Technical Data Sheet

SEWERIN
Protecting Water, Gas and Life.

# Multitec® 545/540

## Series

| | |
|---|---|
| Type/model | • Multitec 545: 066 13<br>• Multitec 540: 066 12 |

## Certificates

| | |
|---|---|
| Certificate | TÜV 07 ATEX 553353 X<br>• II 2G Ex db eb ib IIB T4 Gb<br>basic device without leather bag for:<br>◦ CH4, C3H8, C4H10, C9H20, H2S, CO<br>• II 2G Ex db eb ib IIC T4 Gb<br>basic device with leather bag for:<br>◦ CH4, C3H8, C4H10, C9H20, H2S, CO, H2 |

## Device data

| | |
|---|---|
| Dimensions (W x D x H) | approx. 148 x 57 x 205 mm (5.83 x 2.24 x 8.07 in)<br>approx. 148 x 57 x 253 mm (5.83 x 2.24 x 9.96 in) with supporting bracket |
| Weight | approx. 1000 g (35 oz), depending on equipment |

## Features

| | |
|---|---|
| Display | monochrome, 320 x 240 pixel |
| Buzzer | • frequency: 2,4 kHz<br>• volume: 80 dB (A) / 1m (3.28 ft) |
| Signal light | red |
| Pump | • vacuum: > 250 mbar<br>• volume flow: typically 50 l/h ±20 l/h<br>• pump error (F100) depending on volume flow:<br>◦ ≤ 20 l/h F100 certain<br>◦ > 20 l/h – ≤ 35 l/h F100 possible |
| Interface | USB 2.0 |
| Memory | 8 MB |
| Control | • ON/OFF key<br>• 3 function keys<br>• jog dial |
| Sensors | • IR for flammable gases (CH4)<br>• IR for CO2<br>optional:<br>• EC for CO, H2, H2S, O2 |



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## Operating conditions*

| | |
|---|---|
| Operating temperature | -20 – 40°C (-4 °F – 104 °F) |
| Humidity | 5 – 90% r.h., non-condensing |
| Atmospheric pressure | 800 – 1100 hPa |
| Pressure at gas inlet | -175 – 65 hPa |
| Protection rating | IP54 |
| Position of use | any |

*Optional sensors can affect the operating conditions of the device.

## Storage conditions

| | |
|---|---|
| Storage temperature | -25 – 60°C (-13 °F – 140 °F)<br>temperatures above 40°C (104 °F) reduce the service life of the sensors |

## Power supply

| | |
|---|---|
| Power supply | 4 cells, type Mignon AA, optionally:<br>• rechargeable batteries: NiMH<br>• disposable batteries: Alkaline |
| Operating time, typical | at least 6 h |
| Battery capacity | 2000 mAh |
| Charging time | approx. 3 h (complete charge), depending on capacity |
| Charging temperature | 0 – 35°C (32 to 95 °F) |
| Charging voltage | 12 V DC (max. 1 A) |

## Data transmission

| | |
|---|---|
| Communication | USB |

## Gas types

| | |
|---|---|
| Default | CH4, CO2 |
| Optional | CO, H2, H2S, O2 |

# Sensors

**Note:**
when using probes, the specified response times are longer.

**Note for EC sensors:**
at temperatures below 0 °C (32 °F) the specified response times and decay times may be longer.

## Methane CH4 (Interspace application)

| | | |
|---|---|---|
| Type | infrared sensor (IR) | |
| Use | Multitec 545/540 | |
| Measuring range | 0 ppm – 1.00% vol. | |
| Indication range | 0 ppm – 2.5% vol. | |
| Resolution | • 50 ppm (0 – 950 ppm)<br>• 0.01% vol (0.10 – 2.50% vol.) | |
| Response times | t50 < 9 s | t90 < 17 s |
| Warm-up time | < 60 s | |
| Temperature range | -20 – 40 °C (-4 °F – 104 °F) | |
| Measuring error | ±15% of measured value (linearity), at least ±100 ppm | |
| Interference, known | all hydrocarbons CxHy | |
| Lifetime, expected | 5 years | |
| Adjustment | test gas concentration:<br>• zero point:<br>• CH4: | <br>hydrocarbon-free, clean air<br>1% vol., utilisable 0.50 – 1.00% vol. |

