SENSFLOOR® SYSTEM CATALOG – JULY 2016

YOUR COMPONENTS FOR FUTURE APPLICATIONS

SMART HOME

AMBIENT ASSISTED LIVING

INTERNET OF THINGS

SENSFLOOR ® CATALOG - CONTENT

INTRODUCTION

THE SENSFLOOR® SYSTEM

Conventional functions of room floors range from mechanical support, convenience, heating and noise reduction to the expression of individual style and design. However, considering the fact that during the day we are mostly in direct contact with the floor one may ask whether it is possible to exploit this close relationship for even more advanced functions. Using the SensFloor® underlay a room's floor is transformed into a sensor plane that detects and monitors people's behavior and allows for a collection of novel supportive functions. Although these functions are obvious to the user, the sensor system itself remains invisible and does not interfere with the material or design of the floor covering in any way. In this respect, the patented SensFloor® technology is an example for a new class of systems summarized under the expression *Ambient Assisted Living (AAL)* and is very suitable for a variety of new applications in the *Internet of Things (IoT)* domain.

SCHEMATIC OF THE SENSFLOOR SYSTEM

The base functions offered by the SensFloor® system are the detection and tracking of people moving around within the room. Furthermore, the system very reliably distinguishes standing persons from a person lying on the floor. The capacitive measurement principle allows for a unique advantage of the system compared to pressure sensors: as the sensors react from a certain distance without direct touch, there is no restriction on the floor covering. The SensFloor® underlay is based on *Smart Textiles* with a thickness of 3 mm, and it is installable underneath flexible, as well as rigid flooring. The only exception is conductive material, because of its shielding of the capacitive measurement.
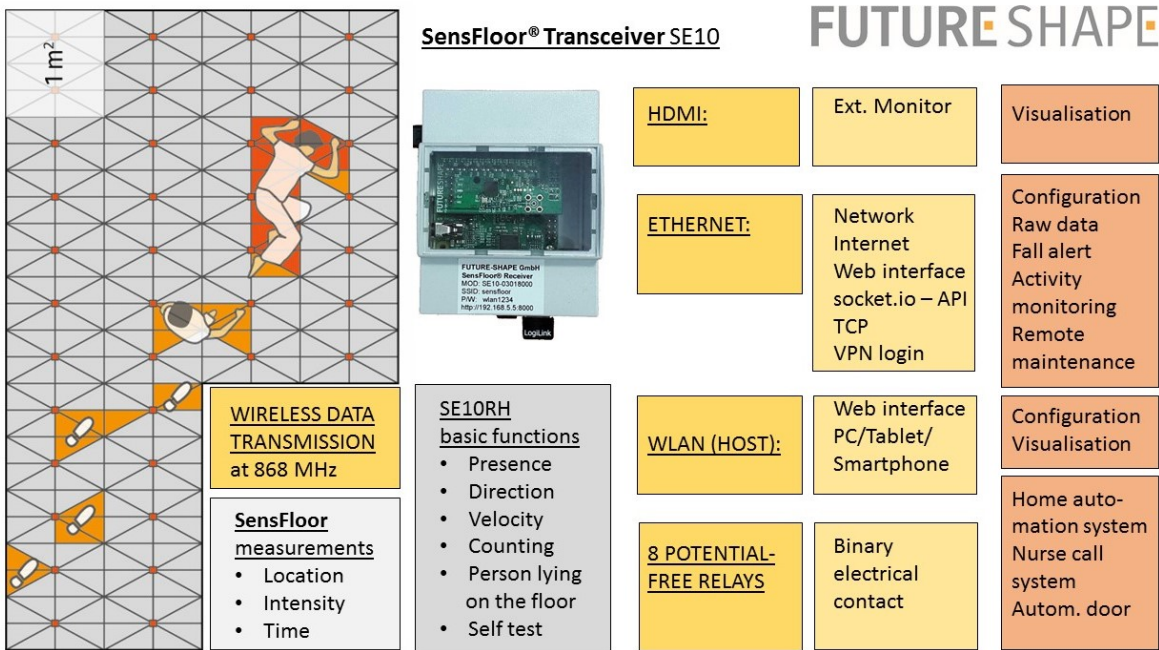

Figure 1 Schematic of the SensFloor® system with transceiver SE10-H

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As soon as a person is moving or standing on the floor, the persons' location is acquired very accurately based on the spatial resolution of the sensor grid. The sensor signals are transmitted wirelessly at 868 MHz to the SensFloor transceiver, using a proprietary protocol. By collecting and processing the sensor patterns over time it is possible to assign movement trajectories to the persons based on which several applications can be realized.

Figure 1 shows the schematic of the SensFloor system with the transceiver SE10-H based on Raspberry Pi. The basic functions of the transceiver are the detection of people, direction of movement, velocity, counting, detection of a person lying on the floor, and self-tests. Various interfaces support the applications: HDMI for depicting a *Graphical User Interface (GUI)* on an external monitor, ETHERNET for accessing the internet, networks, web interfaces, and socket.io-API, TCP for configuration of the system, transmitting raw data, fall alert, activity monitoring, and VPN login for remote maintenance.

A WLAN (HOST) provides a web interface for PC, tablet, and smartphone for configuration and visualization. Finally, eight programmable potential-free relays provide binary electrical contacts for home automation systems, nurse call systems, control of automatic doors, or security applications.

Figure 2 shows the installation of the SensFloor® underlay in the living room / entrance area of a *Smart Home* apartment with laminate as a covering floor. We supply installation instructions for different kinds of flooring material, like parquet, laminate, MDF plates, PVC, lino, carpet, and tiles.

Figure 2 Installation of the SensFloor® underlay and same view after installation of the laminate

In this catalog, you will find a variety of SensFloor® underlays and SensFloor® mats, as well as SensFloor® transceivers, which provide a base for absolutely amazing and new applications.

Please, refer to the according data sheets for more detailed technical information!

Contact us – we are pleased to help you chose the right components for your project, offer you complete solutions, including installation, programming and testing. We also develop customized solutions for you!

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SENSFLOOR® SYSTEM

The SensFloor underlay is able to detect persons walking or laying on it and differentiates between these situations. For this purpose, the underlay has several sensor areas that detect changes of the capacitance above its surface. If these changes are within a predefined range, the integrated radio modules transmit the data to one or several SensFloor transceivers in their environment. The transceiver uses the data to identify different events like a step or a fall on the floor. Triggered by these events, the transceiver activates different switches, light or acoustic signals and is able to set off an alarm in case of emergency.

