corpuls®

FOCUS – ON – PATIENTS

corpuls3

LIFE-SAVING MULTI-TALENT

corpuls3

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The corpuls3 is not only a device – it is a 3 module system:

- **Monitoring Unit**
- **Patient Box**
- **Defibrillator | Pacer**

The modules can be separated at any time, as and when required. They communicate wirelessly, eliminating annoying cables.
The **corpuls3** adapts optimally to the users needs. Legendary and still unique, the **corpuls3** is used successfully by hundreds of organizations around the world.

COMMUNICATION PROFESSIONAL

The built-in connectivity functions such as 4G modem, WLAN or LAN are ideal for telemedicine and the **corpuls** communication platform **corpuls.mission**.

The corpuls3 is available in three versions:

- **corpuls3 TOUCH**
- **corpuls3 CLASSIC SLIM**
- **corpuls3 CLASSIC**

MODULAR AND UNIQUE

- **Constant monitoring**
  from the emergency site to the hospital
- **Uninterrupted monitoring from a safe distance**
  (e.g. CT scan)
- Better **ergonomics** for patient transport
  by separating the modules
- Increases **patient safety** by recording and storing parameters in direct proximity to patients
- More **flexibility** at the mission site due to the separation of different tasks:
  Display, data recording and therapy

SPECIFICATIONS

- Transflective **8.4" display**, **with optional Touch**
- **Wide printer** (10,6 cm)
- **Weight**: 6.5 kg (**SLIM**, basic configuration)
- **Dimensions** of complete device (WxHxD):
  30.5 cm x 29.6 cm x 19.5 cm
  (**corpuls3 SLIM CLASSIC** & **TOUCH**)
- Extremely high **dust and splash protection** (IP55)
- **Battery life** 7-10 hours,
  according to settings and demand
- **Operating environment**:
  -20 °C to +55 °C
  (basic functions: ECG monitoring and defibrillation)
- **EN 1789**
- Conforms with selected sections of the international **Standard for Airborne Equipment** RTCA DO 160 G
- Conforms with selected sections of the **US Military Standard** MIL STD 810 G

Illustration of the **corpuls3**.

The unique wireless RF technology allows the modules to communicate with one another as if they were physically connected.

Alternatively the **corpuls3** *is also available as a TOUCH version – the* **C3T**

THE MONITORING UNIT

The Monitoring Unit is the control centre of the **corpuls3**. At just 2.9 kg, including the battery and printer paper, it is compact and can be comfortably held in one hand.

FULL CONTROL

Up to 6 curves and 13 vital parameters can be displayed simultaneously on the brilliant 8.4" display.
Fully customisable, freely namable and - in case of the NIBP display - with quality indicator. In addition, up to 6 curves can be printed in real time.

INTUITIVE OPERATION

The **corpuls3** has a unique operating concept, which is simple and safe, especially in stressful situations operation allows:

- **Softkeys and function keys**
- **JogDial**

All critical and important functions are controlled directly via the keys. The JogDial is used for all additional functions and the configuration of the device. This allows all other **corpuls3** menus to be easily navigated.

In addition, the JogDial is used as an alarm light. Technical and patient-related alarms are signaled to the user via a powerful integrated LED.

▲ *Alarm visualization via glowing JogDial as well as warning tones.*

▶ *Illustration of the* **corpuls3** Monitor.

THE PATIENT BOX

The Patient Box is the „heart“ of the system. It collects, records, and stores all vital parameters and measurements. Values recorded via pre-connected sensors are transmitted in real time wirelessly to the monitoring unit, where they are displayed and/or processed.

CONSTANT COMPANION

Due to its low weight (between 1.1 and 1.4 kg, depending on features) the Patient Box is so compact that it can stay with the patient during transport.
This also means that all the sensors and cables can remain on the patient. This not only keeps them out of harm's way, but also enables seamless monitoring – for example, when transporting a patient through a narrow stairwell.

