

OPERATING MANUAL

SKC HAZ-DUST I Particulate Monitor

Battery care, zeroing and dust measurement with the HAZ-DUST I hand-held particulate monitor, 0.01 to 200 mg/m³, with cleaning, battery replacement, specifications and ordering information.

AMTC-MN-0026

About this manual

The SKC HAZ-DUST I (model HD-1100) is a hand-held, direct-reading monitor for airborne dust. It shows the dust concentration in mg/m³ the moment you point it into the air, which makes it a survey tool: finding the dusty spots in a workplace, checking whether a dust-suppression measure works, or watching a process over time with a data logger on its analogue output.

This manual covers the whole routine: how the monitor measures and what its controls do, keeping the battery charged, zeroing and measuring, cleaning the optics and replacing the battery pack. The last chapters give the technical data and the order numbers of accessories.

If you are new to the monitor, read Commissioning (p. 8) and Operation (p. 9) in that order before your first survey. Analyt-MTC supplies, calibrates and services the HAZ-DUST I; see Service, warranty and contacts (p. 15).

Keep this manual for the lifetime of the product. The current revision is on the product page at analyt-mtc.com.

Abbreviations

Abbreviation	Meaning
NiMH	Nickel-metal hydride (battery type)
NIOSH	US National Institute for Occupational Safety and Health
OSHA	US Occupational Safety and Health Administration

How this manual marks information

NOTICE

Practices not related to personal injury — damage to the product, the process or the sample.

Note
Information that helps understanding; never a hazard.

Switch positions are written as they are printed on the monitor: **0-20**, **0-200**, **BATTERY**.

Document information

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Manufacturer	SKC Inc.

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2	October 2026	Quality programme: new document type, number and identity pages.
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Contents

1 **Safety** 5
- Intended use 5
- Battery and measurement 5
- What you may service yourself 5

2 **Product description** 6
- How the monitor measures 6
- Controls 6
- Measuring ranges 6
- Supplied items and accessories 7

3 **Commissioning** 8
- Checking the battery 8
- Charging 8
- Battery life 8

4 **Operation** 9
- Switching on 9
- Zeroing 9
- Taking readings 9

5 **Communication** 10
- Recording readings: analogue output 10

6 **Maintenance** 11
- Cleaning the optics 11
- Replacing the battery pack 11

7 **Specifications** 13
- Measurement 13
- Power 13
- Operating conditions and mechanical data 13

8 **Ordering information** 14
- Monitor kit 14
- Accessories and spare parts 14

9 **Service, warranty and contacts** 15
- Returning a monitor 15
- Warranty 15
- Disposal 15

CHAPTER 1

Safety

Read the safety messages in this chapter before you use the HAZ-DUST I. Each one also appears in the procedure where it applies. They protect the battery and the accuracy of the reading.

Intended use

The HAZ-DUST I is a portable, direct-reading monitor for the concentration of airborne dust, in milligrams per cubic metre. It is intended for industrial and environmental dust monitoring and for checking workplaces against occupational exposure limits (see Product description (p. 6)). Use it at operating temperatures from 0 to 50 °C (32 to 120 °F).

The monitor is calibrated with a standard test dust. A dust that differs from the test dust can read higher or lower than a gravimetric sample of the same air, so do not treat a reading as a gravimetric result.

Battery and measurement

NOTICE

Charging the switched-off monitor for longer than 12 hours can damage the battery. Do not leave it on the charger for longer than 12 hours.

NOTICE

Left at **BATTERY**, the monitor keeps drawing current and the battery runs flat. Always return the power switch to off after the battery check.

Note

Bright or flickering light can disturb the optical sensor and produce wrong readings. Take care close to strong light sources and reflections — directly next to arc welding, near flashes from explosions or in reflected sunlight. Where necessary, turn the monitor so that its air intake faces away from the light.

What you may service yourself

You may charge and zero the monitor, clean its optics and replace the battery pack, as described in Commissioning (p. 8), Operation (p. 9) and Maintenance (p. 11). All other service work is done by qualified service technicians at the factory; Analyt-MTC arranges it (see Service, warranty and contacts (p. 15)).

CHAPTER 2

Product description

The HAZ-DUST I measures dust optically and continuously, and displays the concentration in milligrams per cubic metre (mg/m³). It covers particles from 0.1 to 50 µm and concentrations from 0.01 to 200 mg/m³ on two ranges.

How the monitor measures

The monitor works by near-forward light scattering. An infrared (IR) emitter and a photodetector sit at 90° to each other around a sensing volume. Particles drifting through that volume scatter part of the IR light forward, at angles of 45 to 90°, onto the detector. The more dust in the air, the more light is scattered: the detector signal is directly proportional to the aerosol concentration.

The monitor is calibrated at the factory with a standard test dust against the gravimetric method NIOSH 0600. Because the amount of scattered light depends on what the particles are made of and how large they are, a dust that differs from the test dust can read higher or lower than a gravimetric sample of the same air. If you mainly measure one kind of dust and want to know how the monitor responds to it, contact Analyt-MTC.

