please refer to page 85.

If the devices are used in the vicinity of power networks operating at a frequency of 16.7 Hz (railway systems in some countries), the 16.7 Hz filter must be activated via the configuration software before use. The filter is by default activated.

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8 Technical Data

Unless otherwise stated, all specifications are valid at a temperature of 25 °C.

8.1 System Specifications

Manufactured by	SCHILLER MEDICAL
Device name	**FRED easy®**
Dimensions	
SD card version	70 x 230 x 220 mm (h x l x w)
Ethernet/Online Versions	70 x 237 x 220 mm (h x l x w)
Weight	Approx. 1.5 kg
Protection class of the device housing	IP54 (protection against dust and splashing water)
Recorded data	ECG signal recording (2 hours) Ambient noise recording (2 hours) Event recording (500 events)
Power supply	Internal power supply, suitable for continuous operation with intermittent loading
Standard battery type	Lithium/MnO_2 12 V, 2.8 Ah
Battery life	• 180 shocks at maximum energy, or 3.75 hours of operating (alternately 30 minutes ON and 30 minutes OFF) • Several years in standby (standby duration corresponding to laboratory tests at 25°C: 5 years with weekly self-tests)
Optional battery type	NiCd 12 V, 650 mAh, rechargeable
Battery life	• 45 shocks at maximum energy, or operating for 1 h 20 min.
Environmental conditions[a]	
Device	
Operation	• -5...40 °C at a relative humidity of 30 to 95% (no condensation)
Storage befor use	• -5...40 °C with the battery inserted and incl. electrodes at a relative humidity of 30 to 95 % (no condensation) but resulting in a reduced battery life; optimal conditions: 15...25 °C to ensure maximum battery life. • Atmospheric pressure 700 to 1060 hPa
Storage and transport	• -20 ... 50 °C at a relative humidity of 0 to 95% (no condensation) • Atmospheric pressure 500 to 1060 hPa
Battery and Electrodes	
Storage and Transport temperature battery $LiMnO_2$	• 0 ... 60 °C (48h max. between 0...15 °C and 25°...60°C)
Storage and transport temperature electrode pads	• 0 ... 50 °C

a. For additional information about operating and storage conditions see page 67 Chapter 6.5 Special operating conditions.

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Display	
Type	High-resolution LCD screen, electroluminescent backlighting, text and symbol display
Dimensions	100 x 37 mm

8.2 Classification and safety standards

Standards	**FRED easy®** complies with IEC standard 60601-2-4. According to IEC standard 60601-2-4, **FRED easy®** is a device for frequent use.
EMC	See 8 Technical Data.
Compliance	• **FRED easy®** bears the CE 0459 (Notified Body LNE/G-MED) mark indicating its compliance with the provisions of the Directive 93/42/EEC (modified by the Directive 2007/47/EEC) regarding medical devices and fulfils the essential requirements of Annex I of this directive. • **FRED easy®** is a class IIb device.
Patient Protection	BF type, resistant to defibrillation shocks.
Explosions protection	**FRED easy®** is **not** designed to be used in the presence of flammable mixtures of anaesthetic agents with air or oxygen.

The SCHILLER quality management system complies in full with the international standards ISO 9001 and ISO 13485.

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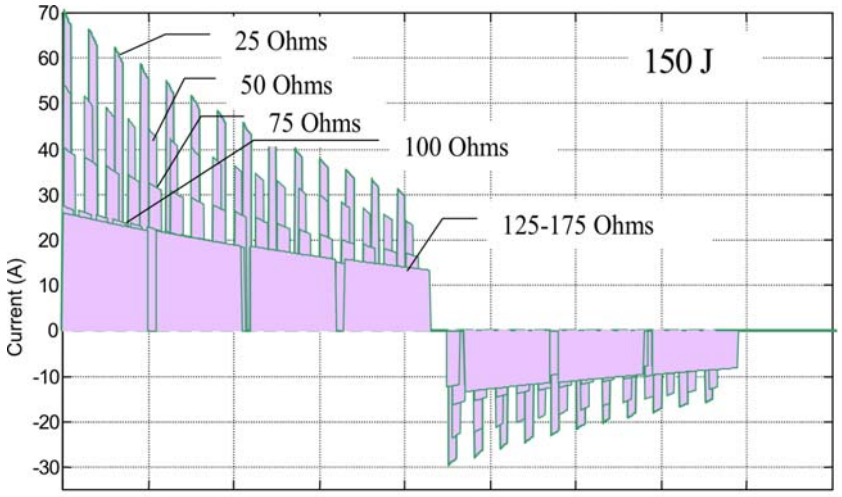
8.3 Defibrillation pulse

Form

- Biphasic pulsed defibrillation pulse with approximately constant phases for optimal physiological compatibility.
- Maintains the energy delivered to the patient at an approximately constant level with regard to patient resistance by applying pulse-pause modulation that varies according to measured patient resistance.