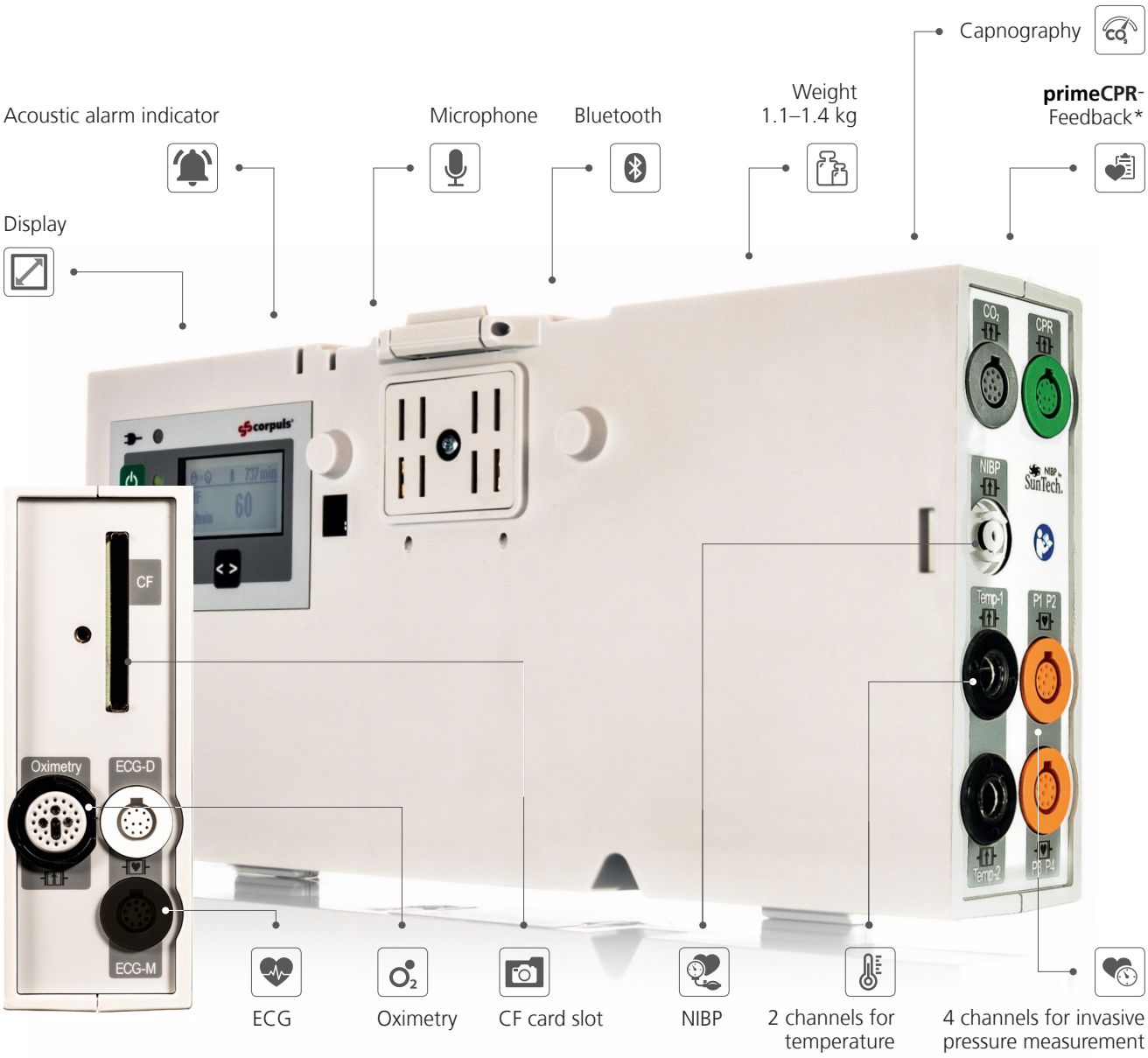
The Patient Box can operate completely autonomously. The backlit monochrome display enables patient observation even without a monitoring unit (including voice recording and acoustic alarms).

All data can be stored for later transmission.

The small screen is located on the front of the Patient Box.

