

BM-Dustdetector®

Operation Manual

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Description

The BM-Dustdetector is a portable measurement instrument, which can immediately analyse BM-Dustlifters and so determine the dust cover percentage on smooth surfaces.

Application

The BM-Dustdetector system is suitable for:

- Quality control of cleaning.
- Indoor environment.
- Evaluation of cleaning methods.

All results achieved with this instrument are the user's own responsibility. BM Environmental Engineering can therefore not be held responsible for results and measurements carried out with this instrument.

Starting

The BM-Dustdetector is supplied in a suitcase. Always use the suitcase when the instrument is transported. Be careful that no small parts get into the instrument!

On arrival the package must contain the following items:

- 1 BM-Dustdetector
- 1 BM-Dustroller
- 1 Battery charger
- 1 USB communication cable
- 1 CDROM with BMEE communication software
- 1 Operational manual
- 1 Warranty certificate

Storage

BM-Dustdetector may not be exposed to moisture or extreme temperatures. Please protect the instrument from vibration. Handle with care. The BM-Dustdetector can be used at temperatures between -10 to +40 degree Celsius.

BM-Dustlifters may not be exposed to bright sunlight, and they must be kept/stored at a temperature of max. 5 degree Celsius, to remain effective.

Always use the original suitcase to transport the BM-Dustdetector. Be careful that no small parts or dust get into the instrument.

Battery charger

Before using the BM-Dustdetector for the first time, charge the instrument for at least 2 hours.

Disconnect the battery charger when the red light on top turns off. When the BM-Dustdetector is not in use make sure that the switch on the bottom of the BM-Dustdetector is turned OFF. This will extend the lifetime of the battery.

Use the battery charger when Charge Battery message appears in the display of the BM-Dustdetector.

Measurement procedure

The measurement procedure is according to the flowchart in appendix A.
The BM-Dustdetector has two different measurements. Turn the BM-Dustdetector on and follow the instructions below.

Measurement 1

USE MEMORY [No] Measurement without storing the results.

Measurement 2

USE MEMORY [Yes]

TRANSFER SAMPLES [No]

USE OLD DATA [Yes] Start a new measurement and store the results with the old data.

or

USE OLD DATA No]

CLEAR MEMORY [Yes]

SURE TO CLEAR [Yes] Start a new measurement.

Before starting a measurement, the BM-Dustdetector will perform a self test to check the laser and the condition of the battery which will take 20 seconds.

Remove the cover foil from the BM-Dustlifter, and place it in the slot of the BM-Dustdetector. It is important that the sticky side of the BM-Dustlifter faces the open side of the slot. Push [REF] to adjust the BM-Dustdetector to the used lifter.

Next, take an impression of the surface for examination, by pressing the BM-Dustlifter with the sticky side against the surface and roll the BM-Dustroller over the lifter. Press the BM-Dustroller on the lifter until the metal tab of the roller touches the line on top of the handle. The pressure should be 10 Newton. Too much pressure may deform the BM-Dustlifter.

Pull the BM-Dustlifter carefully off the surface and put it in the slot. Press the [%]button. The dust percentage from the examined surface, will be shown on the display. If USE MEMORY [Yes] was selected, the BM-Dustdetector asks you to store the result [Yes] or [No].

You can then make another measurement with a new BM-Dustlifter by repeating the procedure [REF] and [%] or end the measurement by pressing [ON/OFF]. A BM-Dustlifter can only be used once or the result will be incorrect.

We recommend three tests per surface to get an average for the dust level on the examined surface. The BM- Dustdetector will switch off automatically in ten minutes when no action is taken.