## Methane CH4 (Gas measuring application)

| | | |
|---|---|---|
| Type | infrared sensor (IR) | |
| Use | Multitec 545/540 | |
| Measuring range | 0 – 100% vol. | |
| Resolution | • 0.1% vol. (0 – 79.9% vol.)<br>• 1% vol. (80 – 100% vol.) | |
| Response times | t50 < 9 s | t90 < 17 s |
| Warm-up time | < 30 s | |
| Temperature range | -20 – 40 °C (-4 °F – 104 °F) | |
| Measuring error | ±1.5% of measured value, at least ±0.5% vol. | |
| Interference, known | all hydrocarbons CxHy | |
| Lifetime, expected | 5 years | |
| Adjustment | test gas concentration:<br>• zero point:<br>• CH4:<br>◦ 100% vol.<br>◦ gas mixture 60% vol. CH4 / 40% vol. CO2 | <br>hydrocarbon-free, clean air |

## Carbon dioxide CO2

| | |
|---|---|
| Type | infrared sensor (IR) |
| Use | Multitec 545/540 |
| Measuring range | 0 – 100% vol. |
| Resolution | 1% vol. (0 – 100% vol.) |
| Response times | t90 < 20 s |
| Warm-up time | < 30 s |
| Temperature range | -20 – 40°C (-4 °F – 104 °F) |
| Measuring error | ±1.5% vol. |
| Zero point deviation | 0.04% vol. |
| Interference, known | none |
| Humidity | 5 – 90% r.h., non-condensing<br>• short term: 0% r.h |
| Lifetime, expected | 5 years |
| Adjustment | test gas concentration:<br>• zero point: carbon dioxide-free, clean air<br>• CO2:<br>◦ 100% vol.<br>◦ gas mixture 60% vol. CH4 / 40% vol. CO2 |

## Oxygen O2

| | |
|---|---|
| Type | electrochemical sensor (EC) |
| Use | Multitec 545/540 |
| Measuring range | 0 – 25% vol. |
| Indication range | 0 – 30% vol. |
| Resolution | 0.1% vol. |
| Response times | t90 < 30 s |
| Warm-up time | up to 90 s |
| Temperature range | -20 – 40 °C (-4 °F – 104 °F) |
| Measuring error | • linearity: ≤ 1.5% of measured value, minimum ≤ 0.3% vol.<br>• long-term stability: ≤ 0.2% vol. (3 months) |
| Drift | < 2% within 3 months |
| Interference, known | none |
| Humidity | 5 – 90% r.h., non-condensing<br>• short term: 0% r.h |
| Lifetime, expected | 2 years |
| Adjustment | test gas concentration:<br>• zero point:<br>◦ oxygen-free air<br>◦ 100% vol. N2<br>◦ 100% vol. CH4<br>• O2: 20.9% vol., e.g. clean air |

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## Carbon monoxide CO

| | |
|---|---|
| Type | electrochemical sensor (EC) |
| Use | Multitec 545/540 |
| Measuring range | 0 – 500 ppm<br>• lower limit:<br>◦ 0 – 100 ppm: 4 ppm<br>◦ > 100 ppm: 11 ppm |
| Indication range | 0 – 600 ppm |
| Resolution | 1 ppm |
| Response times | t90 < 30 s |
| Decay times | t10 ≤ 25 s |
| Warm-up time | up to 90 s |
| Temperature range | -20 – 40 °C (-4 °F – 104 °F) |
| Measuring error | • ±3 %, minimum ±3 ppm (±3 digit)<br>• long-term stability<br>◦ test gas: ≤ 4% of measured value<br>◦ zero point (fresh air): ≤ 1 ppm |
| Drift | < 10% within 6 months |
| Zero point deviation | • 0 – 100 ppm: 3 ppm<br>• > 100 ppm: 13 ppm |
| Interference, known | at 20°C (68 °F)<br>• C2H2 100 ppm: approx. 90 ppm CO<br>• C2H4 100 ppm: approx. 96 ppm CO<br>• Cl2 15 ppm: approx. 1 ppm CO<br>• H2 200 ppm: approx. 30 ppm CO<br>• H2S 50 ppm: approx. 1 ppm CO<br>• NH3 50 ppm: approx. 0 ppm CO<br>• NO 50 ppm: approx. 15 ppm CO<br>• SO2 20 ppm: approx. 0 ppm CO |
| Humidity | 15 – 90% r.h., non-condensing<br>• short term: 0% r.h |
| Lifetime, expected | 3 years |
| Adjustment | test gas concentration:<br>• zero point: clean air<br>• CO: 40 ppm, utilisable 10 – 150 ppm |