Data export via:

- Bluetooth Classic | BLE
- Mobile Network 4G-LTE & WLAN (in the monitoring unit)
- CompactFlash® Card via **corpuls.manager**



▶ *Illustration of the* **corpuls**3 *Patient Box.*

RESPIRATION RATE FROM THE PLETH (RRp®)

Respiration rate is an important vital parameter in Emergency Medicine. With Masimo®'s Respiration Rate from the Pleth (**RRp®**) feature, this can now be measured automatically via the pulse oximetry sensor.

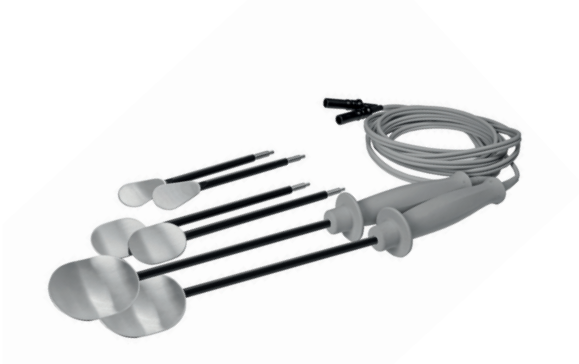
Pressure changes in the chest, which are caused by respiration, among other things, cause a baseline variation in the plethysmographic waveform. The respiration rate (**RRp®**) can be derived from these changes in the plethysmographic waveform. This new parameter is a quick and easy tool to measure or monitor the patient's respiration rate.

* *Connection for a* **primeCPR** *feedback sensor. The reusable sensor is a product of Schiller AG.*

THE DEFIBRILLATOR | PACER

The modular design of the **corpuls3** allows complete mechanical separation of the Defibrillator/Pacer. However, the modules remain wirelessly connected. This significantly reduces the weight of the **corpuls3** system, which improves the mobility and flexibility of the system during urgent patient transfers, such as from the ambulance to the hospital. In this configuration, the patient can be remotely shocked from a safe distance via the monitoring unit (in connection with the **corPatch** therapy electrodes).

▶ *With the HBO variant, the* **corpuls3** *can be operated in multi-place hyperbaric chambers.*



▶ *Shock spoon in three sizes for use during open heart surgery.*

AED

Manual mode
- Cardioversion
- Defibrillation

Only 2.5 kg

Pre-connected **corPatch** therapy electrodes

Pacer

Battery charge for up to 200 shocks

*Illustration of the **corpuls3** Defibrillator | Pacer*

The defibrillator is optionally available with hard paddles and swivelling stand.

primeCPR-FEEDBACKSENSOR

To increase the quality of resuscitation, the **corpuls3** is equipped with CPR feedback. For this purpose, the **primeCPR** feedback sensor is placed on the lower half of the sternum. It measures the pressure frequency and depth of the chest compressions during resuscitation. Depending on the configuration, the quality of the chest compressions is shown on the display (bar graphs) and improved by voice guidance.[1] The bar graph shows the pressure depth and quality of the chest compressions. pressure depth and quality of chest compressions. This view serves as support and feedback for the rescuer.[2]

*The **primeCPR** reusable sensor[2] can be easily disinfected and reprocessed according to the hygiene plan.*

[1] *Source: F. Lakomek et al.: Real-time feedback improves chest compression quality in out-of-hospital cardiac arrest: A prospective cohort study*

[2] *only when using a **primeCPR** feedback sensor. The reusable sensor is a product of Schiller AG.*

PERFECT TEAMWORK

SYNCHRONISATION OF CORPULS3 AND CORPULS CPR

This has long been our vision: the perfect interaction between **corpuls3** and **corpuls cpr** during resuscitation. Our objective was to lift resuscitation procedures to a new level of quality. The **corpuls3** is primarily distinguished from other compact units by its revolutionary modular design. It can be divided into the monitoring unit, patient box and defibrillator/pacer. Synchronised therapy can greatly reduce the stress in the team. **corpuls3** and **corpuls cpr** act as one unit, they are integrated into the team and the two of them working together make the resuscitation procedure even more efficient. The hands-off time is significantly reduced and the patients' chance of survival is increased, even under very confined conditions.

When designing the **corpuls cpr**, we focused on two things: A seamless rescue chain from out-of-hospital, to air rescue, to in-hospital – as well as the shortest possible hands-off time.