Communication Software

Software installation

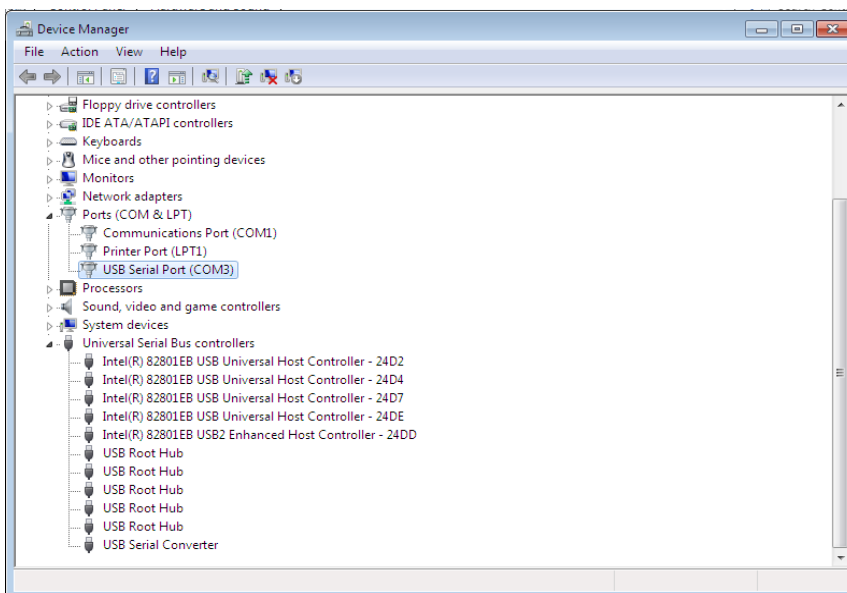
The software is supplied on a CD.

If you are using this software for the first time on a computer, this software and a driver (virtual com port) needs to be installed. This has to be done only once.

If the computer is connected with the internet this driver is installed automatically. If not you have to install the driver manually. For this you need to have administrator rights.

See appendix D for more information about the driver installation.

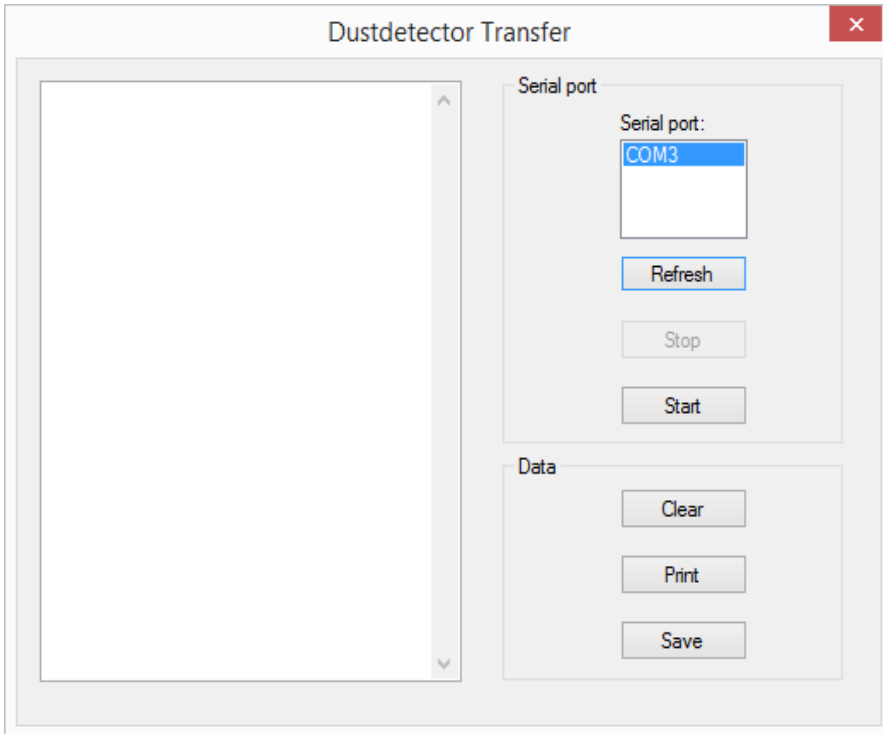
If the driver has been installed correctly and the Dustdetector is connected to the computer, a USB Serial Port (COM?) should be visible in the Device Manager.



To transfer the samples from the BM-Dustdetector to a PC, connect the USB cable between the BM-Dustdetector and the PC and turn the BM-Dustdetector on.

A USB Serial Port (COM XX) is now added to your system. This can be checked in the Device Manager.