This high-resolution SensFloor® underlay is suitable for counting, gait analysis, security applications and games.

Base material: Polyester fleece
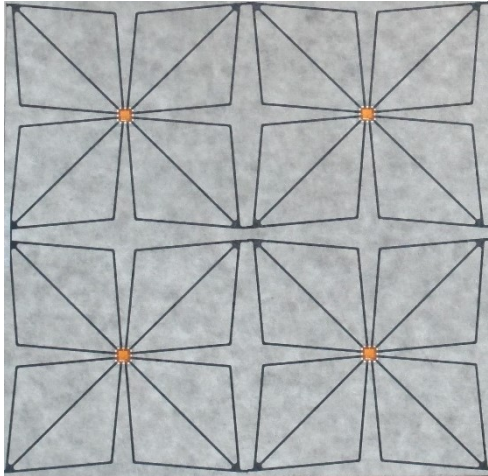
|------------------- 100 cm----------------------|

TECHNICAL DATA SF HR

Underlay width / length	100 cm / up to 50 m
Underlay thickness / weight	2.5 +- 0.6 mm / 720 g +- 60 g per sqm
Grid	50 cm x 50 cm, 4 radio modules / 32 sensor areas / sqm
Current per module / sqm	max. 25 mA / 100 mA
Supply voltage	+5V - +12V functional ground required!
Radio frequency	868.0 MHz
Code	proprietary protocol between SensFloor® components
Range	20 m free field
Transmission power	+10 dBm max.
Measurement / frequency	capacitive proximity sensing / 10 Hz
Installation	beneath non-conductive flooring, only
Operating temperature	-10°C to + 40°C

MODELS

|	
High-resolution Underlay SF HR	delivered in reels
High-resolution Underlay S -HR PS	delivered in patches with customized power supply connection
High-resolution Underlay SF HR PS AF	delivered in patches with customized power supply connection and self-adhesive foil on top and bottom side
High-resolution Underlay SF HR WP	delivered in patches with PE encapsulation for water protection

SENSFLOOR® SYSTEM

SENSFLOOR® UNDERLAY SF LR

The SensFloor underlay is able to detect persons walking or laying on it and differentiates between these situations. For this purpose, the underlay has several sensor areas that detect changes of the capacitance above its surface. If these changes are above the given limits, the integrated radio modules transmit the values of the measured capacitances to one or several SensFloor transceivers in their environment. The transceiver uses the data to identify different events like a step or a fall on the floor. Triggered by these events, the transceiver activates different switches, light or acoustic signals and is able to set off an alarm in case of emergency.

The low-resolution SensFloor Underlay is suitable for care applications and Smart Home.

Base material: Polyester fleece
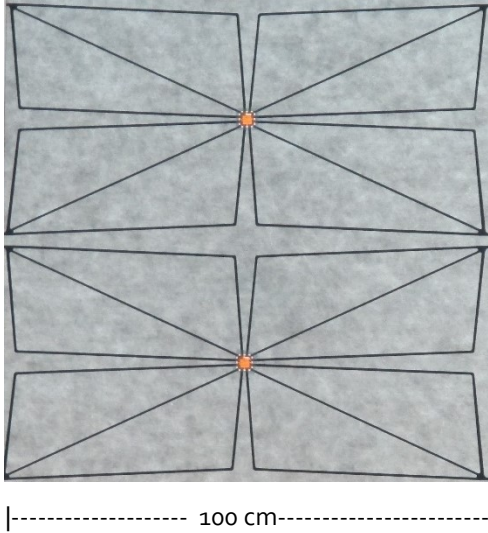
|------------------- 100 cm-----------------------|

TECHNICAL DATA SF LR

Underlay width / length	100 cm / up to 50 m
Underlay thickness / weight	2.5 +- 0.6 mm / 720 g +- 60 g per sqm
Grid	100 cm x 50 cm, 2 radio modules / 16 sensor areas / sqm
Current per module / sqm	max. 25 mA / 50 mA
Supply voltage	+5V - +12V functional ground required!
Radio frequency	868.0 MHz
Code	proprietary protocol between SensFloor® components
Range	20 m free field
Transmission power	+10 dBm max.
Measurement / frequency	capacitive proximity sensing / 10 Hz
Installation	beneath non-conductive flooring, only
Operating temperature	-10°C to + 40°C

MODELS

Low-resolution Underlay SF LR	delivered in reels
Low-resolution Underlay SF LR PS	delivered in patches with customized power supply connection
Low-resolution Underlay SF LR PS AF	delivered in patches with customized power supply connection and self-adhesive foil on top and bottom side
Low-resolution Underlay SF WP	delivered in patches with PE encapsulation for water protection

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SENSFLOOR® SYSTEM

SENSFLOOR® SENSOR MAT HR

The SensFloor® mat is able to detect persons stepping or laying on it and differentiate between these situations. The mats have eight sensor areas per module that detect changes of the capacitance above its surface. If these changes are within a predefined range, the integrated radio modules transmit the data to one or several SensFloor transceivers in their environment. The transceiver uses the data to identify different events like a step or a fall on the mat. Triggered by these events, the transceiver activates different switches, light or acoustic signals and is able to set off an alarm in case of emergency.

The mats are encapsulated with PVC and sealed for water protection.

