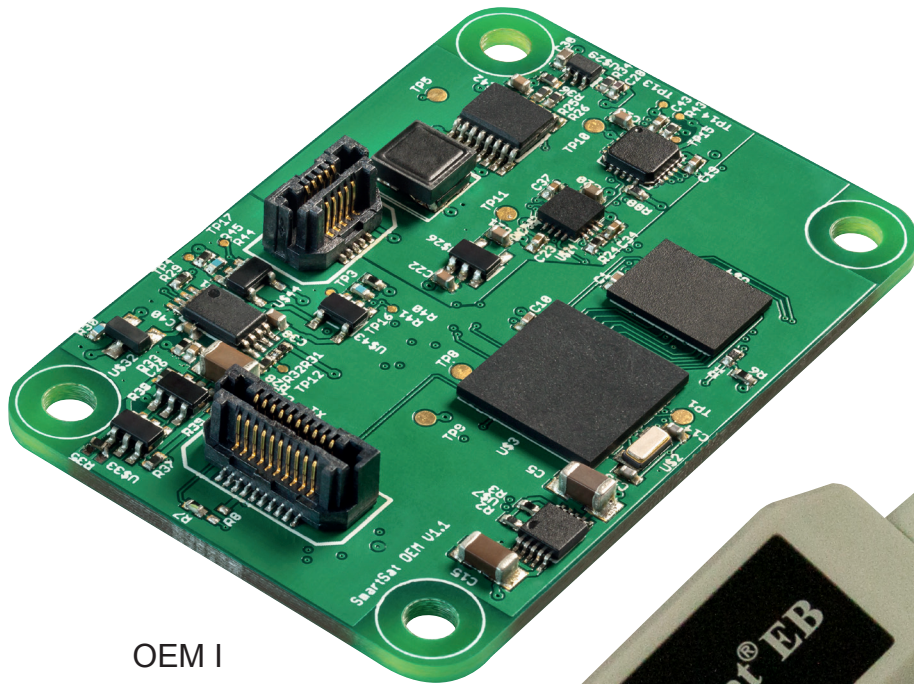


pulse oximetry

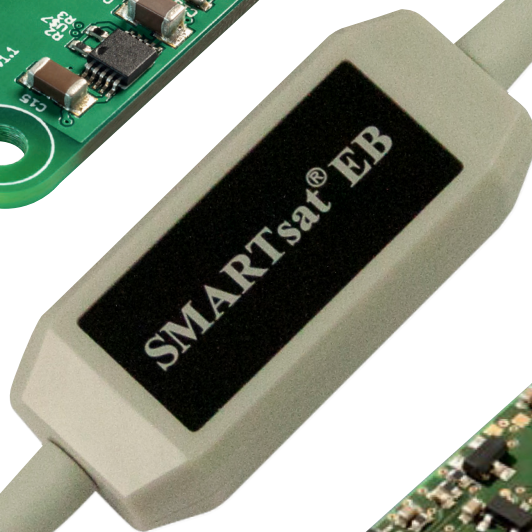


# SMARTsat®

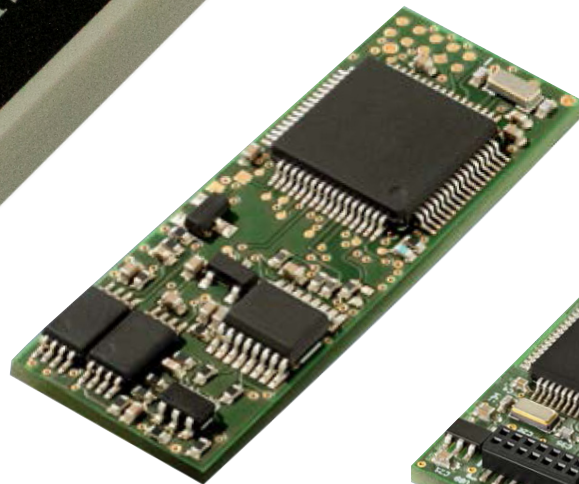
High performance SpO<sub>2</sub> technology for OEMs



