

be readily brought into an operative state by the patient shortly before or during transcutaneous introduction of the sensor. Preferably, little or no additional handling effort for the patient is required. Further favorable, the analyte measurement kit can be manufactured in a cost efficient manner.

- 5 According to a first aspect of the present invention, there is provided an analyte measurement kit including a sensor assembly and an insertion device. The sensor assembly comprises a sensor element, preferably a transcutaneous sensor element, and a control unit. The control unit includes a battery for powering the sensor assembly, and a magnetic sensor designed or configured to generate an electrical activation signal in dependence of a magnetic field. The
- 10 control unit is designed or configured to switch from a pre-operative state into an operative state upon generation of the activation signal. The sensor assembly and the insertion device comprise complementary coupling structures for releasable coupling. Furthermore, the insertion device is designed or configured for executing an insertion routine. The insertion routine includes advancing the sensor assembly from a retracted position in which the sensor element
- 15 stands back behind a skin contact surface of the insertion device into an advanced position in which the sensor element projects beyond the skin contact surface, and subsequent decoupling the insertion device from the sensor assembly. The insertion device includes an activation magnet. Executing the insertion routine is associated with a change of a magnetic coupling between the activation magnet and the sensor assembly, thereby generating the activation
- 20 signal. The activation magnet is generally a permanent magnet.

An analyte assembly of the above-described type has the advantage that the activation signal is generated during the insertion routine, upon which the control unit is switched from a pre-operative, i.e. inactive, state to an operative, i.e. active, state. It is to be understood that the

arrangement is favorably such that the magnetic flux lines correspond to a direction of maximum sensitivity of the Hall effect sensor (perpendicular to a plane as defined by the Hall probe of the Hall effect sensor).

In some embodiments, the control unit includes a wireless communication interface. Furthermore, the control unit is configured to pair with a remote device for data communication via the wireless communication interface upon being switched into the operative state. In particular, the remote device may include a smart phone, a portable computer or any other suitable device. In alternative embodiments, it may also be possible to connect the control unit via a communication interface and a cable with a device for data communication.

In some embodiments, the sensor assembly is configured to execute analyte measurements in the operative state, for example, by electrochemical or electroenzymatic measurements. In some particular embodiments, the analyte is glucose. In the pre-operative state, in contrast, no analyte measurements are carried out and the control unit is in a low-energy or sleep mode and only the magnetic sensor is powered (in case of the magnetic sensor being a Hall effect sensor as explained before) and those parts of the control unit, in particular of a microcontroller or microprocessor, that are required for detecting the generation of the activation signal and reacting thereon. In the operative state, the control unit may be configured to directly transmit glucose measurements to the remote device, and/or to temporarily store measurement results in a memory of the control unit and transmit them upon request by the remote device and/or according to a transmission time schedule.

According to a second aspect of the present invention, there is provided a method for switching a sensor assembly from a pre-operative state in an operative state. The method including:

(a)

providing an analyte measurement kit as defined in the first aspect; and (b) executing an insertion routine, the insertion routine including changing a magnetic coupling between the activation magnet and the sensor assembly, thereby generating the activation signal.

BRIEF DESCRIPTION OF THE DRAWINGS

5 Figure 1 shows a schematic view of an analyte measurement kit in accordance to a first embodiment of the invention;

Figure 2 shows a schematic view of an analyte measurement kit in accordance to another embodiment of the invention;

Figure 3 shows a schematic view of an analyte measurement kit in accordance to another
10 embodiment of the invention.

Figure 4 shows a further embodiment according to the invention in a first configuration.

Figure 5 shows a further embodiment according to the invention in a second configuration.

Figure 6 shows a further embodiment according to the invention in a third configuration.

Figure 7 shows the sensor assembly of the embodiment of Figure 4 to Figure 6 after removal
15 of the insertion device.

CLAIMS

1. Analyte measurement kit, the analyte measurement kit including:
 - a) a sensor assembly, the sensor assembly including a transcutaneous sensor element and a control unit;
5 the control unit including a battery for powering the sensor assembly and a magnetic sensor designed to generate an electrical activation signal in dependence of a magnetic field, wherein the control unit is designed to switch from a pre-operative state into an operative state upon generation of the activation signal;
 - 10 b) an insertion device, wherein the insertion device and the sensor assembly comprise complementary coupling structures for releasable coupling;
wherein the insertion device is designed for executing an insertion routine, the insertion routine including advancing the sensor assembly from a retracted position where the transcutaneous sensor element stands back behind a skin contact surface of the insertion device into an advanced position where the sensor
15 element projects beyond the skin contact surface, and subsequently decoupling the insertion device from the sensor assembly,
wherein the insertion device includes an activation magnet and executing the insertion routine is associated with a change of a magnetic coupling between
20 the activation magnet and the sensor assembly, thereby generating the activation signal.

2. Analyte measurement kit according to claim 1, wherein the sensor assembly includes a sensor housing, the sensor housing encapsulating the control unit, wherein the transcutaneous sensor element projects from the sensor housing.
3. Analyte measurement kit according to claim 1 or 2, wherein the insertion device includes an elongated piercing element, wherein the piercing element is structurally coupled with the sensor element in the retracted position, wherein the insertion routine includes advancing the piercing element together with the sensor assembly from the retracted position into the advanced position, followed by only retracting the piercing element into the retracted position.
4. Analyte measurement kit according to any one of claims 1 to 3, wherein the insertion device includes an insertion device housing, wherein the activation magnet is rigidly coupled to the insertion device housing.
5. Analyte measurement kit according to claim 4, wherein the activation magnet is positioned such that a distance between the activation magnet and the magnetic sensor increases upon advancing the sensor assembly into the advanced position, thereby generating the activation signal.
6. Analyte measurement kit according to claim 4, wherein the activation magnet is positioned such that a distance between the activation magnet and the magnetic sensor decreases upon advancing the sensor assembly into the advanced position, thereby generating the activation signal.

7. Analyte measurement kit according to claim 3, wherein the activation magnet is coupled with the piercing element to move relative to the sensor assembly when retracting the piercing element into the retracted position.
8. Analyte measurement kit according to claim 7, wherein the activation magnet is rigidly coupled to or included in the piercing element.
9. Analyte measurement kit according to any one of claims 1 to 8, wherein the magnetic sensor includes a coil.
10. Analyte measurement kit according to any one of claims 1 to 8, wherein the magnetic sensor includes a Hall effect sensor.
- 10 11. Analyte measurement kit according to any one of claims 1 to 10, wherein the activation magnet and the magnetic sensor are aligned, in particular coaxially aligned, with each other in a coupled state of sensor assembly and insertion device.
12. Analyte measurement kit according to any one of claims 1 to 11, wherein the control unit includes a wireless communication interface and wherein the control unit is configured, upon being switched into the operative state, to pair with a remote device for data communication via the wireless communication interface.
- 15 13. Analyte measurement kit according to any one of claims 1 to 12, wherein the sensor assembly is configured to execute analyte measurements in the operative state.

14. Analyte measurement kit according to any one of claims 1 to 13, wherein the analyte is glucose.
15. Method for switching a sensor assembly from a pre-operative state into an operative state, the method including:
 - 5 (a) providing an analyte measurement kit according to any one of claims 1 to 14;
 - (b) executing an insertion routine, the insertion routine including changing a magnetic coupling between the activation magnet and the sensor assembly, thereby generating the activation signal.