Typical uses are industrial and environmental dust monitoring, and checking workplaces against occupational exposure limits, for example the US OSHA permissible exposure limits listed in OSHA publication 3112, “Air Contaminants Permissible Exposure Limits”.

Controls



Figure 1. Front of the monitor.
1 Display, reading in mg/m³ · **2** Zero adjustment screw · **3** Range switch · **4** Power switch

	Control
1	**Display.** Shows the dust concentration in mg/m³ or, with the power switch at **BATTERY**, the battery reading.
2	**Zero adjustment.** Set the zero reading with the trim stick supplied with the monitor (see Zeroing (p. 9)).
3	**Range switch.** Up: **0–20** mg/m³. Down: **0–200** mg/m³.
4	**Power switch.** Up (**I**): on. Centre (**0**): off. Down: **BATTERY**, battery check.

Measuring ranges

Range	Span	Use it for
0-20 (switch up)	0–20 mg/m³	The most sensitive range. Use it for start-up, zeroing and the battery check, and for measuring up to 10 mg/m³.
0-200 (switch down)	0–200 mg/m³	Areas where the dust concentration exceeds 10 mg/m³.

Supplied items and accessories

The monitor kit contains the monitor, a 110–240 V AC charger and a carry case; the trim stick for the zero adjustment is supplied with the monitor. Accessories such as the tripod, the zeroing accessory and the data logger are listed in Ordering information (p. 14).

CHAPTER 3

Commissioning

The monitor runs on a rechargeable NiMH battery pack. A full charge lasts more than 8 hours of measuring and takes 10 to 12 hours. Check the battery before every survey.

Checking the battery

1. Set the range switch to **0-20** (up).
2. Push the power switch down to **BATTERY** and read the display.
3. A reading above 6.0 means the battery is charged enough to use the monitor. At 6.0 or below, charge it first.

   NOTICE

   Left at **BATTERY**, the monitor keeps drawing current and the battery runs flat. Always return the power switch to off after the battery check.

4. Set the power switch back to off.

Charging

1. Switch the monitor off.
2. Connect the battery charger to the monitor.

   NOTICE

   Charging the switched-off monitor for longer than 12 hours can damage the battery. Do not leave it on the charger for longer than 12 hours.

3. Leave the charger connected for 10 to 12 hours, then disconnect it.

Battery life

The service life of the NiMH pack varies between 500 and 1000 hours. Replace the pack when a full charge no longer lasts 8 hours; Replacing the battery pack (p. 11) describes how.

CHAPTER 4

Operation

Every survey follows the same order: switch on and let the monitor warm up, set the zero in clean air, choose the range, then take readings. Charge the battery first if the battery check calls for it (see Checking the battery (p. 8)).

Switching on

1. Set the range switch to **0-20** (up).
2. Push the power switch up to on.
3. Let the monitor warm up for a few minutes before you zero it.

Zeroing

The zero sets the reading for dust-free air, and every reading builds on it. Zero the monitor in air that is clean compared with the air you are going to measure. Where no such air is at hand, the Zeroing Accessory pumps filtered air into the sensor and gives a zero reading even in dusty surroundings; it is the recommended way to zero.

1. With the range switch at **0-20**, turn the zero adjustment screw (2 in Figure 1 (p. 6)) with the trim stick supplied with the monitor.
2. Be patient: turn in very small steps, and after each step wait one minute for the reading to settle.
3. Stop when the display reads 0.00 ±0.02 mg/m³.
4. If you expect more than 10 mg/m³, you can now set the range switch to **0-200** (down).

Taking readings

Hold the monitor in the palm of your hand with the display facing up, or mount it display-up on the tripod for unattended monitoring. The display shows the concentration in mg/m³ continuously.

> **Note**
> Bright or flickering light can disturb the optical sensor and produce wrong readings. Take care close to strong light sources and reflections — directly next to arc welding, near flashes from explosions or in reflected sunlight. Where necessary, turn the monitor so that its air intake faces away from the light.

The readings refer to the factory calibration with standard test dust against NIOSH 0600. For dusts of a different composition or size distribution, see How the monitor measures (p. 6).

CHAPTER 5

Communication

Recording readings: analogue output

When you need a permanent record of the readings, connect a data logger to the 0 to 2 V analogue output. The output is linear: 0 to 1 V corresponds to 0 to 100 mg/m³, and the signal over-ranges up to 2 V, which corresponds to 200 mg/m³. The recommended logger is the HAZ-DUST I Data Logger (see Ordering information (p. 14)), but any logger with an analogue voltage input will do.

CHAPTER 6

Maintenance

The monitor needs little maintenance. The tasks you will do most often are cleaning the sensing chamber and replacing the battery pack. Have the monitor recalibrated once a year by Analyt-MTC (see Service, warranty and contacts (p. 15)).