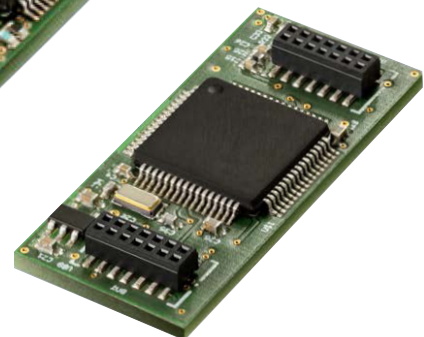
OEM I



EB

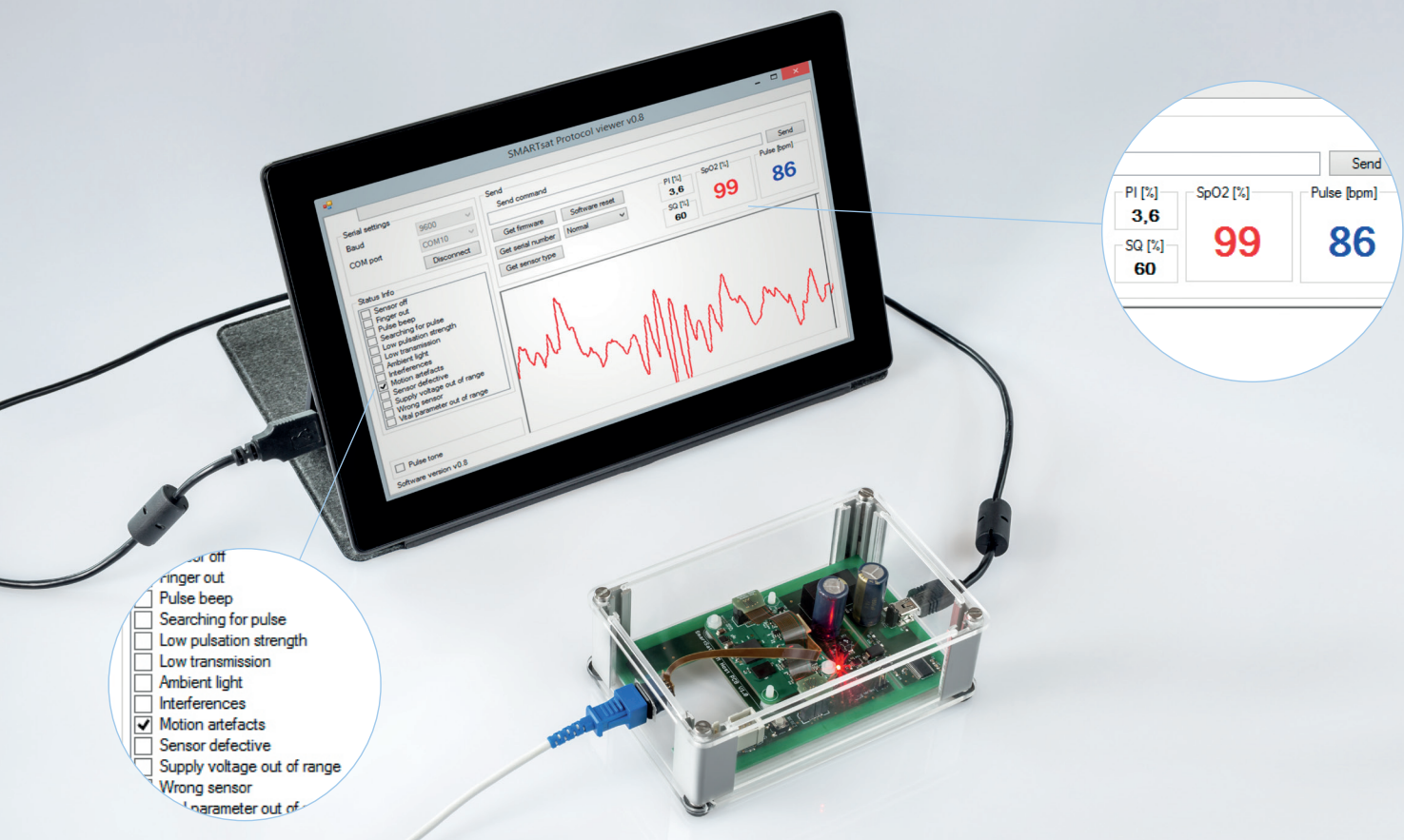


OEM II



OEM III





## SMARTsat technology – Now you have a choice! High performance SpO<sub>2</sub> technology for OEMs

The SMARTsat technology platform was developed over the last few years, in close cooperation with well-established research institutions and university hospitals.

The very latest and innovative signal processing technologies and algorithms enable precise measurements, even under very difficult physiological conditions. SMARTsat technology has extremely low power consumption requirements, and is a real alternative for OEM customers whom require high-end pulse oximetry solutions for their applications.

