ANALYT MESSTECHNIK



OPERATING MANUAL

SKC Split2 Particulate Monitor

Passive and active (pumped) set-up, auto-zero, personal sampling of respirable and inhalable dust, data review and download, custom scale factors and maintenance of the Split2 real-time dust monitor, with ordering information.

AMTC-MN-0047

Rev. 2 · October 2026

About this manual

The SKC Split2 is a real-time dust monitor for personal sampling. A light-scattering sensor in a small sensor head, worn in the breathing zone, reads the dust concentration in mg/m³; the monitor on the belt displays it, logs it and works out the time-weighted average (TWA), the short-term exposure level (STEL), the minimum and the maximum. Used on its own (passive mode) it measures respirable dust. Connected to a sample pump running at 2 L/min (active mode) it measures respirable or inhalable dust and can collect a filter sample at the same time for gravimetric or chemical analysis.

This manual takes you from charging the battery to a finished measurement: setting up the sensor head for passive or active sampling, preparing and zeroing the monitor, sampling, and reviewing and downloading the data. Later chapters cover custom scale factors, maintenance, the technical data and the order numbers of accessories and spare parts. With an optional thoracic inlet the Split2 can also measure thoracic dust; that application is not covered here.

Read Safety (p. 6) before you use the monitor for the first time. For a quick start, follow Commissioning (p. 10), Passive or active sampling (p. 13), Preparing a measurement (p. 15) and Sampling (p. 17) in that order.

The manual applies to the SKC Split2 dust monitor kit. Analyt-MTC supplies, services and supports the monitor; for questions, repairs, servicing and spare parts see Service, warranty and contacts (p. 30). For background on sampling terms and methods, see SKC's *Step-by-Step Guide to Air Sampling* (Cat. No. 224-G1; ask Analyt-MTC).

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

Conventions in this manual:

- Keys, buttons and menu entries are printed like this: **ENTER**.
- A menu path such as **Special Functions** › **Set Alarm** means that you open each entry in turn.

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.

The keys are **ENTER**, **UP**, **DOWN** and **I/O**. Menu items are written in bold; to follow a menu path, highlight each item with **UP** or **DOWN** and press **ENTER**. All menus are listed in Menu map (p. 32).

Document information

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Rev.	Date	Change
2	October 2026	Quality programme: new document type, number and identity pages.
1	October 2026	First issue.

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CHAPTER 1

Safety

Read this chapter before you use the monitor for the first time. The Split2 is an optical instrument: its accuracy depends on a clean sensor head with an intact light-absorbing coating, and on a battery in good condition. The rules in this chapter protect both, and the warranty.

Intended use

The Split2 is a real-time dust monitor for personal sampling in the breathing zone. Used on its own (passive mode) it measures respirable dust. Connected to a sample pump running at 2 L/min (active mode) it measures respirable or inhalable dust. The measurement of thoracic dust is not covered by this manual.

Battery and charger

The monitor runs on a rechargeable NiMH battery pack and is charged with its own charger. Charge the battery fully before every use (see Commissioning (p. 10)).

NOTICE

Another charger may reduce the battery's performance or damage it beyond repair, and voids the warranty of the battery pack. Use only the Split2 battery pack and the Split2 charger.

Sensor head

The inside of the sensor head is coated with a matt, light-absorbing finish. The sensor relies on it: if the coating is damaged, the readings are no longer accurate. Clean the sensor head only as described in Cleaning the sensor optics (p. 24).

NOTICE

A liquid cleaning solution inside the sensor head damages the matt black finish and can get behind the optical lenses. Cleaning the sensor head in any other way than described in this manual damages it, affects the accuracy of the monitor and voids the warranty. Never use a liquid cleaning solution inside the sensor head.

Where to use the monitor

Use the monitor at 0 to +50 °C and up to 95 % relative humidity, non-condensing. The case is rated IP20: it keeps out fingers, not water.

Note
The Split2 is not waterproof. Protect the monitor and the sensor head from rain, splashes and condensation.

CHAPTER 2

Product description

Checking the contents

The Split2 kit comes in a carry case. Check the delivery against the list below; if anything is missing, contact Analyt-MTC (see Service, warranty and contacts (p. 30)).

- Split2 monitor in a carry pouch with detachable shoulder strap
- Sensor head assembly with spiral cable and locking plug
- Sensor mounting bracket with spring clip
- Battery charger with interchangeable mains plugs for the UK, Europe, USA and Australia/New Zealand
- Calibration span accessory (for the span check)
- Zeroing accessory (for the auto-zero in active mode)
- I.O.M. cassette clip
- RS-232 9-pin serial cable, female to male
- Factory calibration certificate
- CD with the DustComm Pro software and the instructions as a PDF

A sample pump for active sampling is not included; see Accessories (p. 29).

Parts of the monitor



Figure 1. Monitor.
1 Monitor case · **2** Liquid crystal display (LCD) · **3** Keypad · **4** RS-232 data port · **5** Sensor head socket · **6** On/off switch · **7** Charging socket

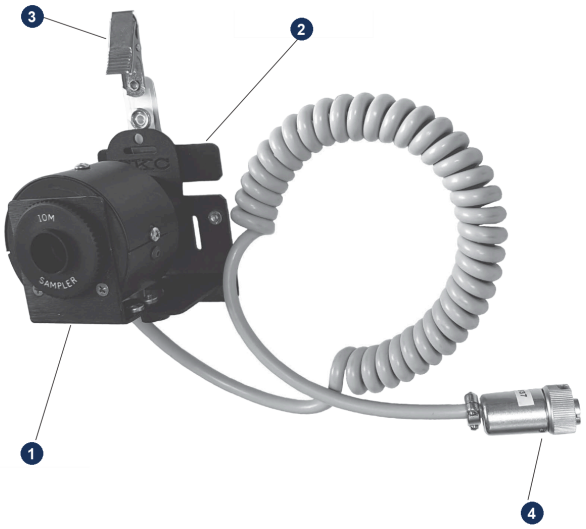


Figure 2. Sensor head assembly.
1 Sensor head · **2** Sensor bracket · **3** Spring clip · **4** Sensor head plug

The sensor head

The sensor head is built up from I.O.M. sampler parts around the optical sensor. Which parts you fit depends on the operating mode and the dust fraction (see Passive or active sampling (p. 13)). Figure 3 shows every part in its assembly position.