Now the Dustdetector Transfer Program can be started, but first turn the Dustdetector on.



Make sure the correct comport is being used. In the Device Manager the right comport can be found.

Use the “Refresh” button to display all available comports.

Select the right comport and click on the Start button.

The comport setting can be changed in the Program → Setting menu.

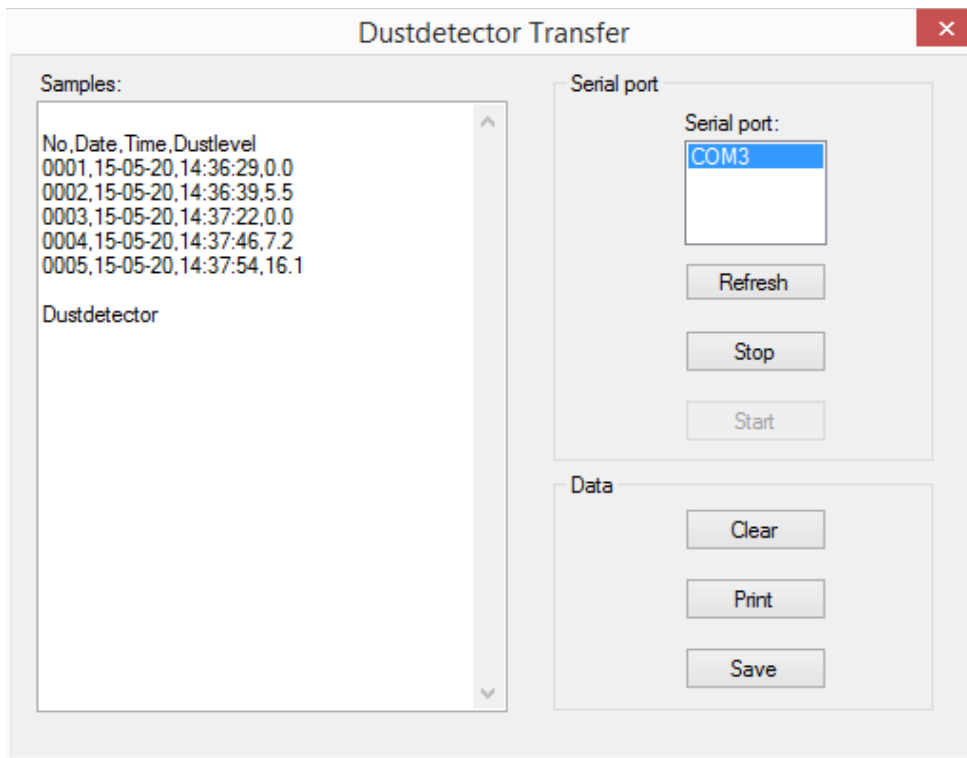
Now start the transmission on the BM-Dustdetector by doing the following steps on the BM-Dustdetector:

USE MEMORY [Yes]

TRANSFER SAMPLES [Yes]

The samples are now being transferred and after a short while the message appears in the screen of the BM-Dustdetector, saying “Transfer completed”. The BM-Dustdetector is turns now automatically off.

In the screen of the Dustdetector Transfer Program the samples are now visible.



The samples can be stored to a csv (comma separated values) by pressing on the Save button. This file can be opened by any spreadsheet program or word processor.

By pressing the Clear button de list of samples will be cleared.

The Print button will print the samples.

The Stop button will release the previous selected comport.

Technical Specifications

BM-Dustdetector
Weight: 2,9 kg
Size: 340*105*83 mm
Battery: 1* 6V, 1.2Ah
Laser: Class 2