In accordance with ISO Standards, the approved pulse oximetry sensors are calibrated and evaluated against dyshemoglobin-free reference measurements, which were determined from CO oximeter data and do not contain saturation

components of the hemoglobin fractions SaCO and SaMet.

SMARTsat has been validated within the range of 60 - 100 % SpO<sub>2</sub>.

### SMARTsat A<sub>RMS</sub> in the SaO<sub>2</sub> ranges

|                       | 100 - 60% | 100 - 90% | 90 - 80% | 80 - 70% | 70 - 60% |
|-----------------------|-----------|-----------|----------|----------|----------|
| Silicone Sensors      | 1.5       | 1.3       | 1.1      | 1.5      | 2.4      |
| Finger Clip Sensors   | 1.2       | 1.0       | 1.0      | 1.2      | 2.0      |
| Silicone Wrap Sensors | 1.5       | 0.9       | 0.9      | 1.7      | 3.2      |
| Disposable Adult      | 1.7       | 1.1       | 1.5      | 2.0      | 2.4      |
| Ear Sensors           | 1.3       | 1.3       | 1.4      | 1.3      | 1.7      |



## Typical applications

SMARTsat is designed for integration into:

- High-End SpO<sub>2</sub> monitoring devices
- Patient monitors
- Transport monitors
- Sleep screening devices
- Defibrillators
- Home care monitors
- ... and more



## Robust, flexible and hygienic

Viamed provides a range of high quality and comfortable sensors that incorporate the very latest technology



### Soft Silicone Sensors

Due to their robust design, the Soft Silicone Sensors are ideal for use in the tough environment of rescue services, emergency services and hospitals.

The Silicone Sensors from the 4000 series are manufactured from premium materials and their design allows for effective high-level disinfection. This reduces the risk of nosocomial infection associated with surface-borne pathogenic microorganisms.

Available in Adult, Small Adult (Medium) and Paediatric sizes.



### Finger Clip Sensor

Finger Clip sensors are the ideal solution for ambulatory use, or for long-term monitoring. Advanced manufacturing technologies, materials and design elements are found in these sensors.



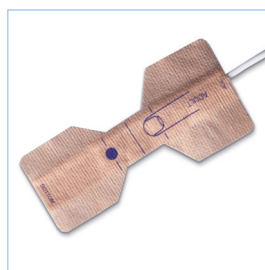
### Silicone Wrap Sensor

Silicone Wrap sensors are for universal applications, for use on infants to adults. Wrap tapes are provided with mounting loops, enabling a simple fixation of the skin friendly wrap sensor.



### Ear Sensor

High-quality ear sensor, which is comfortable and easy to use. The ear sensor has an additional sensor holder that prevents sensor movement and prevents it from being dislodged.



### Disposable Sensors

Disposable sensors with Plaster Tape – the soft material is highly flexible and adaptable. Available in adult, paediatric, infant and neonatal sizes.