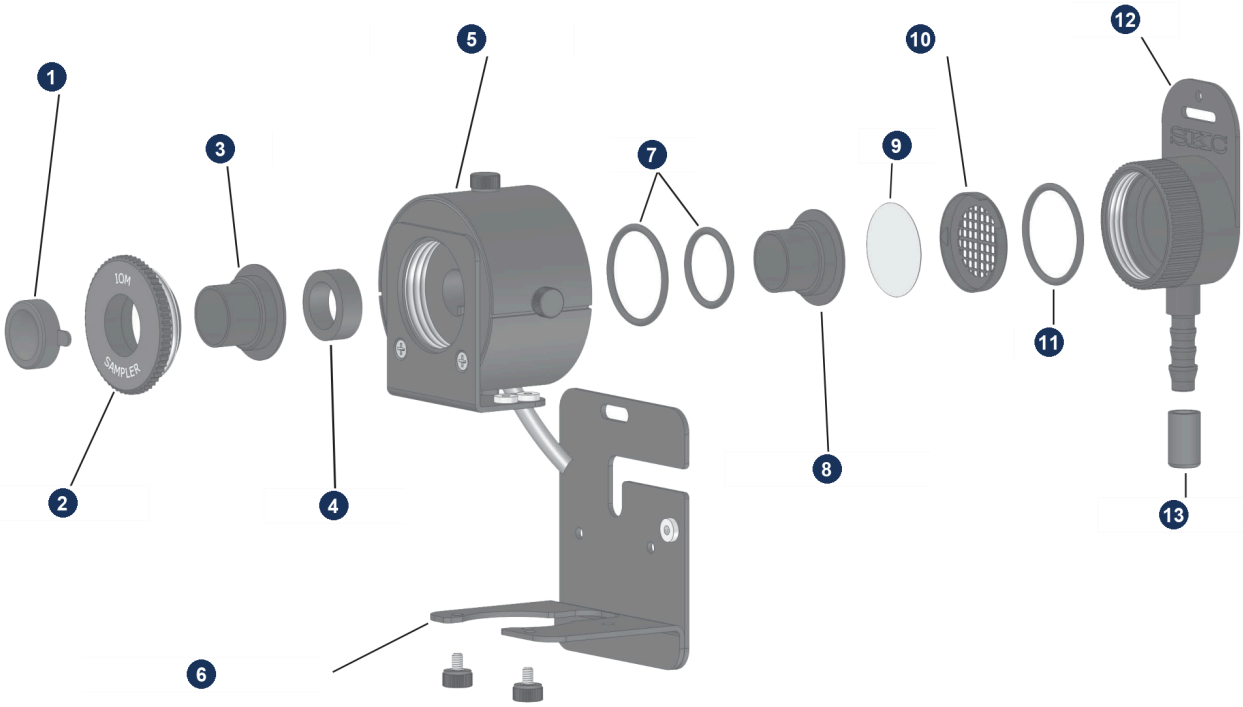


Figure 3. Sensor head, exploded view (front on the left).
1 I.O.M. dust cap · **2** I.O.M. front plate · **3** I.O.M. inlet · **4** Rubber seal · **5** Sensor head body · **6** Sensor head bracket with two thumb screws · **7** O-rings (2) · **8** I.O.M. cassette inlet · **9** Filter (only for a gravimetric filter sample) · **10** I.O.M. cassette grid · **11** O-ring · **12** I.O.M. body with outlet hose nipple · **13** Tube end cap

Switching on and off

The on/off switch is a push button on the side of the monitor (6 in Figure 1 (p. 7)). Press it to switch on: the monitor beeps and shows the welcome screen. Press it again to switch off. The monitor runs from its battery, or from the mains while the charger stays connected.

Press **ENTER** to leave the welcome screen; the main menu appears, with **Run**, **Review Data**, **Special Functions** and **Auto-Zero**.



Figure 4. Welcome screen with the firmware version.

Keypad and menus

Key	What it does
ENTER	Selects the highlighted menu item, accepts a value and moves on to the next digit or field.
UP	Moves the selection arrow up a menu, or increases the selected value.
DOWN	Moves the selection arrow down a menu, or decreases the selected value.
I/O	On/standby key: puts the monitor into standby and wakes it again.

The display has four lines of 20 characters and is backlit. An arrow marks the highlighted menu item. Values such as the date, time or alarm level are entered digit by digit: the digit to change is underlined; change it with **UP** and **DOWN**, then press **ENTER** to accept it and move to the next digit. Most menus end with **Cancel**, which leaves the menu without changes.

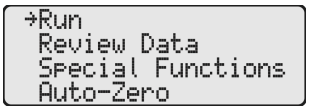


Figure 5. Main menu.

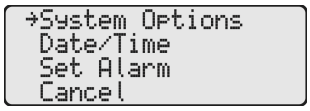


Figure 6. Special Functions menu.

Standby

Press **I/O** to put the monitor into standby, and press it again to wake it. If the monitor does not wake, check that it is switched on with the push button on the side. If it still does not wake, charge the battery fully. The monitor also goes into standby on its own when the battery is almost empty (see Low battery (p. 18)).

CHAPTER 3

Commissioning

A fully charged battery runs the monitor for at least 8 hours. Charge it before every measurement — the first time ideally overnight.

Charging

Use only the Split2 charger. It works on 100–240 V, 50/60 Hz mains and comes with plugs for the UK, Europe, USA and Australia/New Zealand.

1. Fit the mains plug for your country to the charger.
2. Switch the monitor off with the push button on its side. It charges fastest when it is switched off.
3. Plug the charger's output jack into the charging socket on the side of the monitor (7 in Figure 1 (p. 7)).
4. Plug the charger into the mains and switch the outlet on.
5. When the battery is fully charged, unplug the charger from the monitor. For the best battery performance, do not leave the battery on the charger for more than 24 hours.

> **Note**
> A new battery pack reaches its full capacity only after two or three full charge and discharge cycles. For longer measurements you can leave the charger connected: the monitor then runs from the mains.

Checking the battery status

The battery pack has a nominal voltage of 7.2 V. Check its voltage before every measurement:

1. Select **Special Functions › System Options › Extended Options › Battery Status**. The screen shows the battery voltage, for example `8.05 Volts`.
2. Press **ENTER** to return to the main menu.

Battery voltage	Meaning
8.0 V or higher	Fully charged
below 7.4 V	Recharge before you start sampling
below approx. 6.8 V	Sampling stops automatically (low battery)
below approx. 6.5 V	The monitor switches to standby

While sampling, a battery symbol in the top right corner of the screen shows a full or low battery (see The data record screen (p. 18)). Looking after the battery pack, testing and replacing it are covered in Care of the battery pack (p. 24).