Default energy settings

Accuracy at 50Ω: ± 3 J or ± 15 % (the higher value is assumed)

SCHILLER's customer service department can change the default energy levels to the following values:
1 – 2 – 4 – 6 – 8 – 15 – 30 – 50 – 70 – 90 –110 – 130 – 150 J (adults)
1 – 2 – 4 – 6 – 8 – 15 – 30 – 50 – 70 J (children)
(automatic adaptation when paediatric pads are connected)

Cycle time: rhythm analysis – shock availability (in semi-automatic mode)

(Maximum time between start of the analysis and shock availability, in semi-automatic mode)

With full battery:

< 11 seconds

After 15 discharges with max. energy:

< 11 seconds

Cycle time: switch-on of the device – shock availability (in semi-automatic mode)

(Maximum time between the switch-on of the device and the shock availability, in semi-automatic mode)

< 22 seconds

Patient impedance at which shock delivery is possible

30 to 250 Ω (Impedance is compensated up to 175 Ω)

Indication when ready to shock

The orange button is lit

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Shock delivery

- With the orange button (in semi-automatic or manual mode)
- Via disposable pads applied to the patient in an anterior-anterolateral or anterior-posterior position

Safety discharge when:

- A non shockable rhythm has been detected
- The shock is not delivered within the 20 seconds after charging
- An electrode problem is detected
- Battery voltage is insufficient
- The device is defective
- The device is turned off.

Defibrillation pad connection

BF type

Defibrillation electrodes

Electrode cable, 2 m in length

Adult pads
- 80 cm² active surface

Paediatric pad
- 42 cm² active surface

VF/VT detection

VF/VT detection is based only on the ECG signal.

Conditions for ECG analysis

Minimum amplitude for signals suitable for analysis > 0.15 mV, signals < 0.15 mV are considered asystole.

Shock recommendation

For VF and VT (VT > 150 B/min).

	VF	VT	Non shockable rhythms NSR/N/Asystole
Shock	148	100	2
No Shock	2	2	1395
Performance criteria	Sensitivity > 90 %	Sensitivity > 75 %	Specificity > 95 %
Observed performance	98.67 %	98.04 %	99.86 %

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8.4 Electromagnetic interferences

The **FRED easy®** is intended to be used in the electromagnetic environments listed in the following tables. The owner or user of the **FRED easy®** has to ensure that the device is operated in an adequate environment.

8.4.1 Electromagnetic emissions

Emission measurement	Compliance with the regulations	Electromagnetic environment - explanations
HF emissions CISPR 11	Group 1	**FRED easy®** only uses HF energy for internal functions. Therefore, HF emissions are very low and interferences with electronic devices nearby are unlikely.
HF emissions CISPR 11	Class B	**FRED easy®** is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonics IEC 61000-3-2	Not applicable	
Voltage fluctuations IEC 61000-3-3	Not applicable	

8.4.2 Electromagnetic immunity

Interference testing	IEC 60601 test level	Conformity level	Electromagnetic environment - explanations
Electrostatic discharge IEC 61000-4-2	± 6 kV contact ± 8 kV air	IEC 60601-1 conformity	Floors should be made of wood, concrete or ceramic tiles. If floors are covered with synthetic material, relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/output lines	Not applicable	
Surge IEC 61000-4-5	± 1 kV between conductors ± 2 kV conductor-earth	Not applicable	
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	< 5 % U_T (> 95 % dip in U_T) for 0.5 cycle 40 % U_T (60 % dip in U_T) for 5 cycles 70 % U_T (30 % dip in U_T) for 25 cycles < 5 % U_T (> 95 % dip in U_T) for 5 s	Not applicable	
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	IEC 60601-1 conformity	Power frequency magnetic fields should be that of a typical commercial and/or hospital environment.
Note: U_T indicates the AC voltage of the mains before the test level.			

