



FMS116F111

## FMS 116, 196: Smart Fusion Mesh multi-sensor, viaSens

### Features

- Multi-sensor for detection of temperature, humidity and air quality (VOC) for the indoor air quality (IAQ)
- Multi-sensor for detecting the indoor environment quality (IEQ) such as presence/motion, light intensity and noise level
- Several measuring sensors can be linked together for more precise information on the state of the room (sensor fusion)
- For ceiling fitting (recessed/surface-mounted)
- Flexible positioning of the sensor possible thanks to mesh network
- Freely controllable, coloured LED ring to indicate the room status for room users (room reserved/free, room air quality good/bad, ready for room cleaning, etc.)
- Bluetooth Beacon technology for locating the room user with a smartphone and optimised use of SAUTER Mobile Building Services (Mobile Room Control app)
- Simple integration into the SAUTER automation system with viaSens196
- Commissioning of up to 16 sensors for one ecos504/505 room controller with CASE Suite
- Networking of the sensors via Bluetooth Mesh technology
- Bluetooth Mesh Sensors viaSens116 combined in the viaSens196 sensor/gateway
- "IoT ready" thanks to open interface in viaSens196 (MQTT via IP/Ethernet)
- Ideal for room climate automation according to the WELL Building Standard and the IAQ guidelines of AMEV, ASHRAE, BSRIA, REHVA, VDI
- Option to integrate other Bluetooth Mesh devices

### Technical data

#### Power supply

Power supply	12...34 V=, typ. 24 V=
Current consumption	Typ.125 mA at 24 V=
Power consumption	Typ.3 W

#### Parameters

Temperature sensor (digital)	Measuring range	0...40 °C (-40...125 °C)
	Resolution	0.1 K
	Time constant	> 2 seconds
Temperature sensor (FIR) (FMS116F121)	Measuring range	15...40 °C
	Resolution	0.1 K
Humidity sensor (digital)	Measuring range	0...100%
	Resolution	0.08%
	Time constant	Approx. 8 seconds
VOC sensor (digital)	Method of measurement	Ethanol, hydrogen >br> Calculated TVOC, CO <sub>2</sub> eq
	Measuring range	0...1000 ppm, typ. for IAQ: 0.3...30 ppm (ethanol), 0.5...3 ppm (H <sub>2</sub> )
	Resolution	0.2% of the measured value
	Time constant	min.15 seconds
	Measuring accuracy	Typ.15% (ethanol), 10% (H <sub>2</sub> ) of the measured value
	Mixed gas (TVOC)	0...60 ppm (calculated)
	CO <sub>2</sub> equivalent (CO <sub>2</sub> eq)	400...60 000 ppm (calculated)
	PIR sensor (presence, movement)	Detection range
Light sensor	Angle of detection	110°
	Measuring range	0...120 000 lux
	Resolution	0.0036 lux



Noise level sensor	Signal-to-noise ratio (SNR) <sup>1)</sup>	65 dB(A)
	Sensitivity	-26 dB(A) on the measuring range, ±1 dB tolerance
	Frequency spectrum	50 Hz ... 20 kHz
	Noise level (SPL) <sup>2)</sup>	0...116 dB
Technology	Processor	Dual-core ARM Cortex, 32 bit, 240 MHz

**Ambient conditions**

Operating temperature	0...45 °C
Storage and transport temperature	-25...70 °C
Ambient humidity	10...85% rh, no condensation

**Display and operation**

Indicator/display <sup>3)</sup>	LED ring with 12 LEDs, 24-bit RGB (red, green, blue)
Push-button, capacitive	For pairing, identification, reset (frontal)

**Interfaces, communication**

Bluetooth Mesh	Network	Bluetooth mesh node (2.4 GHz), up to 8 TTL hops
	Radio frequency	2.4 GHz
	Range <sup>4)</sup>	Up to 15 m
	Bluetooth mesh profile	V1.0, Sensor Server Model (FMS 116) Sensor Server and Client Model (FMS 196)
	Localisation	iBeacon standard, indoor positioning
Ethernet (FMS 196)	Ethernet network	1 × RJ-45 connector
	10/100 BASE-T(X)	10/100 Mbit/s
	Communication protocol	MQTT client V3.1.1/V5, MQTT/TLS V1.2 (ISO/IEC 20922)
	NFC (near field communication)	For configuration parameters
	Slide switch	Noise level measurement on/off (rear)
	Serial port	UART for firmware update (point to point)

**Construction**

Dimensions	Surface ø × D:102 × 23 mm
	Recessed ø × D:56 × 20 mm
Housing	Traffic white (similar to RAL 9016), matt
Housing material	Thermoplastic (ABS)
Fitting	Recessed (recessed box min. 45 mm deep) surface-mounted with accessories
Fitting height	2.5...5 m (ceiling)

**Standards, directives**

	Type of protection	IP30 (EN 60529)
	Protection class	III (EN 60730-1)
	Environment class	3K3 (IEC 60721)
	Plastic fire classification	UL94 V-2
CE conformity according to	Low-Voltage Directive 2014/35/EU	EN 60730-1
	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4
	RED Directive 2014/53/EU	ETSI EN 300 328 (V2.2.2), 2.4 GHz band
	RoHS Directive 2011/65/EU	EN 50581
	RoHS delegated directive (EU) 2015/863	EN 50581

<sup>1)</sup> SNR: Signal-to-Noise Ratio

<sup>2)</sup> SPL: Sound Pressure Level

<sup>3)</sup> Example application: Presence: LED ring off / blue, room climate / air quality: LED ring green / red

<sup>4)</sup> Depending on building and room structure; planning recommendation: max. 10 m between two Bluetooth Mesh nodes