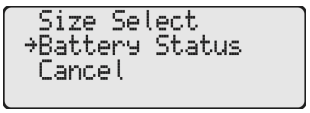


Figure 7. Extended Options menu.

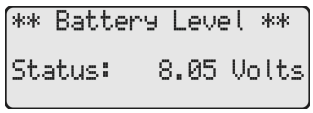


Figure 8. Battery status with the battery voltage.

Before the first measurement, connect the sensor head, switch the monitor on and let it stabilise for at least 10 minutes (see Connecting and switching on (p. 12)). Zero the monitor before every new set of measurements (see Auto-zero (p. 16)).

CHAPTER 4

Operation

Operation runs from the first set-up to the stored data: connect the sensor head, switch on and set the clock; choose passive or active sampling; prepare each measurement; sample; then review and download the data. Where you measure regularly at the same location, a custom scale factor brings the readings closer to the gravimetric result.

Every stored reading carries the date and time of the monitor's clock. Set the clock when you put the monitor into service, and clear the memory when you want to start with empty storage locations.

Connecting and switching on

1. Push the sensor head plug into the sensor head socket on the side of the monitor (5 in Figure 1 (p. 7)) and lock it.
2. Switch the monitor on with the push button on its side. It beeps and shows the welcome screen.
3. Wait at least 10 minutes for the electronics to stabilise, so that the baseline reading is stable.
4. Press **ENTER**. The main menu appears.

Setting the date and time

1. Select **Special Functions › Date/Time › Set Date/Time**. The first digit of the time is underlined. (**View Date/Time** shows the current setting without changing it.)
2. Enter the time in 24-hour format, hours, minutes and seconds, digit by digit: **UP** and **DOWN** change the underlined digit, **ENTER** moves to the next one.
3. Enter the date as day, month and year (for example 12-JUL-12), then the day of the week.
4. After the day of the week, press **ENTER**. A confirmation screen appears.
5. Select **Set Date/Time** to save the new date and time, or **Cancel** to keep the old ones. The main menu appears.



Figure 9. Date/Time menu.



Figure 10. Time entry: the cursor on the first digit.

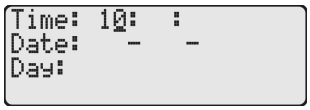


Figure 11. Time entry: the first digit set.

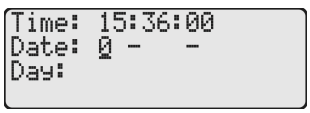


Figure 12. Time set; the cursor moves on to the date.

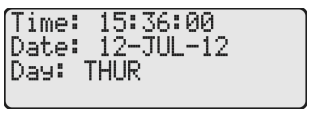


Figure 13. Date and time entered, with the day of the week.



Figure 14. Confirming the new date and time.

Erasing the memory

Erasing clears every data point in every storage location at once. You do not have to erase the memory before each measurement: the run options in Starting the measurement (p. 17) either keep the stored data or overwrite it.

NOTICE

Erased data cannot be recovered. Download the data you want to keep first (see Downloading the data to a PC (p. 22)).

1. Select **Special Functions › System Options › Erase Memory**. The monitor asks `Erase Memory? DATA WILL BE LOST.`
2. Select **Yes** to erase the memory, or **No** to keep the data. The Special Functions menu appears.

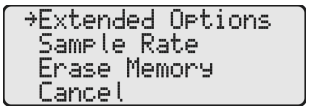


Figure 15. System Options menu.

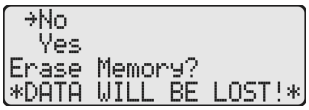


Figure 16. Erase Memory? confirmation: DATA WILL BE LOST.

Passive or active sampling

The dust fraction you want to measure, and whether you also need a filter sample for gravimetric or chemical analysis, decide the operating mode. Each mode needs its own sensor head configuration.

	Passive	Active (pumped)
Sample pump	None	Sample pump at 2 L/min (not included)
Respirable dust	Yes	Yes, with a size-selective foam plug in the I.O.M. inlet
Inhalable dust	No	Yes, without foam plug
Filter sample	No	Yes, on a 25 mm filter in the I.O.M. cassette

In both modes the sensor head sits on its bracket in the orientation shown in the figures below and is secured with the two thumb screws. The part numbers in this section refer to Figure 3 (p. 8).

Passive sampling

In passive mode only the I.O.M. front plate is fitted to the front of the sensor head; air reaches the sensor without a pump. The monitor is calibrated for the respirable fraction only in this mode: it cannot measure inhalable dust, and it cannot take a filter sample.

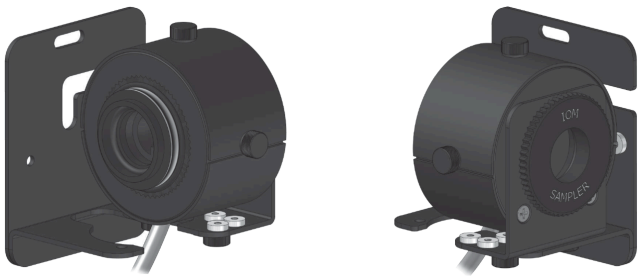


Figure 17. Sensor head configured for passive sampling: front (left) and rear (right).

Active (pumped) sampling

In active mode the sensor head carries the complete I.O.M. sampler: front plate, inlet and rubber seal at the front, the I.O.M. cassette and body at the rear (Figure 3 (p. 8)). A sample pump draws the air through the head at 2 L/min. With a size-selective foam plug in the I.O.M. inlet the monitor measures the respirable fraction; without it, the inhalable fraction.



Figure 18. Sensor head configured for active sampling. Left: with foam plug in the inlet (respirable); right: without foam plug (inhalable).

1. Assemble the sensor head as in Figure 3 (p. 8) and secure it to the bracket with the two thumb screws.
2. For respirable dust, fit a size-selective foam plug (Cat. No. 225-772) into the I.O.M. inlet — but only after the auto-zero (see Auto-zero (p. 16)). For inhalable dust, leave it out.
3. Connect the outlet hose nipple of the I.O.M. body, at the rear of the sensor head, to the inlet of the sample pump with flexible tubing of 1/4 in. bore, for example Tygon tubing. Pass the tubing through the coils of the sensor cable so that it does not catch on the wearer's clothing.
4. Set the pump to 2 L/min as described in Setting the flow rate (p. 14).

Loading a filter for a gravimetric sample

For a concurrent filter sample, a 25 mm filter sits in the I.O.M. cassette supplied with the sensor head. The filter is weighed together with the cassette.