This is why the **corpuls cpr** arm can be aligned and fixed over the patient with just one movement in just a few seconds. During the therapy the **corpuls cpr** checks the position of the stamp after each ventilation pause or after 100 compressions when in continuous mode. If the thorax has collapsed, the **corpuls cpr** automatically corrects the distance between the stamp and the thorax. Thus ensuring that the set compression depth is always achieved.

With three different boards made of radiolucent carbon, the user is optimally equipped for every mission.

The synchronisation means that the **corpuls cpr** is virtually the fourth module of the **corpuls3** and we are again a step closer to our target of a seamless rescue chain.

Monitor | Patient box | Defibrillator/ Pacer | + | Mechanical Chest Compression

SPECIFICATIONS corpuls cpr

- **Weight**: 5.5 kg (arm with battery and stamp)
- **Compression depth**: 2–6 cm
- **Frequency**: 80–120/min
- **Therapy mode**: 30:2 | 15:2 | continuous
- **Bluetooth** and **NFC**
- **Intuitive user interface**: therapy start/stop button with alarm function and 4 softkeys
- **Customisable therapy parameters**
- **Battery running time:** up to 80 min
- **Radiolucent boards**
- **Fast secure adjustment**
- **Children from the age of 8, pregnant women and obese patients** can also be treated

THE CORPULS REVOLUTION

Over 20 years ago, **corpuls** introduced the 12-lead ECG to the emergency services. It has been the gold standard in ECG diagnostics ever since. Now **corpuls** is revolutionising the ECG again.

ECGmax

22-LEAD ECG

With **ECGmax** you get not only the classic 12, but **22-leads** and thus 10 additional perspectives on the course of electrical activity in the heart muscle.

The current European Society for Cardiology (ESC) guidelines recommend examining the additional leads **V7–V9** and the right cardiac leads **V3r–V6r**.

No additional effort is required and no other electrodes have to be attached or positioned. The additional leads are calculated on a server. They can be displayed and measured in **corpuls.mission LIVE** or forwarded to the recipient as a PDF by e-mail or fax via the **corpuls** Gateway.

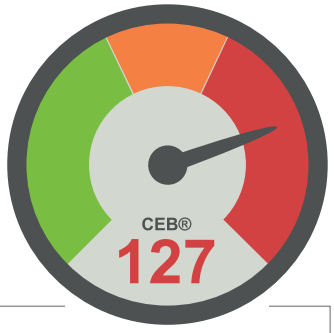
- Diagnostic support with **22-leads**
- **Posterior leads V7–V9**
- **Right cardiac leads** V3r–V6r
- **Orthogonal leads X, Y, Z** and **associated vectorloops**
- **Only 10 electrodes**, extremities and chest leads
- Display on every **corpuls3** with telemetry option

CEB®

CARDIAC ELECTRICAL BIOMARKER

In addition, **ECGmax** can calculate the **Cardiac Electrical Biomarker CEB®** from the same leads.

To do so the electrical field of the heart is measured and the user can immediately recognise whether myocardial ischemia is present – with comparable sensitivity and specificity to troponin.



- **Simple interpretation** using the traffic light concept
- **Correlation of the CEB® with troponin**
- **Fast reaction** by measuring the electrical field
- **Non-invasive measurement**
- **Continuous value**
- **High sensitivity** and **specificity**
- **No additional electrodes** required

GLASGOW ECG INTERPRETATION

The **corpuls3** has integrated the **Glasgow ECG Interpretation Program**. Since its development in the 1960s by Prof. Macfarlane, the program has been further refined and investigated in scientific studies. In addition to adults, the ECG interpretation of pediatric patients is also possible.