High-resolution SensFloor sensor mats are suitable for counting (at least 2 steps required on the mat).

|------------------- 100 cm---------------------|
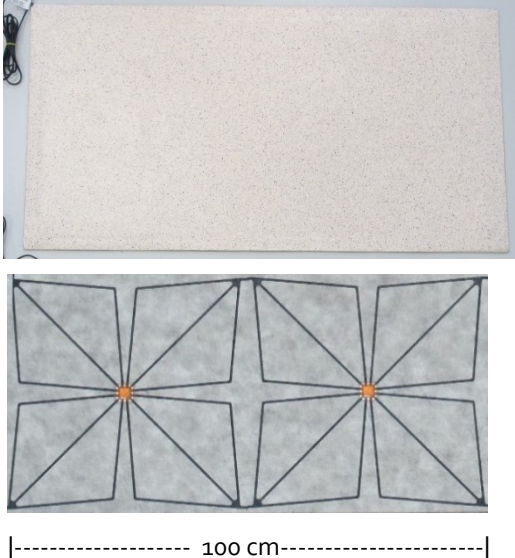
TECHNICAL DATA SENSOR MAT HR

Thickness / weight	Center: 5.2 mm, Seam: 3.0 mm / 3 kg
Encapsulation	Heterogeneous PVC beige, surface (EN 429) slip-proof R10 treated with bacteriostatic and fungistatic finishing
Grid	50 cm x 50 cm, 4 radio modules / 32 sensor areas / sqm
Current per module	max. 25 mA
Supply voltage	+5V - +12V functional ground required!
Radio frequency	868.0 MHz
Code	proprietary protocol between SensFloor® components
Range	20 m free field
Transmission power	+10 dBm max.
Measurement / frequency	capacitive proximity sensing / 10 Hz
Cable	1.8 m PVC, DC outlet male barrel 5.5 *2.1*11 mm

MODELS

Sensor mat HR M03	56 cm x 56 cm, 1 radio module / 8 sensor areas
Sensor mat HR M05	100 cm x 56 cm, 2 radio modules / 16 sensor areas
Sensor mat HR M10	100 cm x 106 cm, 4 radio modules / 32 sensor areas
Sensor mat HR M15	100 cm x 156 cm, 6 radio modules / 48 sensor areas

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SENSFLOOR® SYSTEM

SENSFLOOR® SENSOR MAT LR

The SensFloor® mat is able to detect persons stepping or laying on it and differentiate between these situations. The mats have eight sensor areas per module that detects changes of the capacitance above its surface. If these changes are within the measurement range, the integrated radio modules transmit the values to one or several SensFloor® transceivers in their environment. The transceiver uses the data to identify different events like a step or a fall on the mat.

The mats are encapsulated with PVC and sealed for water protection.

Left: Low-resolution SensFloor sensor mat M05
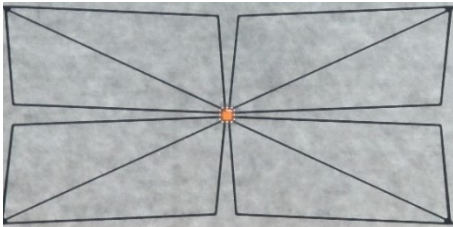
|------------------ 100 cm---------------------|

TECHNICAL DATA SENSOR MAT LR

Thickness / weight	Center: 5.2 mm, Seam: 3.0 mm / 3 kg
Encapsulation	Heterogeneous PVC, beige, surface (EN 429) slip-proof R10 treated with bacteriostatic and fungistatic finishing
Grid	100 cm x 50 cm, 2 radio modules / 16 sensor areas / sqm
Current per module	max. 25 mA
Supply voltage	+5V - +12V functional ground required!
Radio frequency	868.0 MHz
Code	proprietary protocol between SensFloor® components
Range	20 m free field
Transmission power	+10 dBm max.
Measurement / frequency	capacitive proximity sensing / 10 Hz
Cable	1.8 m PVC, DC outlet male barrel 5.5 *2.1*11 mm

MODELS

|	
Sensor mat LR M05	100 cm x 56 cm, 1 radio module / 8 sensor areas
Sensor mat LR M10	100 cm x 106 cm, 2 radio modules / 16 sensor areas

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SENSFLOOR® SYSTEM

The SensFloor® relay mat is able to detect persons stepping on it. The mat has several sensor areas that detect changes of the capacitance above its surface. If these changes are above the given limits, the integrated microcontroller switches the integrated potential-free relay.

As default configuration, the relay remains closed as long as the mat is occupied. On customer's request, other configurations are possible, e.g. to drive the relay as opener instead or to open/close it for a defined time only.

Please note: Wireless data transmission might be used for programming / reprogramming of the SensFloor mat. There no wireless data transmission is needed in normal use. However, wireless data transmission can be active optionally.
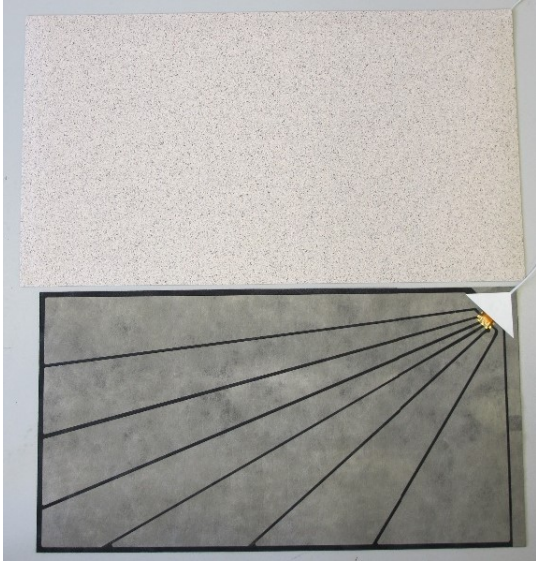
SensFloor Relay patch size: 93 cm x 50 cm
SensFloor Relay mat with PVC: 100 cm x 56 cm

TECHNICAL DATA RELAY MAT LR

Thickness / weight with PVC	Center: 5.2 mm, Seam: 3.0 mm / 3 kg
Encapsulation mat:	Heterogeneous PVC, beige, surface (EN 429) slip-proof R10 treated with bacteriostatic and fungistatic finishing
Encapsulation patch:	PE-foil
Size PVC mat	100 cm x 56 cm, 1 relay module / 7 sensor areas
Current per module	max. 25 mA
Supply voltage	+5V - +24V functional ground required!
Radio frequency	868.0 MHz
Code	proprietary protocol between SensFloor® components
Range	20 m free field
Transmission power	+10 dBm max.
Measurement / frequency	capacitive proximity sensing / 10 Hz
Cable	Open wire ends

MODELS

Sensor relay patch RP05 WP	93 cm x 50 cm, 1 relay module /7 sensor areas / thickness 3 m
Sensor relay mat PM05	100 cm x 56 cm, 1 relay module / 7 sensor areas / thickness 5.2 mm

SENSFLOOR® SYSTEM

PRESSUR-E-TEX® SENSOR MAT PHR

The pressur-e-tex® mat is a pressure-sensitive variation of the SensFloor® mat. The mats have eight sensor areas per module that detect changes of the capacitance above its surface. The changes are achieved by compression of a soft and conductive top layer. If these changes are within the measurement range, the integrated radio modules transmit the values to one or several SensFloor® transceivers in their environment.