1. Undo the two thumb screws and take the sensor head off its bracket.
2. Place a 25 mm filter in the I.O.M. cassette and pre-weigh the filter with the cassette.
3. Fit the cassette into the I.O.M. body at the rear of the sensor head. Check that all sealing O-rings are in place (7 and 11 in Figure 3 (p. 8)).
4. Refit the sensor head to the bracket with the two thumb screws.

Setting the flow rate

In active mode the pump must draw exactly 2 L/min through the sensor head. Set the flow at the front of the sensor head with a flowmeter that has a traceable calibration, such as the SKC chek-mate, connected through the I.O.M. flow calibration adapter (Cat. No. 391-01). The monitor itself does not need to be switched on.



Figure 19. Flow calibration adapter on the I.O.M. front plate; the tubing leads to the flowmeter.

1. Connect the outlet hose nipple of the flowmeter to the hose nipple of the calibration adapter with a length of 1/4 in. bore tubing.
2. Switch on the sample pump and let it run for at least 5 minutes to stabilise.
3. Press the foam pad of the calibration adapter firmly against the I.O.M. front plate of the sensor head (Figure 19). Keep pressing it while you set the flow so that it seals all the time.
4. Read the flowmeter and adjust the pump, as described in the pump's manual, until the flowmeter shows 2 L/min.
5. Switch off the pump.

> **Note**
> With a filter sample, note the flow reading: you need it to calculate the dust concentration on the filter. The filter that was in the cassette while you set the flow must not be used for sampling — replace it with a clean filter, pre-weighed together with the cassette.

Preparing a measurement

Before each measurement, check the battery, set the particle size, the logging interval and the alarm, and zero the monitor.

Before you start

- Set up the sensor head for the operating mode and dust fraction (see Passive or active sampling (p. 13)); in active mode, set the flow rate.
- Check that the date and time are correct (see Setting the date and time (p. 12)).
- Let the monitor and the sensor head adjust to the temperature of the sampling location for at least 20 minutes.
- Check that the battery is fully charged: 8.0 V or more; recharge below 7.4 V (see Checking the battery status (p. 10)).

Particle size

The particle size setting tells the monitor which dust fraction it measures; the data screen shows it as a letter. It must match the sensor head configuration.

1. Select **Special Functions › System Options › Extended Options › Size Select › Select**.
2. Select **Respirable** or **Inhalable**. The main menu appears. (**Thoracic** needs the optional thoracic inlet, which is not covered in this manual.)

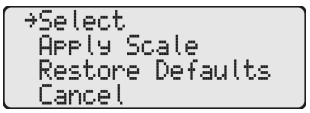


Figure 20. Size Select menu.

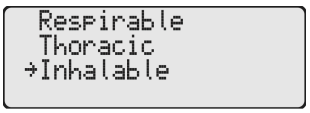


Figure 21. Particle size selection.

Sample rate

The sample rate is the interval at which the monitor stores a reading. A longer interval fills the memory more slowly, so the menu lists each interval together with the longest sample that fits into the memory.

1. Select **Special Functions › System Options › Sample Rate**.
2. Highlight the interval you need and press **ENTER**. The setting is saved and the main menu appears.

Menu entry	Interval	Longest sample
`1 Sec (6hrs)`	1 s	6 hours
`10 Sec (60hrs)`	10 s	60 hours
`1 Min (15Days)`	1 min	15 days
`30 Min (15Mos)`	30 min	15 months

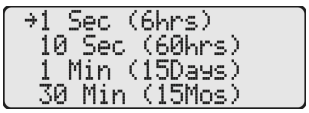


Figure 22. Sample rate selection, with the logging capacity for each rate.

Alarm level

The audible alarm warns the wearer when the dust concentration approaches a limit. A good starting point is 80 % of the occupational exposure limit that applies to the dust you sample. The alarm sounds only if you start the measurement with one of the **Alm** options (see Starting the measurement (p. 17)).

1. Select **Special Functions** › **Set Alarm**. The screen shows the alarm concentration in mg/m³, for example `000.00`, with the first digit underlined.
2. Enter the concentration digit by digit: **UP** and **DOWN** change the underlined digit, **ENTER** moves to the next one.
3. Press **ENTER** after the last digit. The alarm level is saved and the main menu appears.



Figure 23. Alarm level entry: the cursor on the first digit.



Figure 24. Alarm level set, the cursor on the last digit.

Auto-zero

The auto-zero sets the measurement baseline of the monitor. Perform it before every new set of measurements, with a fully charged battery and after the monitor has been switched on for at least 10 minutes. Clean the sensor optics first if they need it (see Cleaning the sensor optics (p. 24)).

Mode	Zero the monitor…
Passive	in a clean, dust-free place. No zeroing accessory is used in this mode.
Active, inhalable	with the zeroing accessory pushed into the I.O.M. inlet and the sample pump running.
Active, respirable	as for inhalable, *before* you fit the foam plug into the I.O.M. inlet.

1. Prepare the sensor head for your mode as in the table above.
2. Select **Auto-Zero** in the main menu. A reminder to clean the optics appears briefly, then the Auto-Zero menu.
3. Select **Auto-Zero** to start (or **Cancel** to leave). The sequence takes 25 seconds; a countdown shows its progress. The main menu then appears.
4. In active mode: switch off the pump and take the zeroing accessory out of the I.O.M. inlet. For respirable dust, now fit the foam plug.

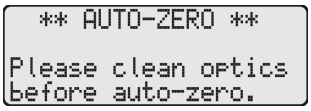


Figure 25. Reminder to clean the optics before the auto-zero.

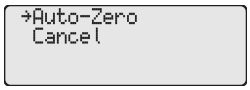


Figure 26. Auto-Zero menu.

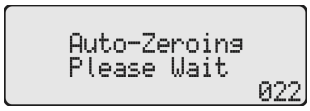


Figure 27. Auto-zero in progress, with the countdown in seconds.

Sampling

With the monitor prepared, fit it to the worker, start the measurement with the alarm and storage option you need, and stop it at the end of the sampling period. A filter sample then goes for weighing or analysis.

Fitting the monitor to the worker

1. Clip the monitor to the worker's belt with its belt clip, or carry it in the pouch on the shoulder strap. In active mode, clip the sample pump to the belt next to the monitor.
2. Clip the sensor head to the worker's clothing with the spring clip, within the breathing zone: the hemisphere of 30 cm radius in front of the face, centred on the midpoint of a line joining the ears.
3. Secure the sensor cable — and in active mode the tubing — to the clothing so that it does not hinder the worker's movements.

> **Note**
> Fit the equipment on the left side of a right-handed worker, and on the right side of a left-handed worker.