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## Hydrogen H2

| | |
|---|---|
| Type | electrochemical sensor (EC) |
| Use | Multitec 545/540 |
| Measuring range | 0 – 1000 ppm |
| Indication range | 0 – 1200 ppm |
| Resolution | 5 ppm |
| Response times | t90 < 60 s |
| Decay times | t10 ≤ 60 s |
| Warm-up time | up to 90 s |
| Temperature range | -20 – 40 °C (-4 °F – 104 °F) |
| Measuring error | ±10 %, minimum ±15 ppm (±3 digit) |
| Drift | < 10% within 6 months |
| Zero point deviation | ±10 ppm (±2 digit) |
| Interference, known | at 20°C (68 °F)<br>• CO 200 ppm approx. 150 ppm H2<br>• H2S 25 ppm approx. -0.5 ppm H2<br>• N2O 20 ppm approx. -1 ppm H2<br>• NO 50 ppm approx. 20 ppm H2<br>• S2O 20 ppm approx. -1 ppm H2 |
| Humidity | 15 – 90% r.h., non-condensing<br>• short term: 0% r.h |
| Lifetime, expected | 3 years |
| Adjustment | test gas concentration:<br>• zero point: clean air<br>• H2: 1000 ppm, utilisable 100 – 1000 ppm |

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## Hydrogen sulphide H2S

| | |
|---|---|
| Type | electrochemical sensor (EC) |
| Use | Multitec 545 |
| Measuring range | 0 – 5000 ppm<br>• lower limit: 1 ppm |
| Indication range | 0 – 6000 ppm |
| Resolution | • 1 ppm (0 – 100 ppm)<br>• 2 ppm (100 - 998 ppm)<br>• 0.02% vol. / 200 ppm (0.10 - 0.5% vol.) |
| Response times | t90 < 60 s |
| Decay times | t10 < 90 s |
| Warm-up time | up to 120 s |
| Temperature range | -20 – 40 °C (-4 °F – 104 °F) |
| Measuring error | • ±3% or ±3 ppm (±3 digits)<br>• ±3 ppm (long-term stability) |
| Drift | < 10% within 6 months |
| Zero point deviation | 2 ppm |
| Interference, known | at 20°C (68 °F)<br>• CO 200 ppm: approx. 2 ppm<br>• SO2 20 ppm: approx. 3 ppm<br>• NO2 200 ppm: approx. -30 ppm<br>• H2 100 ppm: approx. 2 ppm |
| Humidity | 15 – 90% r.h., non-condensing<br>• short term: 0% r.h |
| Lifetime, expected | 2 years |
| Adjustment | test gas concentration:<br>• zero point: clean air<br>• H2S: 180 ppm, utilisable 10 – 1200 ppm |

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## Hydrogen sulphide H2S

| | |
|---|---|
| Type | electrochemical sensor (EC) |
| Use | Multitec 540 |
| Measuring range | 0 – 2000 ppm<br>• lower limit: 1 ppm |
| Indication range | 0 – 2400 ppm |
| Resolution | • 1 ppm (0 – 100 ppm)<br>• 2 ppm (100 - 998 ppm)<br>• 0.02% vol. / 200 ppm (0.10 - 0.2% vol.) |
| Response times | t90 < 60 s |
| Decay times | t10 < 90 s |
| Warm-up time | up to 120 s |
| Temperature range | -20 – 40 °C (-4 °F – 104 °F) |
| Measuring error | • ±3% or ±3 ppm (±3 digits)<br>• ±3 ppm (long-term stability) |
| Drift | < 10% within 6 months |
| Zero point deviation | 2 ppm |
| Interference, known | at 20°C (68 °F)<br>• H2 2% vol.: approx. 150 ppm H2S<br>• Isopropanol 1% vol.: approx. 0 ppm H2S<br>• NH3 1000 ppm: approx. 0 ppm H2S |
| Humidity | 15 – 90% r.h., non-condensing<br>• short term: 0% r.h |
| Lifetime, expected | 2 years |
| Adjustment | test gas concentration:<br>• zero point: clean air<br>• H2S: 180 ppm, utilisable 10 – 1200 ppm |