Typical applications for pressur-e-tex® mats are bed sensors (SensBed) for detecting sleep disorders or SensSeat seat sensor mats.

The mats are protected by a soft textile cover.
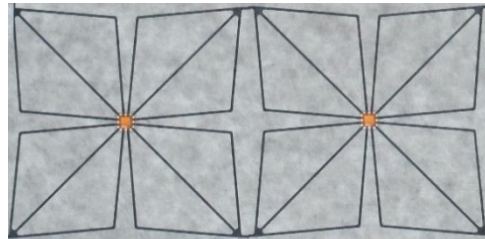
|------------------- 100 cm----------------------|

TECHNICAL DATA PRESSUR-E-TEX® MAT PHR

Thickness / weight	10 mm, / approx. 1 kg /sqm
Encapsulation	Textile cover
Grid	50 cm x 50 cm, 4 radio modules / 32 sensor areas / sqm
Current per module	max. 25 mA
Supply voltage	+5V - +12V
Radio frequency	868.0 MHz
Code	proprietary protocol between SensFloor® components
Range	20 m free field
Transmission power	+10 dBm max.
Measurement / frequency	Pressure sensing based on capacitive measurement / 10 Hz
Cable	1.8 m, PVC, DC outlet male barrel 5.5 *2.1*11 mm

MODELS

Bed sensor mat HR P05 PS   90 cm x 50 cm, 2 radio modules / 16 sensor areas, textile cover

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SENSFLOOR® SYSTEM

The SensFloor® receiver SE1 is used for the wireless reception and processing of messages from SensFloor® products. Every SE1 has a set of pre-programmed functions. Events from the SensFloor® can be detected (e.g. stepping or falling on a floor equipped with SensFloor®) and the receiver's relays are triggered.

The SE1 is suitable for direct connection to a nurse call system according to DIN 0834. The transceiver can be disabled by the integrated control button.

The SE1 has a Schuko plug and a switched Schuko plug in, especially suitable for the control of an orientation light, for fall prevention at night.

Size: 120 mm x 65 mm x 55 mm

TECHNICAL DATA SE1

Power supply	230 V AC, 1 W
Switching power	800 W max.
Radio frequency	868.0 MHz
Antenna	Integrated pcb antenna, SMA socket optional
Code	proprietary protocol between SensFloor components
Range / Transmission power	20 m free-field / +10 dBm max.
Potential free relay	1A max.
Triac relay (SSR)	1 x Sharp S202S02, 8 A max., 230 V AC
Summer	Piezo, 70 dB
RJ45 multipurpose connector	Pin 1,2: potential-free relays (shutter), Pin 3: UART TX, Pin 5: GND
Baud rate UART / data format	115kBaud, 8N1, start byte FD (hex) + 16 Bytes
Configuration parameters	128 Bytes, definition of up to 106 functions
Processing capacity	Up to 128 m² low-res SensFloor® and 16 SensFloor® mats
Event memory:	128 events

MODELS

SensFloor® transceiver SE1-R	For connection to nurse call system (DIN 0843)	Accessories (optional): assembled cable for connection to nurse call system (form)

SENSFLOOR® SYSTEM

SENSFLOOR® TRANSCEIVER SE2

The SensFloor® SE2 transceiver is used in the field of private and professional care. Various functions are activated by the manufacturer by default or can be configured on request. When events from the SensFloor® sensors are detected (e.g. stepping or falling on a SensFloor® mat) the receiver's light and sound signals and relay switches are triggered.

Please refer to the detailed description of the functions in the datasheet.

The SE2 contains an opener and a closing relay, which are both potential-free. On request, the relay contacts are made accessible as free end cables for the integration of the SE2 into alarm and nurse call systems.

SE2-R with cable adaption to nurse call system
Size: 77 x 43 x 17 mm

TECHNICAL DATA SE2

Power supply	5 V – 24 V DC, max. 31 mA at 24 V, cable length 80 cm
Radio frequency	868.0 MHz
Code	proprietary protocol between SensFloor components
Range / Transmission power	20 m free field / +10 dBm max.
Antenna	Integrated pcb antenna
Potential free relays (PFR)	2x Omron G6K-2P, max. 1 A, 125 V AC, 60 V DC
Luminous flux LED	14 lm max. (LED1)
Speaker	0.3 W, 92 dB max.
Plug type	Customized adaption to nurse call systems, available pins: power supply, potential free relay (closer or opener), UART, Rx/Tx
Processing capacity	Up to 128 m² low-res SensFloor® and 16 SensFloor® mats
Event memory:	128 events
Operating temperature	-10°C to + 40°C

MODELS

SensFloor® transceiver SE2-R	For nurse call systems	Interconnect to nurse call system

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SENSFLOOR® SYSTEM

SENSFLOOR® TRANSCEIVER SE3

The SensFloor® transceiver SE3 is used for the wireless reception and processing of messages from SensFloor® products. The version SE3-P (for PC-connection) is plugged into a PC-USB-socket from which it is powered and to which it transmits the sensor data from the various SensFloor® products.

Simultaneously, the SE3-P can be used to send configuration data from the PC to the SensFloor® products. It is possible to stream the wireless sensor data of any SensFloor® product to a computer for further processing. The serial data transmission is handled by a chip of the company FTDI, therefore you have to download and install a Virtual COM Port (VCP) driver from FTDI. Optional: Customized programming of the serial data format.