Starting the measurement

NOTICE

The Overwrite options delete all stored data. Download the data you want to keep first (see Downloading the data to a PC (p. 22)).

1. In active mode, start the sample pump.
2. Select **Run** in the main menu, then one of the four run options below, and press **ENTER**.
3. If you chose an **Overwrite** option, the monitor asks you to confirm. Select **Yes** to overwrite the data, or **No** to return to the main menu.

Run option	Alarm	Stored data
Run - Continue	off	Kept; the new data goes into the next free storage location.
Run - Overwrite	off	Deleted; the new data goes into location 001.
Alm - Continue	on	Kept; the new data goes into the next free storage location.
Alm - Overwrite	on	Deleted; the new data goes into location 001.

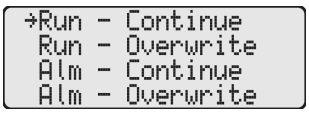


Figure 28. Run menu with the four run modes.

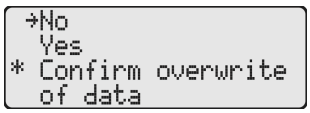


Figure 29. Confirming the overwrite of the stored data.

The data record screen

As soon as sampling starts, the data record screen appears. The concentration shown is the instantaneous reading of the sensor; this value is stored at the interval set as the sample rate (see Sample rate (p. 15)).

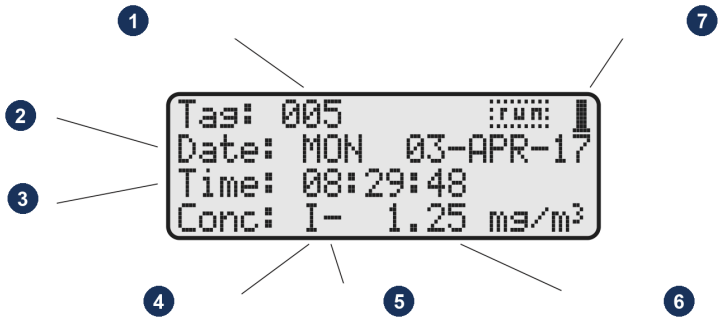


Figure 30. Data record screen.
1 Storage location (tag) the data is written to · **2** Date · **3** Time · **4** Dust fraction: I inhalable, T thoracic, R respirable · **5** Minus sign: negative reading · **6** Dust concentration, mg/m³ · **7** Battery status: full or low

> **Note**
> A minus sign in front of the concentration means the monitor is reading a negative concentration. If it stays for more than a short while, perform an auto-zero (see Auto-zero (p. 16)) before you continue the sample.

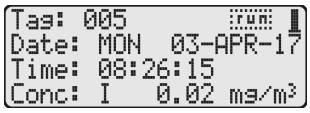


Figure 31. Data record screen as sampling starts.

Low battery

When the battery voltage falls below approx. 6.8 V, the sensor can no longer read accurately: sampling stops automatically and the battery status screen shows the voltage with `-BATT LOW-`. Press **ENTER** to return to the main menu, and charge the battery. Below approx. 6.5 V the monitor switches to standby on its own.

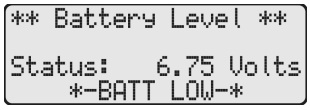


Figure 32. Low battery warning with the battery voltage.

Ending the measurement

1. At the end of the sampling period, press **ENTER**. Sampling stops and the main menu appears.
2. In active mode, stop the sample pump.
3. Take the equipment off the worker.

After a filter sample

1. Take the equipment to a clean, dust-free place.
2. Check the flow rate as in Setting the flow rate (p. 14), without adjusting it, and note the flowmeter reading for the concentration calculation.

3. Undo the two thumb screws and take the sensor head off its bracket.
4. Unscrew the I.O.M. body from the rear of the sensor head and take out the filter cassette for post-weighing.
5. If the filter goes to a laboratory for analysis, put the red cap on the cassette inlet and place the cassette in the red I.O.M. cassette clip supplied with the kit.

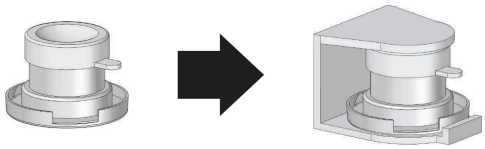


Figure 33. Capped filter cassette (left) placed into the cassette clip (right).

Reviewing data

The monitor stores up to 21 500 readings in up to 999 storage locations, called tags; each measurement goes into its own tag. You can read the statistics of any tag on the monitor, and download all data to a PC with the DustComm Pro software.

Statistics of a measurement

1. Select **Review Data › Statistics**. (If no tag has been reviewed yet, this menu is skipped and the tag selection appears directly.)
2. Choose the tag: **Review Tag** shows the tag you reviewed last; **New Tag** lets you enter another one. (With data in location 001 only, this menu is skipped.)
3. For **New Tag**: the screen shows the range of tags that hold data, for example `001 thru 005`. Enter the three digits of the tag with **UP**, **DOWN** and **ENTER**.
4. The first statistics screen appears. Press **DOWN** for the next screen, or **ENTER** to return to the main menu.

Screen	Shows
STATS	Tag number, date, start and stop time of the measurement
MAXIMUM	Highest concentration recorded, with date, time and dust fraction (I or R)
MINIMUM	Lowest concentration recorded, with date, time and dust fraction
T.W.A.	Time-weighted average concentration, with date and elapsed sampling time
S.T.E.L.	Short-term exposure level — the highest average concentration over any 15-minute period of the measurement — with date and time. For measurements of 15 minutes or less the screen shows `Not Available`.

On the last screen, **DOWN** or **ENTER** returns to the main menu.

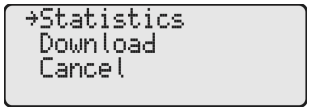


Figure 34. Review Data menu.

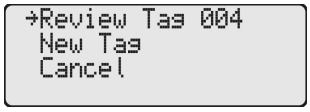


Figure 35. Choosing the tag to review.

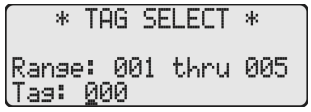


Figure 36. Tag Select: the cursor on the first digit.

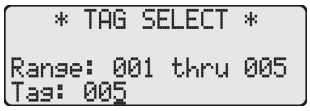


Figure 37. Tag Select: the cursor on the last digit.

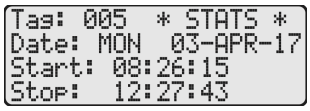


Figure 38. Statistics: date, start and stop time.