# Technical data

| Specification                          |                                                                                                                                                                                                                | OEM I                                                             | OEM II <sup>5</sup>                                                      | OEM III / EB                 |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|--------------------------------------------------------------------------|------------------------------|
| Measurement Range                      | SpO <sub>2</sub>                                                                                                                                                                                               | 0 - 100 %                                                         | 0 - 100 %                                                                | 0 - 100 %                    |
|                                        | Pulse Rate                                                                                                                                                                                                     | 20 - 300 bpm                                                      | 20 - 300 bpm                                                             | 20 - 300 bpm                 |
|                                        | Perfusion                                                                                                                                                                                                      | 0.02 - 20 % (no motion)                                           | 0.02 - 20 % (no motion)                                                  | 0.1 - 20 % (no motion)       |
| Accuracy                               | SpO <sub>2</sub>                                                                                                                                                                                               | 60 - 100 % +/- 2 A <sub>RMS</sub> (no motion) <sup>1</sup>        |                                                                          |                              |
|                                        |                                                                                                                                                                                                                | 60 - 100 % +/- 3 A <sub>RMS</sub> (motion condition) <sup>2</sup> |                                                                          |                              |
|                                        |                                                                                                                                                                                                                | 60 - 100 % +/- 2 A <sub>RMS</sub> (low perfusion) <sup>3</sup>    |                                                                          |                              |
|                                        | Pulse Rate                                                                                                                                                                                                     | 20 - 300 bpm +/- 2 bpm (no motion)                                |                                                                          |                              |
| Power requirements                     |                                                                                                                                                                                                                |                                                                   |                                                                          |                              |
| Input voltage                          |                                                                                                                                                                                                                | 3.2 - 3.4 VDC                                                     | 3.1 - 3.6 VDC                                                            | 3.1 - 3.6 VDC                |
| Average power consumption <sup>4</sup> |                                                                                                                                                                                                                | 69 mW, 75 Hz sampling rate                                        | 65 mW, 75 Hz sampling rate                                               | 24 mW, 75 Hz sampling rate   |
| Maximum power consumption <sup>4</sup> |                                                                                                                                                                                                                | ≤ 86 mW, 75 Hz sampling rate                                      | ≤ 77 mW, 75 Hz sampling rate                                             | ≤ 29 mW, 75 Hz sampling rate |
| Environmental conditions               |                                                                                                                                                                                                                |                                                                   |                                                                          |                              |
| Operation                              | -25 to +60 °C                                                                                                                                                                                                  |                                                                   |                                                                          |                              |
| Storage                                | -40 to +70 °C                                                                                                                                                                                                  |                                                                   |                                                                          |                              |
| Relative humidity                      | 15 % - 95 % (operation, non-condensing)                                                                                                                                                                        |                                                                   |                                                                          |                              |
|                                        | 10 % - 95 % (storage, non-condensing)                                                                                                                                                                          |                                                                   |                                                                          |                              |
| Serial communication                   |                                                                                                                                                                                                                |                                                                   |                                                                          |                              |
| Baud rate                              | 9600 baud up to 230400 baud                                                                                                                                                                                    |                                                                   |                                                                          |                              |
| Sampling rate                          | Adjustable to 75 Hz, 150 Hz, 300 Hz                                                                                                                                                                            |                                                                   |                                                                          |                              |
| Applied Standards                      |                                                                                                                                                                                                                |                                                                   |                                                                          |                              |
| SMARTsat module OEM I, II, III         | IEC 60601-1:2005 (3rd Ed); IEC 60601-1 (2nd Ed)<br>IEC 60601-1-2:2014 (4th Ed); IEC 60601-1-2 (3rd Ed)<br>EN ISO 80601-2-61:2011; EN ISO 9919:2009<br>ISO 14971:2007; IEC 60601-1-6:2010 ; IEC 60601-1-11:2010 |                                                                   |                                                                          |                              |
| SMARTsat sensors                       | ISO 10993-1:2009; ISO 10993-5:2009; ISO 10993-10:2010                                                                                                                                                          |                                                                   |                                                                          |                              |
| Miscellaneous                          |                                                                                                                                                                                                                |                                                                   |                                                                          |                              |
|                                        | OEM I                                                                                                                                                                                                          | OEM II                                                            | OEM III / EB                                                             |                              |
| Dimensions (L x W x H)                 | 50.8 mm x 35.1 mm x 6.6 mm                                                                                                                                                                                     | 37.0 mm x 14.0 mm x 5.0 mm                                        | OEM III - 31.0 mm x 14.0 mm x 5.0 mm<br>EB - 60.0 mm x 25.0 mm x 15.0 mm |                              |
| Part Numbers                           | 0012700                                                                                                                                                                                                        | 0012710                                                           | 0012720 / 0012730                                                        |                              |

<sup>1</sup> A<sub>RMS</sub>: ± 1 Arms represents approx 68% of measurements

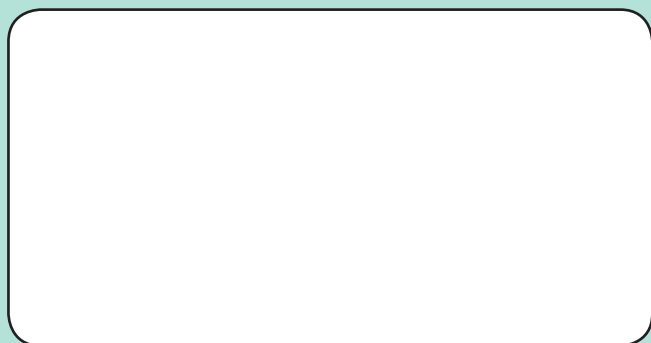
<sup>2</sup> Tested with all motion patterns Index II

<sup>3</sup> Tested with Prosim 8 simulator

<sup>4</sup> Power consumption measured at a data transfer rate of 230 kBaud and 3.3 VDC. Reduced data transfer rates and/or higher sampling rates (150 Hz, 300 Hz) increases the power consumption.

<sup>5</sup> Available Q1/2016

SMARTsat® modules are designed to comply with 2nd and 3rd edition standards.  
Specifications subject to change



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