BM-Dustlifter
Size: 30*70 mm

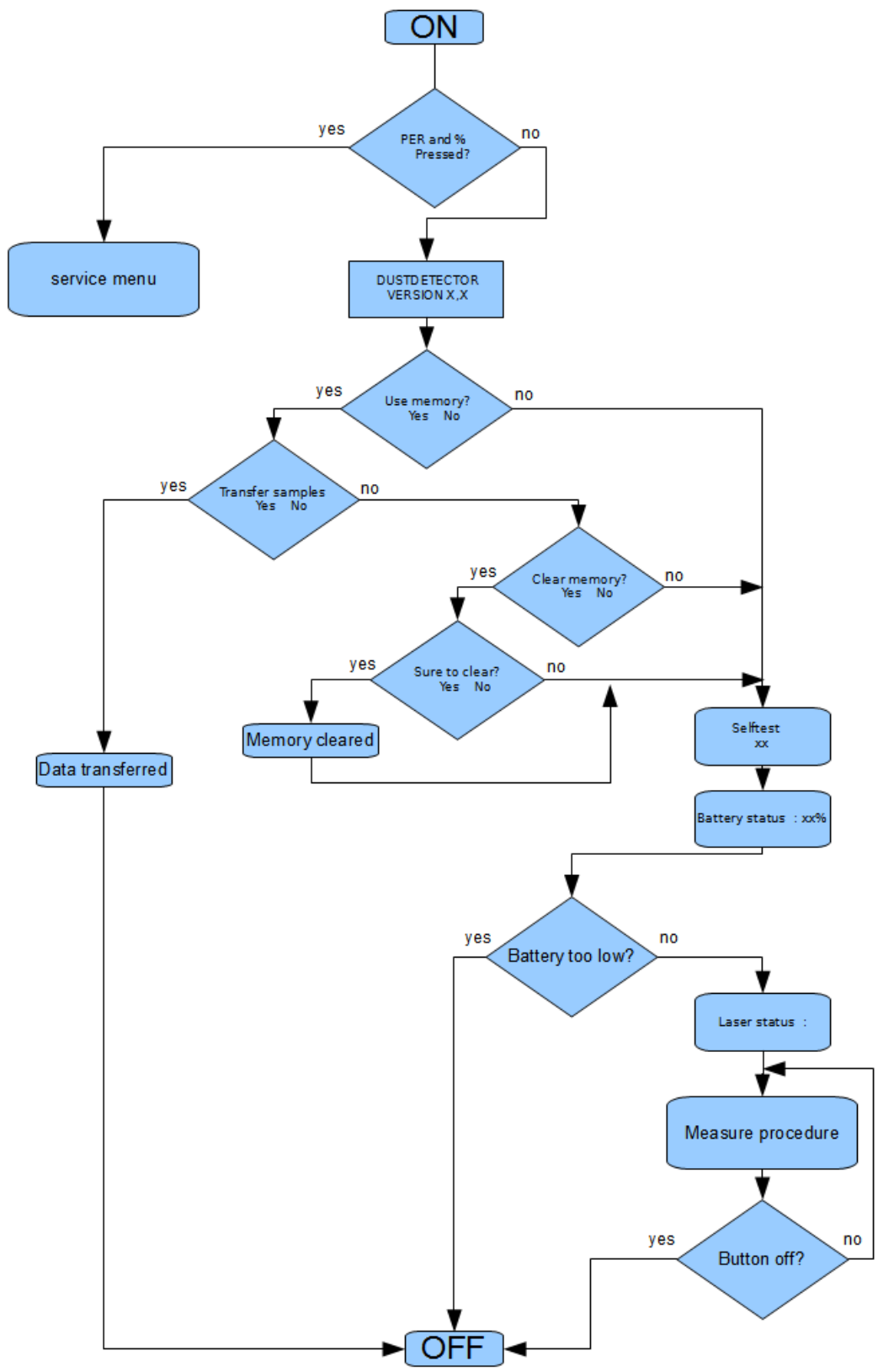
Battery charger
Input: 100-240VAC - 50/60 Hz - 10W
Output: 6VDC/ 800 mA / 4,8 VA