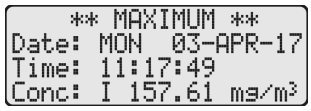


Figure 39. Maximum concentration and its time.

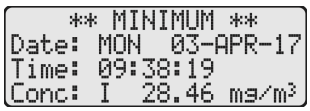


Figure 40. Minimum concentration and its time.

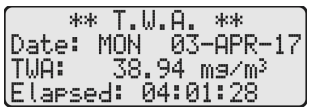


Figure 41. T.W.A. and the elapsed time.

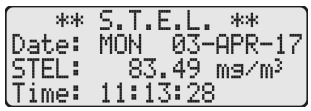


Figure 42. S.T.E.L. and its time.

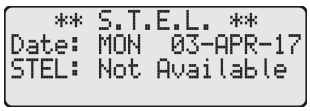


Figure 43. S.T.E.L. not available (sample shorter than 15 minutes).

Custom scale factor

The Split2 is calibrated with ISO 12103-1 A2 Fine Test Dust. Workplace dusts reflect and refract light differently, so the monitor's reading can differ from the true concentration. Where you measure regularly at the same location, a custom scale factor brings the readings closer to the gravimetric result.

Working out the factor

The factor compares a gravimetric filter result with the monitor's own result for the same measurement. Take a measurement at the location in active mode with a concurrent filter sample (see Loading a filter for a gravimetric sample (p. 14)), pre- and post-weigh the filter with its I.O.M. cassette, and calculate the time-weighted average (TWA) concentration on the filter. Read the Split2 TWA from the statistics (see Statistics of a measurement (p. 19)). Then:

Custom scale factor	= filter TWA ÷ Split2 TWA
Example	filter TWA 5 mg/m³, Split2 TWA 4 mg/m³: factor = 5 ÷ 4 = 1.25

> **Note**
> Never set a factor from a single filter sample. Take at least 10 filter samples at the location and use the average of the calculated factors. Different locations may need different factors.

Setting the factor

1. Select **Special Functions › System Options › Extended Options › Size Select › Apply Scale**.
2. Select the particle size the factor applies to (**Respirable** or **Inhalable**). The screen shows the current factor, for example `01.00`.
3. Enter the four digits of the factor with **UP**, **DOWN** and **ENTER** — for the example above, `01.25`. After the last digit the Size Select menu appears.

The factor applies to all following measurements until you change it.

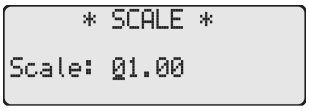


Figure 44. Scale factor entry: the cursor on the first digit.

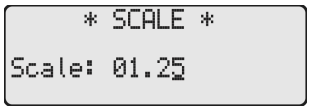


Figure 45. Scale factor entry: the cursor on the last digit.

Restoring the standard factor

Select **Special Functions › System Options › Extended Options › Size Select › Restore Defaults**. The factor returns to `01.00` and the main menu appears. Restore the standard factor before every span check (see Calibration and verification (p. 23)).

CHAPTER 5

Communication

Downloading the data to a PC

The data is transferred over the RS-232 cable supplied with the kit to the DustComm Pro software, which stores it and exports it as ASCII text files for spreadsheet programs such as Microsoft Excel. This section summarises the download; installation and use of the software are described in the DustComm Pro instructions.

A PC without a serial port needs a USB-to-serial adapter (not supplied). In Windows Device Manager, set the adapter to a free COM port between COM1 and COM4.

1. Connect the monitor's RS-232 data port (4 in Figure 1 (p. 7)) to the serial port of the PC with the RS-232 cable. Make sure both plugs are firmly seated: a loose connection interrupts the transfer.
2. Start DustComm Pro and open **Unit › Properties**. Set **Unit Type** to `Split 2` and **Download Port** to the COM port the monitor is connected to. Click **OK**.
3. Select **Unit › Download**. A progress window opens with the message `Awaiting connection...`
4. On the monitor, select **Review Data › Download › To Data Collector**. The monitor shows `Transmitting` and the software shows `Connection established, downloading data...` with a progress bar.
5. When the transfer is complete, the monitor returns to the Download menu and the software reports `The download was successful!` Click **OK**.

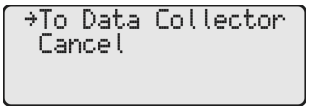


Figure 46. Download menu.

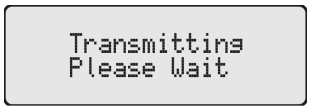


Figure 47. Data being transmitted.

CHAPTER 6

Calibration and verification

The calibration span accessory scatters light by a fixed amount, its "K factor", which is printed on it. Reading it with the monitor checks the factory calibration. Check the span:

- the first time you use the monitor, to confirm the factory calibration;
- once a month in normal use;
- whenever the monitor or the sensor head has been dropped or otherwise damaged.

Before you start, make sure that:

- the sensor optics are clean (see Cleaning the sensor optics (p. 24));
- you are in a clean, dust-free place;
- the battery is fully charged (see Checking the battery status (p. 10));
- the particle size is set to **Respirable** (see Particle size (p. 15));
- the scale factor is the standard 01.00 (see Restoring the standard factor (p. 21)).

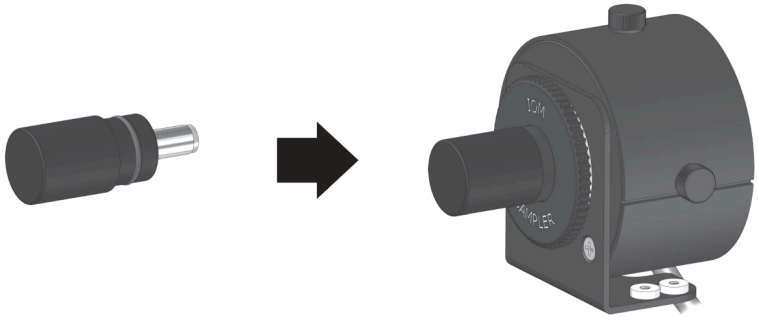


Figure 48. Calibration span accessory pushed fully into the sensor head inlet.

1. Fit only the I.O.M. inlet, the rubber seal and the I.O.M. front plate to the sensor head (3, 4 and 2 in Figure 3 (p. 8)).
2. Perform an auto-zero (see Auto-zero (p. 16)).
3. Push the calibration span accessory fully into the sensor head inlet (Figure 48).
4. Start the monitor with **Run - Continue**, let it run for at least two minutes, and note the concentration reading.
5. Compare the reading with the K factor on the accessory. It must be within ±10 % of the K factor. If not, repeat the check.