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Interference testing	IEC 60601 test level	Conformity level	Electromagnetic environment - explanations
			Recommended minimum distances Portable and mobile HF telecommunication devices must keep the recommended minimum distance from the **FRED easy®** and all its components, incl. cables; the recommended minimum distance is calculated based on the transmitter's frequency.
Conducted HF IEC 61000-4-6	3 Veff between 150 kHz and 80 MHz outside of the ISM frequency bands[a] 10 Veff between 150 kHz and 80 MHz in ISM frequency bands [a]	Not applicable Not applicable	
Radiated HF IEC 61000-4-3	10 V/m Batterie 80 MHz to 2.5 GHz	10 V/m	$d = \frac{12}{10} \times \sqrt{P}$ between 80 MHz and 800 MHz $d = \frac{23}{10} \times \sqrt{P}$ between 800 MHz and 2.5 GHz where P is the maximum transmitting power of the transmitter in Watt (W) according to manufacturer data, and d the recommended minimum distance in metres (m)[b]. The field strength of stationary HF transmitters (according to an on-location measurement [c]) must not exceed the conformity level for each frequency range [d]. When operating the device near devices bearing the symbol “ionising radiation”, interferences can occur. 
Note 1	For 80 MHz to 800 MHz, the higher frequency range applies.		
Note 2	These guidelines might not always be applicable. Electromagnetic radiation is influenced by absorption and reflection on structures, objects and people.		

a. The ISM frequency bands (ISM = industrial, scientific, medical) between 150 kHz and 80 MHz are 6.765 MHz to 6.795 MHz; 13.553 MHz to 13.567 MHz; 26.957 MHz to 27.283 MHz; and 40.66 MHz to 40.70 MHz.

b. The conformity levels within the ISM frequency bands between 150 kHz and 80 MHz and between 80 MHz and 2.5 GHz serve to minimise the probability of interferences caused by mobile/portable communication equipment that accidentally happens to be in the patient environment. The formula for the calculation of the recommended distance has been adapted by the factor 10/3 for transmitters in this frequency range.

c. The field strength of stationary transmitters, e.g. base stations for radio telephones (mobile or cordless) and portable radio equipment, amateur radios, AM and FM radios and TV signals cannot be predicted accurately in a theoretical way. In order to analyse electromagnetic environments caused by stationary HF transmitters, an electromagnetic analysis on site should be considered. If the measured field strength exceeds the HF conformity level, it needs to be checked whether the **FRED easy®** can be used in this environment. If an abnormal behaviour is detected, additional measures need to be taken, e.g. reorientation or change of location of the **FRED easy®**.

d. For the frequency range between 150 kHz and 80 MHz, the field strength must be lower than 3 V/m.

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8.4.3 Recommended minimum distances

The **FRED easy®** is intended to be used in electromagnetic environments in which it is possible to control radiated HF interferences. The user of the **FRED easy®** can prevent electromagnetic interferences by always keeping a minimum distance between portable/mobile HF communication devices (transmitters) and the **FRED easy®**. The recommended minimum distances are listed in the following table according to the transmitters' max. transmitting power.

Max. transmitting power of the transmitter (W)	**Distances according to the transmitter's frequency (m)**			
	$d = \frac{3,5}{3} \times \sqrt{P}$ between 150 kHz and 80 MHz **outside of** the ISM frequency band	$d = \frac{12}{10} \times \sqrt{P}$ between 150 kHz and 80 MHz **within** the ISM frequency band	$d = \frac{12}{10} \times \sqrt{P}$ between 80 MHz and 800 MHz	$d = \frac{23}{10} \times \sqrt{P}$ between 800 MHz and 2.5 GHz
0,01	Not applicable	Not applicable	0,12	0,23
0,1			0,38	0,73
1			1,2	2,3
10			3,79	7,27
100			12	23

For transmitters with a max. transmitting power that is not listed in the above table, the recommended minimum distance d in metres (m) can be calculated using a formula based on the transmitter's frequency, where P is the max. transmitting power of the transmitter in Watts (W) (according to manufacturer data).

Note 1 These guidelines might not always be applicable. Electromagnetic radiation is influenced by absorption and reflection on structures, objects and people.

Note 2 To calculate the recommended minimum distance of transmitters in the ISM frequency bands between 150 kHz and 80M Hz and in the frequency band between 80 MHz and 2.5 GHz, the additional factor 10/3 is used to minimise the probability of interferences caused by mobile/portable communication equipment that accidentally happens to be in the patient environment.

