

# Sensors for TEOS

Smart and powerful sensors\* to help drive efficiency



## Overview

### Intelligent sensors

Create a smarter office environment with three intelligent sensors designed for TEOS meeting room and hot desk applications. Detect occupancy, temperature, humidity, CO2, sound and light across your workplace to drive more efficient ways of working. These battery powered sensors have an incredibly long life-span and are simple to deploy with LoRaWan wireless networks.

#### Meeting Room Comfort Sensor

- Model name: TES-10MRC
- Target application: Meeting rooms
- Measures: CO2, temperature, humidity, noise and light
- Battery life: > 12 months\*\*

#### Meeting Room Occupancy Sensor

- Model name: TES-5MR0
- Target application: Meeting rooms
- Measures: Occupancy, temperature and humidity
- Battery life: > 10 years\*\*

#### Flex Office Desk Sensor

- Model name: TES-5DO
- Target application: Hot desking, flexible working
- Measures: Occupancy
- Battery life: > 5 years\*\*

\* Sensors for TEOS are third-party products not manufactured by Sony.

\*\* Battery life indicated above is a theoretical value and has been verified by a fast aging procedure. However, battery life is dependent on factors such as battery quality, moisture, temperature, etc.

## Features

### **Efficient power consumption**

When the measurement state changes, for example occupancy, the sensors transmit updates. Power is only used when needed, maximizing battery life.

### **Automated experiences**

Integrating sensors with TEOS allows users to create automated scenarios where a defined sensor state can trigger an action such as powering on a device or sending an email.

### **Private**

The sensor's passive infrared component only reacts to comfort or motion sensing and does not recognize people individually or register their personal data.

### **Secure**

Sensor sessions are encrypted using a unique key which prevents malicious attackers gaining access to the network if a device becomes compromised.

### **Remote readings**

In the site overview section of TEOS users can view the light and temperature for each of the spaces with a comfort sensor.

## Specifications

### Communication

Functionality	<p>TES-5DO (Desk sensor): Desk presence detection</p> <p>TES-5MRO (occupancy sensor): Presence, temperature and humidity</p> <p>TES-10MRC (comfort sensor): CO2, temperature, humidity, sound, light</p>
Data communication	<p>TES-5DO (Desk sensor): LoRaWAN Class A</p> <p>TES-5MRO (occupancy sensor): LoRaWAN Class A</p> <p>TES-10MRC (comfort sensor): LoRaWAN Class A</p>
Connection	<p>TES-5DO (Desk sensor): LoRa Gateway and TTN (not supplied by Sony)</p> <p>TES-5MRO (occupancy sensor): LoRa Gateway and TTN (not supplied by Sony)</p> <p>TES-10MRC (comfort sensor): LoRa Gateway and TTN (not supplied by Sony)</p>
Integration with Manage for TEOS	<p>TES-5DO (Desk sensor): Yes (using TheThingsNetwork, TTN)</p> <p>TES-5MRO (occupancy sensor): Yes (using TheThingsNetwork, TTN)</p>

	TES-10MRC (comfort sensor): Yes (using TheThingsNetwork, TTN)
Compatible license in Manage for TEOS	TES-5DO (Desk sensor): TEM-BU10 (not included)
	TES-5MRO (occupancy sensor): TEM-BU10 (not included)
	TES-10MRC (comfort sensor): TEM-BU10 (not included)

## Presence

Presence detection	TES-5DO (Desk sensor): Device's intelligent software determines desk occupancy based on PIR sensor data
	TES-5MRO (occupancy sensor): Device's intelligent software determines desk occupancy based on PIR sensor data
	TES-10MRC (comfort sensor): Not included

## Temperature

Temperature output range	TES-5DO (Desk sensor): Not included
	TES-5MRO (occupancy sensor): [-40 C to +80 C], in C or F

	TES-10MRC (comfort sensor): [-40 C to +80 C], in C or F
Temperature resolution	TES-5DO (Desk sensor): Not included TES-5MRO (occupancy sensor): 0.01°C TES-10MRC (comfort sensor): 0.01°C
Temperature accuracy	TES-5DO (Desk sensor): Not included TES-5MRO (occupancy sensor): ±0.4°C (typical) TES-10MRC (comfort sensor): ±0.4°C (typical)

## Humidity

Relative humidity measurement range	TES-5DO (Desk sensor): Not included TES-5MRO (occupancy sensor): 0-100% TES-10MRC (comfort sensor): 0-100%
Relative humidity resolution	TES-5DO (Desk sensor): Not included TES-5MRO (occupancy sensor): 0.1%

	TES-10MRC (comfort sensor): 0.1%
Relative humidity accuracy	TES-5DO (Desk sensor): Not included TES-5MRO (occupancy sensor): $\pm 2\%$ (typical) TES-10MRC (comfort sensor): $\pm 2\%$ (typical)

## CO2

CO2 measurement range	TES-5DO (Desk sensor): Not included TES-5MRO (occupancy sensor): Not included TES-10MRC (comfort sensor): 0-5000 ppm
CO2 resolution	TES-5DO (Desk sensor): Not included TES-5MRO (occupancy sensor): Not included TES-10MRC (comfort sensor): 1 ppm
CO2 measurement accuracy	TES-5DO (Desk sensor): Not included TES-5MRO (occupancy sensor): Not included TES-10MRC (comfort sensor): +/-