> **Note**
> If the reading is still more than ±10 % away from the K factor, the monitor needs service. Contact Analyt-MTC to have it serviced and recalibrated.

CHAPTER 7

Maintenance

Two tasks keep the Split2 accurate between services: looking after the battery pack, and keeping the sensor optics clean. Check the calibration span as well (see Calibration and verification (p. 23)). Have the monitor serviced at least once a year; your own risk assessment may call for shorter intervals (see Service, warranty and contacts (p. 30)).

Care of the battery pack

Charging	Charge fully before first use; full capacity is reached after two or three full charge and discharge cycles. Use only the Split2 charger. Check the battery voltage before each use and charge as needed.
Temperatures	For best performance, charge at 0 to +40 °C and discharge (use) at −10 to +45 °C. The monitor itself is specified for 0 to +50 °C, so its own limits apply when you use it.
Overcharging	Take the battery off the charger after 24 hours.
Regular use	Once a month, run the monitor until the low-battery shutdown, then charge the battery fully.
Long-term storage	Charge fully, switch the monitor off and store it in a cool, dry place at 0–30 °C. Recharge at least once a year, more often if stored above 30 °C. After storage, cycle the battery two or three times to restore its capacity.

Testing the battery pack

1. Connect the Split2 charger and charge the battery fully.
2. If the monitor does not work at all after a full charge, the battery cells have failed or reached the end of their life: replace the battery pack. Also check the output of the charger.
3. If the monitor works but runs much less time than before until the low-battery shutdown, the cells are failing: replace the battery pack.

Replacing the battery pack

You need a PH1 Phillips screwdriver and a new battery pack.

1. Switch the monitor off.
2. Undo the two screws of the battery cover on the left-hand side of the case and remove the cover.
3. Disconnect the battery plug from its socket and take the battery pack out. Note which way round it sits.
4. Put the new battery pack in the same way round and reconnect the plug.
5. Fit the battery cover the right way round, so that the foam pad on its inside presses on the battery pack and holds it in place. Fasten the two screws without excessive force.
6. Charge the new battery pack fully before use. Dispose of the old one as described in Disposal (p. 31).

Cleaning the sensor optics

Dust on the lenses or the inner surfaces of the sensor head falsifies the readings. Check the optics every 48 hours when the monitor is used in dust concentrations of 2 to 3 mg/m³ (TWA), and weekly or monthly in less dusty places. You need pre-moistened camera lens cleaning wipes, foam-tipped swabs and low-pressure compressed dry air.

NOTICE

A liquid cleaning solution inside the sensor head damages the matt black finish, can get behind the lenses and voids the warranty (see Sensor head (p. 6)). Never use a liquid cleaning solution inside the sensor head.



Figure 49. Left: sensor head body with the curved cover plate and its three thumb screws removed. Right: inside of the sensor head; **1** sensor lens.

1. Switch the monitor off and unplug the sensor head cable from the monitor.
2. Undo the two thumb screws and take the sensor head off its bracket.
3. Remove all parts from the front and the rear of the sensor head.
4. Undo the three thumb screws of the curved cover plate on top of the sensor head body and lift the cover off carefully (Figure 49, left).
5. Check the inside of the cover plate and the inner surfaces of the sensor head for dust. Blow any dust off with low-pressure compressed air.
6. Check the glass lenses of the sensor (Figure 49, right). Remove any dust with a *dry* foam-tipped swab.
7. If the outside of the sensor head or the monitor needs cleaning, use the pre-moistened lens wipes.
8. Refit the cover plate. The foam pad on its underside sits closer to the front edge than to the rear edge, so that it fits into the recess in the sensor head body. Fit the top thumb screw first, then the two side screws, and tighten them firmly so that the cover seals against the body.
9. Refit the parts to the front and rear of the sensor head (see Figure 3 (p. 8)), and fit the sensor head to its bracket with the two thumb screws.
10. Reconnect the sensor head cable and perform an auto-zero (see Auto-zero (p. 16)) before you use the monitor again.

CHAPTER 8

Troubleshooting

Problem	What to do
The monitor does not wake from standby	Check that it is switched on with the push button on its side. If it still does not wake, charge the battery fully (see Standby (p. 9)).
Sampling stopped with `-BATT LOW-`	The battery is below approx. 6.8 V. Charge it (see Low battery (p. 18)).
The monitor does not work after a full charge, or the run time is much shorter	Test and, if necessary, replace the battery pack; check the charger output (see Testing the battery pack (p. 24)).
A minus sign stays in front of the concentration	Perform an auto-zero before you continue (see Auto-zero (p. 16)).
The span check is still outside ±10 % after repeating it	Contact Analyt-MTC to have the monitor serviced and recalibrated (see Calibration and verification (p. 23)).
S.T.E.L. shows `Not Available`	The measurement lasted 15 minutes or less; a STEL needs a longer measurement.
The download does not start or breaks off	Check that both plugs of the RS-232 cable are firmly seated, that DustComm Pro is set to unit type `Split 2` and the right COM port, and that a USB-to-serial adapter uses COM1 to COM4 (see Downloading the data to a PC (p. 22)).

CHAPTER 9

Specifications

Measurement

Measuring principle	Light scattering, real-time; passive or active (pumped) operation
Calibration	To NIOSH methods for lung damaging particles: NIOSH Method 0600, with ISO 12103-1 A2 Fine Test Dust
Sensing range	0.01–200 mg/m³
Accuracy	±10 %
Precision	0.02 mg/m³
Particle size ranges	Respirable 0.1–10 µm Thoracic 0.1–50 µm* Inhalable 0.1–100 µm
Flow rate, active mode	2 L/min, with an external sample pump (not included)
Displayed values	Instantaneous concentration; TWA, STEL, minimum and maximum

* Thoracic measurement needs the optional thoracic inlet and is not covered in this manual.

Display and data

Display	Backlit LCD, 4 lines of 20 characters
Logging interval	Set in the **Sample Rate** menu of the monitor (see Sample rate (p. 15)). The supplier's feature list names 1 s, 1 min and 10 min, whereas the menu offers 1 s, 10 s, 1 min and 30 min; follow the menu on your monitor.
Memory	21 500 data points in up to 999 storage locations; up to 21 weeks of sample/record time
Data output	RS-232; DustComm Pro software, export as ASCII text
Alarm	Audible, adjustable alarm level
Clock	Real-time clock

Power

Battery	Rechargeable NiMH battery pack, 7.2 V, 1.15 Ah
Run time	At least 8 hours with a fully charged battery
Mains operation	With the charger connected
Charger	100–240 V, 50/60 Hz, with UK, EU, US and AUS mains plugs

Operating conditions and mechanical data

Operating temperature	0 to +50 °C
Humidity	Up to 95 % RH, non-condensing
Ingress protection	IP20 (finger-proof); not waterproof
Dimensions	180 × 80 × 45 mm, without protruding sockets and belt clip
Weight	780 g

CHAPTER 10

Ordering information

Order from Analyt-MTC with the order codes. The kit contents are listed in Checking the contents (p. 7). If the part you need is not listed, ask Analyt-MTC.