Size: 50 mm x 39 mm x 14 mm

TECHNICAL DATA SE3

Power supply	PC-USB socket, cable length 180 cm or dongle
Current	Max. 20 mA
Radio frequency	868.0 MHz
Code	proprietary protocol between SensFloor components
Range / Transmission power	20 m free field / +10 dBm max.
Antenna	Integrated pcb antenna
Serial interface	8N1, 115 kBaud
Message format	FD (hex) +16 Bytes
Processing capacity	Up to 128 m² low-res SensFloor® and 16 SensFloor® mats
Operating temperature	-10°C to + 40°C

MODELS

SensFloor® transceiver SE3-P	Connection to PC or Raspberry Pi via Virtual COM Port driver from FTDI
SensFloor® transceiver SE3-M	MIDI-interface, message format: general MIDI
SensFloor® transceiver SE3-K	PS/2 keyboard interface, message format: PS/2, Scan code Set 2
SensFloor® transceiver SE3-L	Integrated in AVISARO data logger, message format: FD (hex) + 16 Bytes
SensFloor® transceiver SE3-W	Repeater

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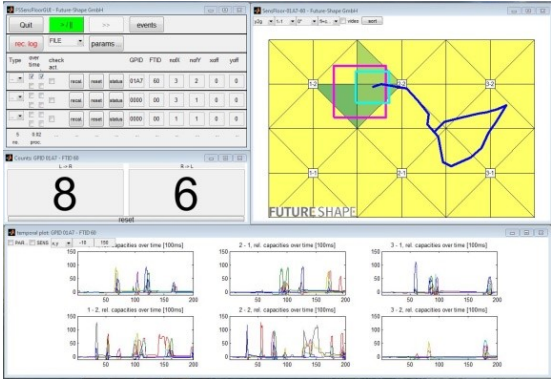
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SENSFLOOR® SYSTEM

SENSFLOOR® GUI FOR DEVELOPING PRODUCTS

SensFloor® GUI visualizes the sensor activity of SensFloor® installations on a PC monitor. It requires an SE3-P receiver for converting the SensFloor radio messages into a serial data stream.

SensFloor® GUI displays up to three SensFloor® installations or mats in parallel. The user can select between time series or 2D representations. Activities can be displayed in real-time or as frequency distributions ("heat maps").

SensFloor® GUI can also count transitions across SensFloor areas.

All received messages can be recorded and played back afterwards.

Screen shot

TECHNICAL DATA GUI

| Visualization	■ Temporal activity of single sensor fields ■ 2D views adjustable to arbitrary ground plans ■ Real-time activity of sensor fields, clusters and objects ■ Frequency distributions on adjustable time scales ("heat-maps")
Counting	■ Counting of transitions: left-to-right (or vice versa) and bottom-to-top (or vice versa) ■ counting reports on adjustable time scales
Data logger	■ One log file per day New messages will be appended with a time stamp
Play back	Play back of recorded log files: ■ Run ■ stop and ■ Single step function

MODELS

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SENSFLOOR® SYSTEM

The SensFloor® receiver SE8 is used for the wireless reception and processing of messages from SensFloor® products. Every SE8 has a set of pre-programmed functions. Events from the SensFloor® sensors can be detected (e.g. stepping or falling on a floor equipped with SensFloor®) and the receiver's relays are triggered.

The SE8 contains eight solid state relays each of which can provide power to a 230V AC device connected to the corresponding terminal strip. In addition, the SE8 contains two potential free relays which can be connected to nurse call systems, for instance. Further, a serial interface is built in, which is used to transmit sensor data from the SensFloor® products to a PC or to a home automation bus.
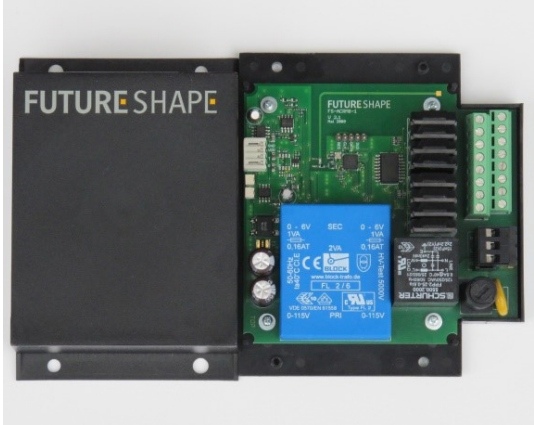
Size: 114 mm x 130 mm x 50 mm

TECHNICAL DATA SE8

Power supply	230V, 2W, AC
Radio frequency	868.0 MHz
Fuse	8 A
Code	proprietary protocol between SensFloor components
Range / transmission power	20 m free field / +10 dBm max.
Antenna	Integrated pcb antenna, SMA socket optional
Potential free relays (PFR)	2x Omron G6K-2P, max 1A, 125V AC, 60V DC
Triac relays (SSR)	8x Sharp S202S02, 8A max., 230V AC
Terminal screw connectors	1 x 230 V AC in (N, L, PE), 8 x 230V out (N, L)
RJ45 multipurpose connector	Pin 1,2: PFR 1 (shutter), Pin 3: --, Pin 4,5,6: RX, GND, TX, Pin 7,8: PFR 2 (opener)
Processing capacity	Up to 128 m² low-res SensFloor® and 16 SensFloor® mats
Event memory:	128 events
Operating temperature	-10°C to + 40°C

MODELS

SensFloor® transceiver SE8   Flat compartment

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SENSFLOOR® SYSTEM

The SensFloor® receiver SE9 is used for the wireless reception and processing of messages from SensFloor® products. Every SE9 has a set of pre-programmed functions. Events from the SensFloor® sensors are detected (e.g. stepping or falling on a floor equipped with SensFloor®) and the receiver's relays or a serial output are triggered.

The SE9 contains eight potential-free solid state relays (Opto FETs), as well as one potential-free mechanical relay which can be connected as an opener or shutter to alarm devices (i.e. an indoor alarm system). The internal connector is suitable for hardware extension boards.

Size: 53 mm x 89 mm x 58 mm

TECHNICAL DATA SE9

Power supply	12 to 24 VDC, max. 2.6 W
Fuse	1 A, self-recovered
Radio frequency	868.0 MHz
Code	proprietary protocol between SensFloor components
Range	20 m free field
Transmission power	+10 dBm max.
Potential-free Solid State Relays (SSR)	8 x AVAGO ASSR 1510, 60 VAC, 1 A, 0.5 Ohms
Mechanical Relay (MR)	1 x Omron G6K-2P, max. 1 A, 125 V AC, 60 V DC
Serial interface	115 kBaud, 8N1, RS232 or RS485
Internal extension pins	5 firmware controlled IO pins, GND, +5 V DC
Processing capacity	Up to 128 m² low-res SensFloor® and 16 SensFloor® mats
Operating temperature	-10°C to + 40°C

MODELS

SensFloor® transceiver SE9   Compartment for installation in DIN rail box

SENSFLOOR® SYSTEM

The SensFloor® transceiver SE10 is an extension board for the Raspberry Pi® embedded computer and is used for wireless reception of messages from SensFloor® products. The black socket of the SE10 is plugged into the pin-row of the Raspberry Pi's expansion port.