(45ppm+3% of reading)

## Sound

Sound range

TES-5DO (Desk sensor): Not included  
TES-5MRO (occupancy sensor): Not included  
TES-10MRC (comfort sensor): 35-99 dB

Sound resolution

TES-5DO (Desk sensor): Not included  
TES-5MRO (occupancy sensor): Not included  
TES-10MRC (comfort sensor): 1 dB

Sound accuracy

TES-5DO (Desk sensor): Not included  
TES-5MRO (occupancy sensor): Not included  
TES-10MRC (comfort sensor):  $\pm 5$  dB

## Light

TES-5DO (Desk sensor): Not included

Light range	<p>TES-5MRO (occupancy sensor): Not included</p> <p>TES-10MRC (comfort sensor): 4 - 4000 LUX</p>
Light resolution	<p>TES-5DO (Desk sensor): Not included</p> <p>TES-5MRO (occupancy sensor): Not included</p> <p>TES-10MRC (comfort sensor): 1 LUX</p>
Light accuracy	<p>TES-5DO (Desk sensor): Not included</p> <p>TES-5MRO (occupancy sensor): Not included</p> <p>TES-10MRC (comfort sensor): <math>\pm 10</math> LUX</p>

## Power Requirement

Power supply	<p>TES-5DO (Desk sensor): 2 Standard AA batteries (preferably long lifespan)</p> <p>TES-5MRO (occupancy sensor): 2 or 4 Standard AA batteries (preferably long lifespan)</p> <p>TES-10MRC (comfort sensor): 4 Standard AA batteries (preferably</p>
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	long lifespan)
Battery life-span	<p>TES-5DO (Desk sensor): &gt; 5 years* (Based on standard factory settings and battery quality)</p> <p>TES-5MRO (occupancy sensor): &gt; 10 years* (Based on standard factory settings and supplied 4 batteries)</p> <p>TES-10MRC (comfort sensor): &gt; 12 months * (Based on standard factory settings and supplied 4 batteries)</p>
Operating voltage	<p>TES-5DO (Desk sensor): 1.2-3V (10 uA in deep sleep)</p> <p>TES-5MRO (occupancy sensor): 1.2-3V (10 uA in deep sleep)</p> <p>TES-10MRC (comfort sensor):</p>
Frequency plan	<p>TES-5DO (Desk sensor): EU868, US915, IN865 (AU915, AS925)**</p> <p>TES-5MRO (occupancy sensor): EU868, US915, IN865 (AU915, AS925)**</p> <p>TES-10MRC (comfort sensor): EU868, US915, IN865 (AU915, AS925) **</p>

## Dimensions and Weight

Dimensions	<p>TES-5DO (Desk sensor): 137 x 75 x 27 mm</p> <p>TES-5MRO (occupancy sensor): 115 x 115 x 40 mm</p> <p>TES-10MRC (comfort sensor): 115 x 115 x 40 mm</p>
Weight	<p>TES-5DO (Desk sensor): 0.14 kg (including batteries)</p> <p>TES-5MRO (occupancy sensor): 0.27 Kg (including batteries)</p> <p>TES-10MRC (comfort sensor): 0.27 Kg (including batteries)</p>
Attachment	<p>TES-5DO (Desk sensor): Double-sided tape</p> <p>TES-5MRO (occupancy sensor): Clip or double-sided tape</p> <p>TES-10MRC (comfort sensor): Clip or double-sided tape</p>
Processor	<p>TES-5DO (Desk sensor): STM32L0, ARM Cortex-M0+</p> <p>TES-5MRO (occupancy sensor): STM32L0, ARM Cortex-M0+</p> <p>TES-10MRC (comfort sensor): STM32L0, ARM Cortex-M0+</p>

Recommended installation location	<p>TES-5DO (Desk sensor): Indoor under the desk</p> <p>TES-5MRO (occupancy sensor): Indoor on the ceiling in Meeting Rooms</p> <p>TES-10MRC (comfort sensor): Indoor on the ceiling (Open spaces and meeting rooms)</p>
Detection Area	<p>TES-5DO (Desk sensor): 35-55 cm from the edge of the table 0.8 m high x 0.8 m width x 0.66 m depth</p> <p>TES-5MRO (occupancy sensor): 44° @2.2 m High and R= 2.2 m</p> <p>TES-10MRC (comfort sensor): -</p>

## Package Contents

Included in the package	<p>TES-5DO (Desk sensor): 1x Sensor with battery and double side tape</p> <p>TES-5MRO (occupancy sensor): 1x Sensor with battery, double side tape and clip</p> <p>TES-10MRC (comfort sensor): 1x Sensor with battery, double side tape and clip</p>
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## Warranty

Standard Warranty	TES-5DO (Desk sensor): 3 years with advanced exchange TES-5MRO (occupancy sensor): 3 years with advanced exchange TES-10MRC (comfort sensor): 3 years with advanced exchange
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## Notes

\* Battery life indicated above is a theoretical value and has been verified by a fast aging procedure. However, battery life is dependent on factors such as battery quality, moisture, temperature, etc.

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\*\* The band used depends on deployment region, contact your distributor for more information)

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## Gallery