Spare parts

Description	Order code
MONITOR	
Battery pack, 7.2 V, 1.15 Ah, NiMH, for the Split2 monitor	Ask Analyt-MTC
Battery charger, single, for the Split2 monitor; 100–240 V, 50/60 Hz, with UK/EU/US/AUS mains plugs	Ask Analyt-MTC
Calibration span accessory for the Split2 monitor	Ask Analyt-MTC
Zeroing accessory for the Split2 monitor	Ask Analyt-MTC
DustComm Pro software, CD	Ask Analyt-MTC
RS-232 serial computer interface cable	Ask Analyt-MTC
I.O.M. SAMPLER PARTS	
I.O.M. sampler, plastic, with two-part plastic filter cassette and clip	225-70A
I.O.M. filter cassette, two-part, plastic, with cap and clip	225-71A
O-rings for I.O.M. sampler, set of 4	P22570
Spring clip with strap	P2257001
Plastic grid for I.O.M. cassette	P2257002
Plastic spout for I.O.M. cassette	P2257003
Plastic body for I.O.M. sampler	P2257004
Dust cap for I.O.M. sampler	P2257005

Accessories

Description	Order code
SAMPLE PUMPS FOR ACTIVE SAMPLING	
Sidekick deluxe sample pump with timer, 5–3000 mL/min, ATEX approved	224-52MTX
Battery charger, single, for the Sidekick pump; 100–240 V, 50/60 Hz, with UK/EU/US/AUS mains plugs	223-203A
Battery charger, single, fast, for the AirChek 3000 pump; 100–240 V, 50/60 Hz, with UK/EU/US/AUS mains plugs	Ask Analyt-MTC
AirChek 3000 fully programmable sample pump, 5–3250 mL/min, ATEX and IECEx approved	210-3311
FLOW RATE SETTING	
chek-mate flowmeter, 750–5000 mL/min, accuracy ±1 % of reading	375-07750
Rotameter, 0.3–3.4 L/min, accuracy ±2.5 % to VDI/VDE 3513-2:2008	393-0334
Flow calibration adapter for the I.O.M. sampler	391-01
Tygon tubing, 1/4 in. inside diameter (ID) × 3/8 in. outside diameter (OD), 1 m	225-13-4A
SAMPLING	
I.O.M. foam plugs for respirable and multi-dust sampling, pack of 10	225-772
MOUNTING	
Hand-held sampling wand for the Split2 monitor	Ask Analyt-MTC
Tripod stand for the Split2 monitor	Ask Analyt-MTC

CHAPTER 11

Service, warranty and contacts

Analyt-MTC is your contact for everything concerning the Split2: technical questions, spare parts and accessories, servicing, recalibration, repairs and warranty claims.

Have the monitor serviced at least once a year: the first service is due one year after purchase, then every year on that date. Use your own risk assessment to decide whether your use calls for more frequent servicing. Contact Analyt-MTC also when a span check fails (see Calibration and verification (p. 23)) or when the monitor has been damaged.

Contact

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Before you contact Analyt-MTC

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

- the model (Split2 dust monitor) and the serial number of the monitor;
- the date of purchase and of the last service;
- what happened, and the result of your last span check (see Calibration and verification (p. 23)).

Service record

Model	Split2 dust monitor
Serial number	
Date of purchase	

Service	Date	Service	Date	Service	Date
1		5		9	
2		6		10	
3		7		11	
4		8		12	

Warranty

Make warranty claims to Analyt-MTC; Analyt-MTC's terms apply. The manufacturer's warranty does not cover damage caused by not following this manual — in particular:

- cleaning the sensor head in any other way than described in Cleaning the sensor optics (p. 24), especially with a liquid cleaning solution;
- charging the battery pack with a charger other than the Split2 charger.

Disposal

The monitor carries the crossed-out wheelie bin symbol: at the end of its life it must not go into household waste but be disposed of as electrical and electronic equipment, under the WEEE rules that apply where you are. Take the battery pack out first (see Replacing the battery pack (p. 24)); it is disposed of separately under the rules for batteries — collected and treated apart from other waste, and recycled. Analyt-MTC can tell you how to comply.

APPENDIX A

Menu map

All menus of the monitor, starting from the main menu (press **ENTER** on the welcome screen). Most menus also have a **Cancel** entry, not listed here. The right-hand column shows where each function is described.

Menu	Entry	Next screens	See
RUN			
Run	**Run - Continue** / **Run - Overwrite** / **Alm - Continue** / **Alm - Overwrite**	Overwrite: confirm **Yes** / **No**; then the data record screen	Starting the measurement (p. 17)
REVIEW DATA			
Review Data	**Statistics**	**Review Tag** / **New Tag** › Tag Select; then five statistics screens	Statistics of a measurement (p. 19)
	Download	**To Data Collector** › Transmitting	Downloading the data to a PC (p. 22)
SPECIAL FUNCTIONS			
Special Functions	**System Options**	Menu below	
	Date/Time	**View Date/Time**; **Set Date/Time** › confirm **Set Date/Time** or **Cancel**	Setting the date and time (p. 12)
	Set Alarm	Alarm concentration, mg/m³	Alarm level (p. 16)
System Options	**Extended Options**	Menu below	
	Sample Rate	**1 Sec** / **10 Sec** / **1 Min** / **30 Min**	Sample rate (p. 15)
	Erase Memory	**Yes** / **No**	Erasing the memory (p. 13)
Extended Options	**Size Select**	Menu below	
	Battery Status	Battery voltage	Checking the battery status (p. 10)
Size Select	**Select**	**Respirable** / **Thoracic** / **Inhalable**	Particle size (p. 15)
	Apply Scale	Particle size › scale factor	Setting the factor (p. 20)
	Restore Defaults	Scale factor back to 01.00	Restoring the standard factor (p. 21)
AUTO-ZERO			
Auto-Zero	**Auto-Zero**	25-second countdown, then main menu	Auto-zero (p. 16)

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