The SE10 F (flat compartment) or SE10H (DIN rail box) is already installed ready for use. It is pre-configured with some standard functions. Events from the SensFloor® underlay are detected (e.g. stepping or falling on a floor equipped with the SensFloor® underlay) and the SE10's relays are switched accordingly. Further interfaces are: HDMI (for ext. Monitor), ETHERNET (network, internet, web interface, socket.io –API, TCP, VPN), WLAN (HOST) for web interface PC/tablet/smartphone

Size: 72 mm x 91 mm x 63 mm
(without sockets)

TECHNICAL DATA SE10

Power supply	+5 VDC, max. 80 mA
Radio frequency	868.0 MHz
Code	proprietary protocol between SensFloor components
Range	20 m free field
Transmission power	+10 dBm max.
Antenna	Integrated pcb antenna, SMA socket optional
Potential-free Solid State Relays (SSR)	8 x AVAGO ASSR 1510, 60 VAC, 1 A, 0.5 Ohms
Serial interface	115 kBaud, 8N1, UART
Connection	13 x 2 pole socket for the IO extension, port of the Raspberry Pi® (all versions)
Operating temperature	-10 °C to + 40 °C

MODELS

|		
SensFloor® transceiver SE10 F	Flat compartment	Accessories (optional): HDMI cable, WLAN host adapter, SD card, USB charge cable
SensFloor® transceiver SE10 H	Compartment for installation in DIN rail box	Accessories (optional): DIN rail power supply, HDMI cable, WLAN host adapter, SD card

SENSFLOOR® SYSTEM

SENSFLOOR® WEB INTERFACE

The SensFloor® web interface is a visualisation and configuration tool that is delivered with SensFloor® SE10 receivers. It runs in all common web browsers by accessing the SE10 URL from within the same WLAN or tethered network.

The application is used to set up a corresponding SensFloor® installation layout, and assign functions like fall and presence detection to certain areas of interest. For these function outcomes, the relay switching behaviour of the SE10 can be configured.

Sensor readings and detected falls are visualised in real time in the browser.

The web interface server provides a web socket-based API delivering raw data and detection results for application development.
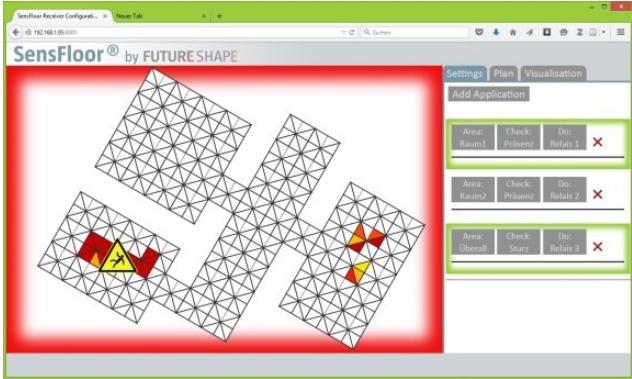
Screen shot

TECHNICAL DATA GUI

Settings	Add and remove SensFloor® applications. An application consists of a designated area, a parameterized detection function, and relay behaviour.
Plan	The floorplan view can be moved, rotated and zoomed, SensFloor® modules can be added or removed and IDs be set for the corresponding installation.
Visualisation	Rendering of coordinates and IDs can be turned on and off. The external view can be adjusted for visualisation on screens connected via HDMI to the SE10.
Configuration	Configure settings of the integrated WLAN Access Point. The project file can be saved and restored. The SE10 can be shut down safely.

MODELS

SENSFLOOR® SYSTEM

SENSFLOOR® TRANSCEIVER SE11

The SensFloor® transceiver SE11 used for the wireless reception and processing of messages from SensFloor® products. Every SE11 has a set of pre-programmed functions. Steps on the SensFloor underlay or SensFloor mat trigger the potential-free relay for i.e. opening an automatic door or securing a special area.

The relay contact is provided by open ends in the cable. Two further contacts are for connection to the power supply.

Size: 50 mm x 39 mm x 14 mm

TECHNICAL DATA SE11

Power supply	5 -24 VDC, max. 20 mA (24 V)
Radio frequency	868.0 MHz
Code	proprietary protocol between SensFloor components
Range / Transmission power	20 m free field / +10 dBm max.
Antenna	Integrated pcb antenna
Potential-free Solid State Relay (SSR)	AVAGO ASSR 1510, 60 VAC, 1 A, 0.5 Ohms
Processing capacity	Up to 128 m² low-res SensFloor® and 16 SensFloor® mats
Event memory	128 events
Operating temperature	-10°C to + 40°C

MODELS

SensFloor® Empfänger SE11   relay contact is provided by open ends in the cable

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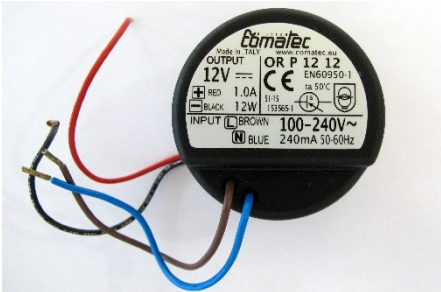
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POWER SUPPLIES

IN-WALL POWER SUPPLY UP12 FOR SENSFLOOR® UNDERLAY

Switch-mode in-wall power supply 12 V DC, 1 A, suitable for large-area SensFloor® installations.

Switch for deactivating of the SensFloor® underlay strongly recommended.

When used as a power supply for the SensFloor underlay, the (-)DC output must be connected to earth (functional ground).

Size: 53 mm x 53 mm x 32,5 mm

TECHNICAL DATA IN-WALL POWER SUPPLY UP12

Nominal input voltage	100-240 V AC +/- 10 %
Nominal input frequency	49 – 61 Hz
Nominal input current	0.16 A rms
Stand-by power consumption	230 V AC: 0.36 W
Energy efficiency	$\geq$ 84 %
Efficiency level	V
Nominal output voltage	U_{out}: 12 V DC +/- 5 %, U_{Br}: < 300 mVpp
Nominal output current	I_{out}: 1000 mA
Leakage current	I leak < 250 µA
Temperature range	-5°C to +50°C

MODELS

UP12	In-wall power supply	12 V DC, 1 A

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POWER SUPPLIES

Switch-mode in-wall power supply 9 V DC, 0.66A,
suitable for large-area SensFloor® installations.