- **Pediatric patient** interpretation
- **Gender, race and age specific** interpretation
- **LBBB criteria for STEMI**
- **ST measurement from J point**
- Continuous **development**[1]
- **Studies** in both the in-hospital and out-of-hospital area[2]

[1] *Macfarlane 1971 to Bosson et al. 2017*
[2] *Bosson et al. 2017*

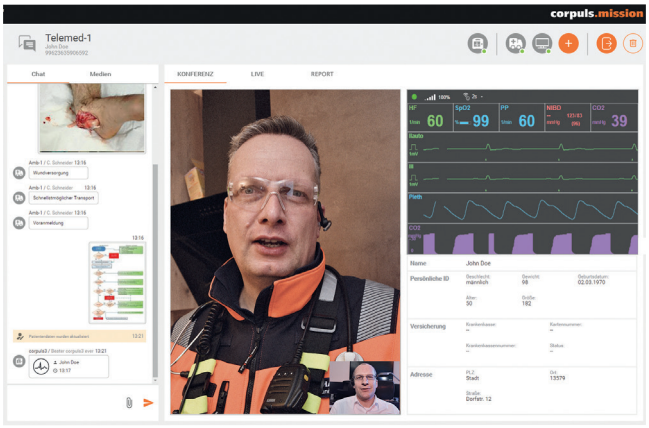
CONNECTIVITY

Various interfaces and connection options are available for the connection to the **corpuls** digital products, the data transmission is always encrypted. For the mobile phone connection, **corpuls** optionally offers additional security through M2M SIM cards.
For local communication with an ePCR device, the **corpuls3** has a combined Bluetooth Classic and Bluetooth Low Energy (BLE) module, which enables the transfer of patient and master data, vital data, trends or the resting ECG as a PDF file.

- **WLAN Interface** (also for "Enterprise" networks)
- **4G LTE Modem** (backwards compatible)
- **M2M SIM cards** for security via mobile connections through their **own APN** with connected **VPN tunnel**
- Combined **Bluetooth Classic and BLE Module** for local communication with an ePCR device

TELEMEDICINE & DATA MANAGEMENT

corpuls.mission and **corpuls.manager** are the optimal and digital complement to **corpuls3**. Missions become borderless in terms of space and time to support patient treatment on site and sustainably improve it for the future.



corpuls.mission LIVE

The telemedicine application **corpuls.mission LIVE** transmits data from the **corpuls3** in real time to any suitable computer connected to the internet – browser-based and yet secure. Thus, medical data can be shared live, no matter how far away the mission site is from the hospital or the specialist.

corpuls.mission CONFERENCE

The communication solution **corpuls.mission CONFERENCE** brings the specific expertise required to the treatment location – any time. The specialists required are connected to the mission site via chat, telephony or video telephony and relevant images, audio recordings, ECG's, etc., can be easily and securely shared – all with a native app.

corpuls.manager ANALYSE

The data management solution **corpuls.manager ANALYSE** centrally and automatically manages all the data from your **corpuls** device fleet and enables data upload from the **corpuls3** at the end of the mission. The filter, sort and search functions are ideal for quality management and controlling.

corpuls.manager REVIEW

With corpuls.manager REVIEW, you can review the mission form the **corpuls3** down to the second. Exactly what's required for optimal debriefing and the best possible documentation for quality assurance.

ENERGY MANAGEMENT

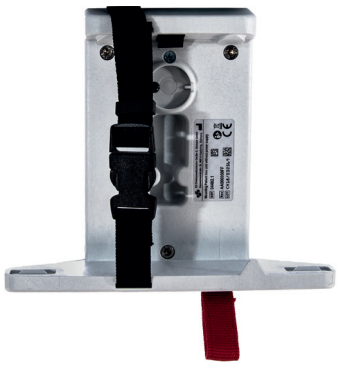
The best energy management is one that the user doesn't have to think about. **corpuls3** intelligent energy management fulfills this requirement precisely.

- **Extremely powerful** and identical batteries in all 3 modules
- **No time-consuming manual charging** and battery replacement required
- In **compact mode**, the battery reserves from the other modules are used

Simply remove the **corpuls3** from the charging bracket in the emergency vehicle and, even during long missions, there will always be always enough power available to ensure comprehensive monitoring and therapy with the Defibrillator/Pacer.

▶ The individual **corpuls3** batteries can be exchanged if necessary.