Cleaning the optics

Dust settles in the sensing chamber over time. How often it needs cleaning depends on how long the monitor is exposed and to how much dust: as a guide, a monitor measuring about 1 mg/m³ for 8 hours needs cleaning every 24 hours. You need dust-free air and the cleaning kit (cotton swabs; order code 770-305B) with a cleaning solution suitable for optical windows; Analyt-MTC can advise on a suitable one.

1. Undo the brass thumb nuts on the back of the monitor and remove the optical light trap.
2. Look at the optical block. Blow any dust out of the inside of the light trap and off the optical block with dust-free air.
3. Clean the windows with a cotton swab moistened with cleaning solution, and let them air-dry.
4. Refit the light trap.
5. Zero the monitor again (see Zeroing (p. 9)).

> **Note**
> Always check the zero reading after cleaning.

Replacing the battery pack

You need a replacement NiMH battery pack and a screwdriver.

1. Switch the monitor off and remove the optical light trap from the sensor (see Cleaning the optics (p. 11), step 1).
2. Remove the six screws on the back of the housing (Figure 2).
3. Lift the back cover off gently.

   > **Note**
   > Hold the nylon connectors, not the wires, when you separate or join them.

4. Disconnect the battery pack at its nylon connectors and take it out.
5. Put the new pack in and connect the nylon connectors.



Figure 2. Back of the monitor, light trap removed. The rings mark the six screws of the back cover.

6. Refit the back cover and screw it down, then refit the light trap.



Figure 3. Left: disconnect the battery at the nylon connectors (step 4). Right: connect the new battery pack (step 5). Hold the connectors, not the wires.

CHAPTER 7

Specifications

Measurement

Measuring principle	Near-forward scattering of infrared light
Sensing range	0.01–200 mg/m³, on two ranges: 0–20 mg/m³ and 0–200 mg/m³
Particle size range	0.1–50 µm
Precision	±0.02 mg/m³
Accuracy	±10 %
Calibration	Standard test dust, against NIOSH 0600
Display	Liquid crystal display (LCD), reading in mg/m³
Signal output	0–2 V analogue, linear; 0–1 V = 0–100 mg/m³

Power

Battery	Rechargeable NiMH battery pack
Operating time	More than 8 h on a full charge
Charging time	10–12 hours
Battery service life	500–1000 hours

Operating conditions and mechanical data

Operating temperature	0–50 °C (32–120 °F)
Dimensions	9 × 3 × 1.5 in
Weight	2 lb

CHAPTER 8

Ordering information

Order from Analyt-MTC with the order codes.

Older documents and labels may carry the manufacturer's original codes; they are listed in the last column to help you identify a part. For a part without an order code, ask Analyt-MTC.

Monitor kit

Description	Order code	Original code
HAZ-DUST I Monitor Kit: monitor (model HD-1100), 110–240 V AC charger and carry case	770-1100K	—

Accessories and spare parts

Description	Order code	Original code
POWER		
Replacement battery pack, NiMH	Ask Analyt-MTC	BP-111
Battery charger, 110–240 V AC; can also run the monitor for extended operation	Ask Analyt-MTC	BC-111
ZERO AND CALIBRATION CHECK		
Calibration standard: light-scattering device giving a constant value, to check the span and the optical sensor	Ask Analyt-MTC	CS-111
Zeroing accessory: pumps filtered air into the sensor, for a zero in dusty air	Ask Analyt-MTC	ZA-111
DATA RECORDING		
Data logger	Ask Analyt-MTC	DL-103
Analogue signal cable, monitor to data logger	Ask Analyt-MTC	AS-111
NiMH battery pack for the data logger	Ask Analyt-MTC	—
MOUNTING AND CLEANING		
Tripod mounting stand	Ask Analyt-MTC	TP-111
Cleaning kit: bulb, swabs and lens tissue	770-305B	KK-101
Dust-free air, for cleaning the optics	Ask Analyt-MTC	DA-101

CHAPTER 9

Service, warranty and contacts

Analyt-MTC is your contact for everything concerning the HAZ-DUST I: technical questions, the annual recalibration, spare parts and accessories, repairs and warranty claims. Apart from the user tasks in Maintenance (p. 11), all service work is done by qualified service technicians at the factory; Analyt-MTC arranges it.

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Before you contact Analyt-MTC

Have the following at hand so that Analyt-MTC can help you quickly:

- the model (HD-1100) and the serial number of the monitor;
- the date of the last calibration;
- a description of the fault, and the battery check reading.

Returning a monitor

Contact Analyt-MTC before you send a monitor back for calibration, repair or under warranty. A return can only be accepted with a return authorisation, which Analyt-MTC arranges with you together with the shipping details.

Warranty

Analyt-MTC's terms of sale and warranty apply. Make warranty claims to Analyt-MTC.

Disposal

Do not dispose of the monitor with household waste. Dispose of it as electrical and electronic equipment under local regulations (WEEE). Remove batteries first where fitted and dispose of them separately.

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