Switch for deactivating of the SensFloor® underlay
strongly recommended.

When used as a power supply for the SensFloor
underlay, the (-)DC output must be connected to
earth (functional ground).

Size: 68 mm x 56 mm x 40 mm

TECHNICAL DATA IN-WALL POWER SUPPLY UP9V

Nominal input voltage	100-240 V AC +/- 10 %
Nominal input frequency	50 – 60 Hz
Nominal input current	0.13 Arms
Stand-by power consumption	230 V AC: 0.3 W
Energy efficiency	≥ 73.5 %
Efficiency level	V
Nominal output voltage	U_{out}: 9 V DC +/- 5 %, U_{Br}: < 300 mVpp
Nominal output current	I_{out}: 660 mA
Leakage current	I leak ≤ 10 µA
Temperature range	0°C to + 40°C

MODELS

UP9V	In-wall power supply	9 V DC, 0.66 A

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POWER SUPPLIES

Regulated switch-mode DIN rail power supply for 12 V DC, 1.25 A, suitable for SensFloor® installations or fixed SensFloor mats.

When used as a power supply for the SensFloor underlay, the (-)DC output must be connected to earth (functional ground).

Size: 56 mm x 93 mm x 25 mm
(DIN rail compartment)

TECHNICAL DATA WALL PLUG-IN POWER SUPPLY DR12V

Nominal input voltage	85-264 V AC +/- 10 %
Nominal input frequency	50 – 60 Hz
Nominal input current	0.88 A
Stand-by power consumption	230 V AC: 0.3 W
Energy efficiency	$\geq 84\%$
Efficiency level	V
Nominal output voltage	U_{out}: 12 V DC +/- 5 %, U_{Br}: < 120 mVpp
Nominal output current	I_{out}: 1.25 A
Leakage current	I leak $\leq$ 100 µA
Temperature range	0°C to + 40°C

MODELS

DR12V	DIN rail	12 V DC, 1.25 A

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POWER SUPPLIES

Switch-mode desktop power supply for medical applications, 9 V DC, 4.45A, suitable for mobile SensFloor® installations or SensFloor mats. With functional ground.

Input plug connector for different countries available. Output plug with functional ground required for SensFloor® underlay and mats.

Further applications of this power supply are mobile medical equipment, medical computer monitor.

Size: 125 mm x 50 mm x 31.5 mm

TECHNICAL DATA DESKTOP POWER SUPPLY DT9V

Nominal input voltage	113-370 V AC +/- 10 %
Nominal input frequency	47 – 63 Hz
Nominal input current	1 A at 115 V AC / 0.5 A at 230 V AC
Stand-by power consumption	230 V AC: 0.3 W
Energy efficiency	$\geq$ 86 %
Efficiency level	V
Nominal output voltage	U_{out}: 9 V DC +/- 5 %, U_{Br}: < 100 mVpp
Nominal output current	I_{out}: 4.45 A
Leakage current	I leak $\leq$ 100 µA
Temperature range	-30°C to + 60°C

MODELS

DT9V	Desktop power supply with functional ground	9 V DC, 4.45 A, plug: female barrel 2.1 mm *5.5 mm *11 mm; cable: 180 cm

POWER SUPPLIES

WALL PLUG-IN POWER SUPPLY WP9V FOR SENSFLOOR® MATS

Regulated switch-mode wall plug-in power supply for medical applications, 9 V DC, 1.67A, suitable for mobile SensFloor® installations or SensFloor mats. Input Euro plug, fixed, output with functional ground (required for SensFloor® underlay and mats).

Further applications of this power supply are mobile medical equipment, medical computer monitor.

Size: 74 mm x 49 mm x 40.5 mm (compartment)

TECHNICAL DATA WALL PLUG-IN POWER SUPPLY DT9V

Nominal input voltage	90-264 V AC +/- 10 %
Nominal input frequency	47 – 63 Hz
Nominal input current	1 A at 115 V AC / 0.5 A at 230 V AC
Stand-by power consumption	230 V AC: 0.3 W
Energy efficiency	≥ 75 %
Efficiency level	V
Nominal output voltage	U_{out}: 9 V DC +/- 5 %, U_{Br}: < 100 mVpp
Nominal output current	I_{out}: 1.67 A
Leakage current	I leak ≤ 100 µA
Temperature range	0°C to + 40°C

MODELS

WP9V	Euro Plug (Schuko) fixed	9 V DC, 1.67 A, plug: female barrel 2.1 mm *5.5 mm *11 mm with functional ground; cable: 180 cm

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SENSFLOOR® INSTALLATION

SF CM SENSFLOOR® – CONDUCTIVE MATERIAL FOR POWER CONNECTION

SensFloor® conductive material based on the SensFloor underlay technology. Used for the connection of the power supply of large-area installations. Prefabricated stripes in different widths for easy adaption to the various room shapes. One seam line conductive, one seam line 5 mm isolating.

Thickness: 3 mm

Electric resistivity: $\leq$ 10 mOhm / square

Solderable
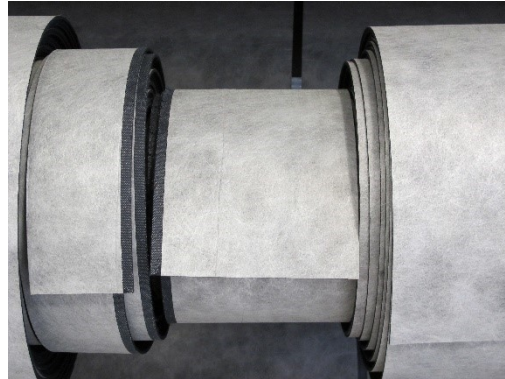
Widths: 10 cm, 15 cm, 20 cm, 25 cm, 30 cm

HL NC – NON-CONDUCTIVE HEIGHT LEVELING MATERIAL

Height leveling material for non-active areas around SensFloor® installations. Cork / rubber composite underlay technology.