BRACKETS



PATIENT BOX

- Adapter solutions **for common stretcher systems**
- **Simple attachment and unlocking**
- **12 V DC**
- **EN 1789**

MONITOR

- **Slim installation depth** and **light weight**
- Also **suitable for the combination of Monitor and Patient box**
- **12 V DC**
- **EN 1789**

COMPACT DEVICE

- **One-hand release** via the handle
- **Self-locking mechanism** after 10 seconds
- **12 V DC** (optional with power supply unit)
- **EN 1789**

corpuls3

MONITOR

- Up to **6 curves and 13 vital parameters**
- Diagnostic **12-lead ECG preview**
- **Quick access** to important menu items via 7 softkeys and function buttons
- **1-2-3 operation** in defibrillation modes
- **Wide printer** (106mm) with simultaneous real-time printout of up to 6 curves
- **4G modem**, WLAN or LAN port for **data transmission/telemedicine**
- All-around **impact protection**
- **Weighs** only 2.9 kg
- **Dimensions** (WxHxD): 30.5 cm x 29.5 cm x 12 cm

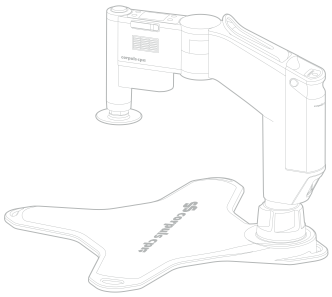
PATIENT BOX

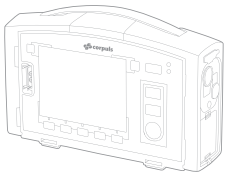
- **12-lead** diagnostic ECG, heart rate
- **ECG-Analysis and Information Software**
- Masimo Rainbow SET® Technologie for **SpO_2, PP, PI, SpCO, SpMet, SpHb, RRp®**
- **Non-invasive blood pressure measurement** (SunTech®)
- **Capnography** with mainstream technology capONE®
- **primeCPR**-Feedback* (disposable or reusable)
- 2 channels for **temperature measurement**
- 4 channels for **invasive pressure measurement**
- **Display** for vital parameters, remaining time and alarms
- Acoustic **alarm indicator**
- Microphone for **audio recording**
- **Bluetooth and CompactFlash®**
- **Weight**: 1.1–1.4 kg
- **Dimensions** (WxHxD): 26.5 cm x 13.5 cm x 5.5 cm

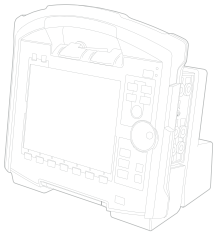
DEFIBRILLATOR

- **Biphasic, rectangular waveform,** impedance compensated
- **2 to 200 Joule,** configurable energy protocol
- **AED and manual defibrillator**
- **AED protocol** according to the current Guidelines, updateable anytime
- **Pacer** with FIX-, DEMAND- and OVERDRIVE mode
- **Pre-connected corPatch therapy electrodes** in separate bag
- **Up to 200 shocks** with fully charged battery
- Use with **hard paddles** as well as **internal shock spoons** possible
- **Weight:** 2.5 kg (**corpuls3 SLIM**)
- **Measurements** (WxHxD): 28 cm x 22 cm x 12 cm

** only when using a* ***primeCPR*** *feedback sensor. The reusable sensor is a product of Schiller AG.*







For over 40 years, **corpuls®** has developed and produced innovative high-end equipment for emergency and intensive care medicine. Today, in our headquarters in Kaufering, over 400 hearts each beat around 80,000 times every work day while aspiring to meet the high standards of rescue workers from over 70 countries around the world.

Since day one, **corpuls** defibrillators, patient monitoring systems and chest compression devices have set the standard in the realisation of the most advanced insights in medical science, as well as in terms of innovation and ergonomics. Complemented by smart telemedicine and data analysis across devices, the **corpuls system** guarantees reliable and safe help in the fight for human lives.

corpuls®

Manufacturer:
corpuls | GS Elektromedizinische Geräte
G. Stemple GmbH
Hauswiesenstrasse 26 | 86916 Kaufering | Germany

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E-Mail info@corpuls.com
Web www.corpuls.world

CE 0123

The **primeCPR feedback sensor** (reusable) is a product of Schiller AG | Altgasse 68 | 6341 Baar | Switzerland

CE

VectraCor | 785 Totowa Road, Suite 100 | Totowa NJ 07512 | USA

CE 2797