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9 Appendix

9.1 Order Information

Devices

Part No.	Description
1-58-9913	**FRED easy®** SD Card, semi-automatic
1-58-9100	**FRED easy®** SD Card, automatic
1-58-9301	**FRED easy®** Ethernet/Online, semi-automatic
1-58-9401	**FRED easy®** Ethernet/Online, automatic
EASY T2	**FRED easy® TRAINER**

Accessories

Part No.	Description
1-58-5303	Ethernet adapter
0-80-0013	Accessory bag for Online version
5-30-0003	Ethernet cable (3 m, category 5)
4-33-0002	Ferrite core
0-05-0026	Ethernet cable (3 m, with ferrite core)
EASY ELEC	1 pair of disposable adhesive defibrillation pads for adults, 80 cm²
0-21-0000	1 pair of disposable adhesive defibrillation pads for children, 42 cm²
0-21-0020	1 pair of disposable adhesive defibrillation pads for adults, 80 cm², "pre-connected"
0-21-0021	1 pair of disposable adhesive defibrillation pads for children, 42 cm², "pre-connected"
0-48-0013	User Guide, English
EASY BAT	Disposable lithium battery
0-02-0003	Rechargeable NiCd battery
3-55-0030	Battery charger, 100 – 240 V, 50 – 60 Hz, UE
3-55-0033	Battery charger, 100 – 240 V, 50 – 60 Hz, UK
3-55-0034	Battery charger, 100 – 240 V, 50 – 60 Hz, US
EASY S	Instrument bag
0-80-0008	Instrument bag, reinforced
EASY CARD	Formatted SD card
5-35-0037	Formatted SD card (for **FRED easy®** with software version ≥ 06.00)

9.2 Required accessories

- User Guide
- One pair of adhesive pads
- 1 lithium batteries
- One SD card (only for the SD Card version)

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9.3 Literature

European Resuscitation Council (2010) European Resuscitation Council Guidelines for Resuscitation 2010 (doi:10.1016/j.resuscitation.2010.08.021).

American Heart Association (2010) International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations (DOI: 10.1161/CIRCULATIONAHA.110.971010).

Cansell A. Effectiveness and Safety of New Transthoracic Cardiac Defibrillation Waveforms – Biphasic Pulses In "La Revue des SAMU 20": 280 - 294. 2000.

9.4 Glossary

ABCD The primary ABCD

A = Airways (check if airways are free)
B = Breathing (artificial respiration)
C = Circulation (circulatory signs or cardiac massage)
D = Defibrillation

AED Automated external defibrillator. This term is also used for semi-automatic defibrillators

BLS Basic Life Support (artificial respiration and cardiac massage)
CPR is frequently used synonymously

CPR Cardiopulmonary resuscitation

VT Ventricular tachycardia

VF Ventricular fibrillation

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9.5 Inspection report

The user guide must be read before the inspection.

Serial number: _____

Checks - before each use					
➜ Visual inspection of the device and accessories ➜ Device casing undamaged?	☐	☐	☐	☐	☐
➜ Cables not twisted, without wear signs due to friction or deterioration?	☐	☐	☐	☐	☐
➜ No excessive clogging or damage?	☐	☐	☐	☐	☐
➜ All the signal inputs in perfect condition?	☐	☐	☐	☐	☐
➜ Legible nameplate at the rear of the device?	☐	☐	☐	☐	☐
➜ Legible inscriptions on the front face of th device?	☐	☐	☐	☐	☐
➜ Expiration date of the accessories elapsed?	☐	☐	☐	☐	☐
Date:					
Performed by:					
Checks - once a Week/once a Month					
Visual inspection of the device and accessories (see previous table)	☐	☐	☐	☐	☐
The green indicator  **is lit**	☐	☐	☐	☐	☐
Date:					
Performed by:					
Checks - every 3 years					
Visual inspection of the device and accessories (see previous table)	☐	☐	☐	☐	☐
Functional test					
➜ Check for proper functioning.	☐	☐	☐	☐	☐
➜ Measure the leakage current.	☐	☐	☐	☐	☐
➜ Measure the energy delivered at 50 ohms.	☐	☐	☐	☐	☐
Date:					
Performed by:					
Replacement - every 6 years					
Internal backup battery replacement.	☐	☐	☐	☐	☐
Date:					
Performed by:					

In case of problems, please notify your Biomedical Department ❒, your local SCHILLER distributor ❒, or the authorized Customer Service for your area ❒:

Name: ..... Tel.: .....

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