Thickness: 3 mm

Electric resistivity: non-conductive

Widths: 100 cm, thickness 3mm

SIGAN® 1 – SELF-ADHESIVE TAPE FOR SENSFLOOR® UNDERLAY INSTALLATION

Self-adhesive installation tape. Special film carrier, micro-perforated, different adhesive force for top and bottom side. Residue-free removal, protective paper covering on one side (patented).

Preparation of the floor:
Grinding, filling, pre-coating (primer): Planus

Widths: 75 cm, length 25 m (20 sqm)

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SENSFLOOR® INSTALLATION

STEP-FLOOR – ADHESIVE CARRIER WITH POLYESTER-THREAD

A very strong adhesive tape for the fast and permanent fixing of carpet and CV flooring on wooden and primed stairs.

Resumption: Step-FLOOR is not removable without residues! Do not use on surfaces where original state should be recovered. Suitable in combination with the decoupling fabric for tile installation on SensFloor®.

Widths: 50 cm, length: 15 m

DECOUPLING FABRIC FOR INSTALLATION BENEATH TILES

This decoupling fabric allows the installation of tiles on the SensFloor® WP underlay. This material consists of Polyester fleece sandwich with glass fibre reinforcement fabric and is used for decoupling and reducing strains between tile or stone flooring and the SensFloor underlay. Weight: approx. 200 g per square meter.

Widths: 100 cm, length: 25 m, thickness: 1 mm

MDF BASE MATERIAL – FOR INSTALLATION ON SENSFLOOR® UNDERLAY

Jumpax® Basic instantly provides a very smooth, stable base on SensFloor® onto which all resilient floor-coverings and carpets can be fitted and glued directly. The twin layers of Jumpax® Basic panels utilise an overlap joint configuration to produce a seamless surface. It creates the ideal sub-floor for carpet, linoleum, vinyl, rubber, cork etc. The installation is an entirely dry process. It requires no setting time. The flooring can be laid immediately.

The very low thermal resistance of Jumpax® Basic makes it suitable over floor heating.

Size: 60 cm x 120 x 7 mm (base and top board), 2.88 square meter per unit

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SENSFLOOR®
MAT SETS, DEMONSTRATORS & DEVELOPMENT TOOLS

SENSFLOOR® SE2-R SENSOR MAT FOR PROFESSIONAL CARE (ADAPTION TO NURSE CALL SYSTEM)

This SET SE2-R for professional care consists of:

■ SensFloor® mat LR M05, easy-to-clean PVC surface, standard colour: beige

■ Wall plug-in power supply WP9V with functional ground for the SensFloor® mat

■ SensFloor® transceiver SE2-R for direct connection to the nurse call system (DIN 0834), using a potential-free relay. The SE2-R transceiver triggers an alarm as soon as someone steps on the mat.
Indoor range approx. 20 m.

Adaption to the nurse call system necessary!

Mat size: 100 cm x 56 cm x 5.2 mm

SENSFLOOR® RM05 RELAY MAT FOR PROFESSIONAL CARE (ADAPTION TO NURSE CALL SYSTEM)

The SET RM05 for professional care consists of:

■ SensFloor® relay mat RM05; easy-to-clean PVC surface, standard colour: beige

■ With integrated flip switch and pre-assembled cable for call system.
Default configuration, the relay remains closed as long as the mat is occupied

Adaption to the nurse call system necessary!

Mat size: 100 cm x 56 cm x 5.2 mm

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SENSFLOOR®
MAT SETS, DEMONSTRATORS & DEVELOPMENT TOOLS

SENSFLOOR® DEMONSTRATOR KIT WITH TRANSCEIVER UNIT SE2-U

The demonstrator kit consists of:

- SensFloor® sensor mat LR M05; easy-to-clean PVC surface, standard colour: beige

- Wall plug-in power supply WP9V with functional ground for the SensFloor® mat

- SensFloor® transceiver SE2-U for demonstration installations. Orientation light by stepping on the mat, acoustic alert in case of falling on the mat. Interface cable with USB plug and integrated FTDI TTL-RS232 converter for connection to a PC (virtual COM port), light- and sound signals, power supply over USB (PC or provided 5V AC/DC adapter). Indoor range approx. 20 m.

SENSFLOOR® DEMONSTRATOR WITH FUNCTIONAL SET-UP WITH TRANSCEIVER UNIT SE2-U

The demonstrator kit consists of:

- SensFloor® demonstrator with visible, functional set-up. Size: 0,5 m²

- Desktop- power supply DT9V with functional ground for the SensFloor® mat

- SensFloor® transceiver SE2-U for demonstration installations. Orientation light by stepping on the mat, acoustic alert in case of falling on the mat. Interface cable with USB plug and integrated FTDI TTL-RS232 converter for connection to a PC (virtual COM port), light- and sound signals, power supply over USB (PC or provided 5V AC/DC adapter). Indoor range approx. 20 m.

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SENSFLOOR®
MAT SETS, DEMONSTRATORS & DEVELOPMENT TOOLS

SENSFLOOR® DEMONSTRATOR WITH FUNCTIONAL SET-UP AND TRANSCEIVER UNIT SE10

Assembling of this demonstration set:

- **SensFloor® demonstrator – Size: 1m²**
  Visible, functional set-up.
  Customized flooring possible.

- **Desktop- power supply DT9V**
  with functional ground for the SensFloor® mat

- **SensFloor® transceiver SE10**
  SensFloor Transceiver based on Raspberry Pi in a DIN-rail compartment with 8 potential-free solid state relays for the integration into building-automation systems. Including: DIN-rail power supply, HDMI cable, WLAN host adapter and SD card with software. The software is used for visualizing the SensFloor activity on a monitor (not included) and for configuring the SensFloor functions over a web server.
  Indoor range approx. 20 m.

- **Roll-up SensFloor**
  Clear presentation of the most important SensFloor applications

- **Demonstrator for fall detection „Strunzling"**
  Dummy for demonstration of fall detection on the sensor floor

- **Brochures & installation information**

(Picture exemplary)

SENSFLOOR® DEVELOPMENT KIT WITH TRANSCEIVER UNIT SE3-P

Assembling of the development kit:

- High-resolution Underlay SF-HR PS patch with power supply connection, 1 sqm
- Switch-mode desktop power supply with functional ground for the SensFloor® underlay
- SensFloor® transceiver SE3-P for connection to a PC or Raspberry Pi via Virtual COM Port driver from FTDI.
  Indoor range approx. 20 m.

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