Warranty

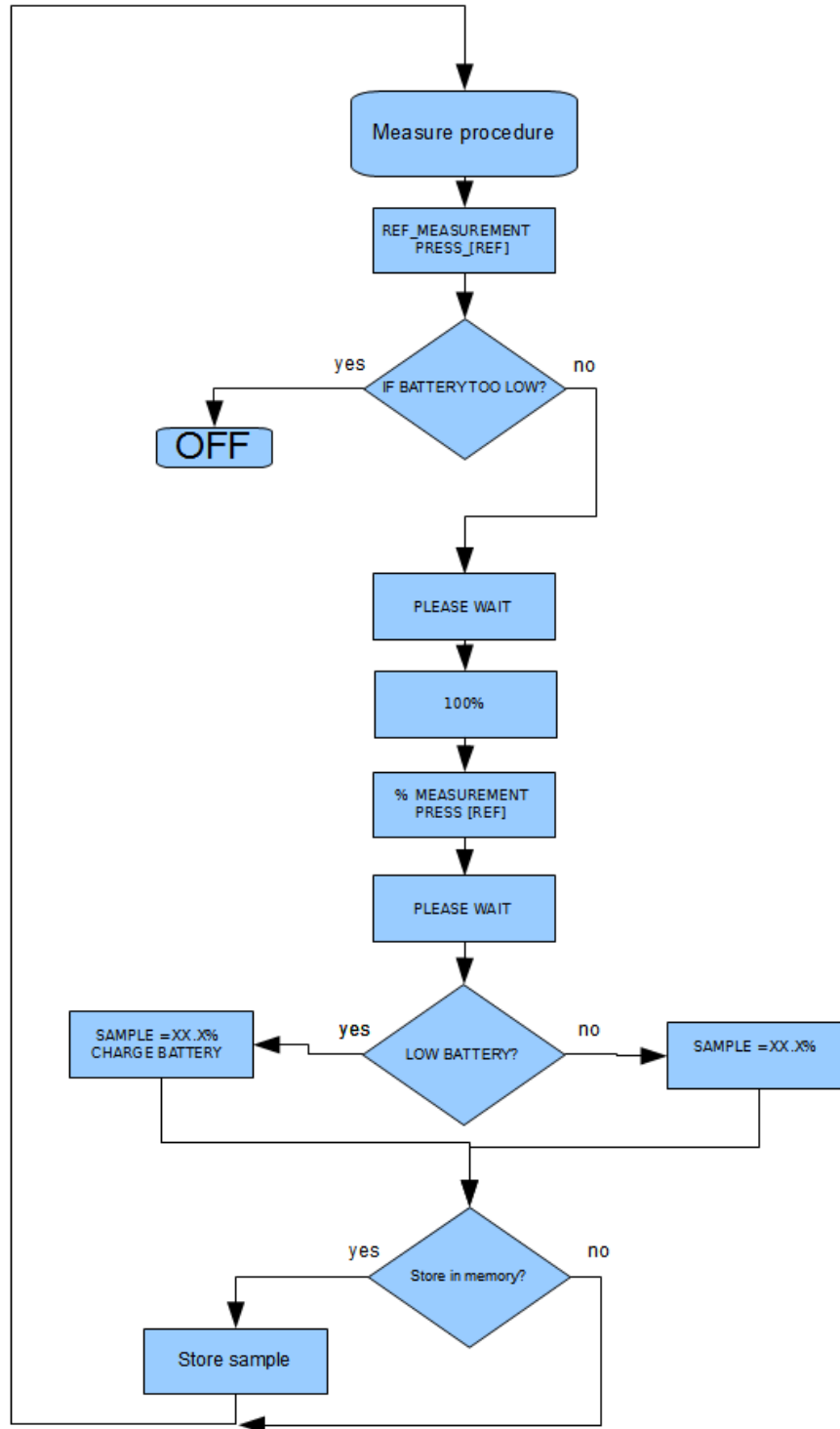
The BM-Dustdetector manufactured by BM Environmental Engineering is covered by replacement warranty for all parts and labour for a period of 12 months from time of purchase, provided that:

1. The manufacturer is notified in writing within fourteen days of the alleged defect first coming to the purchaser's attention and that such notice is given within the warranty period.
2. That the complete package is returned promptly to our Technical Support office. All freight charges are the owner's responsibility.
3. The warranty card is completed and mailed within 30 days of purchase.
4. Any unauthorized repairs or alterations to the BM-Dustdetector will invalidate this warranty.

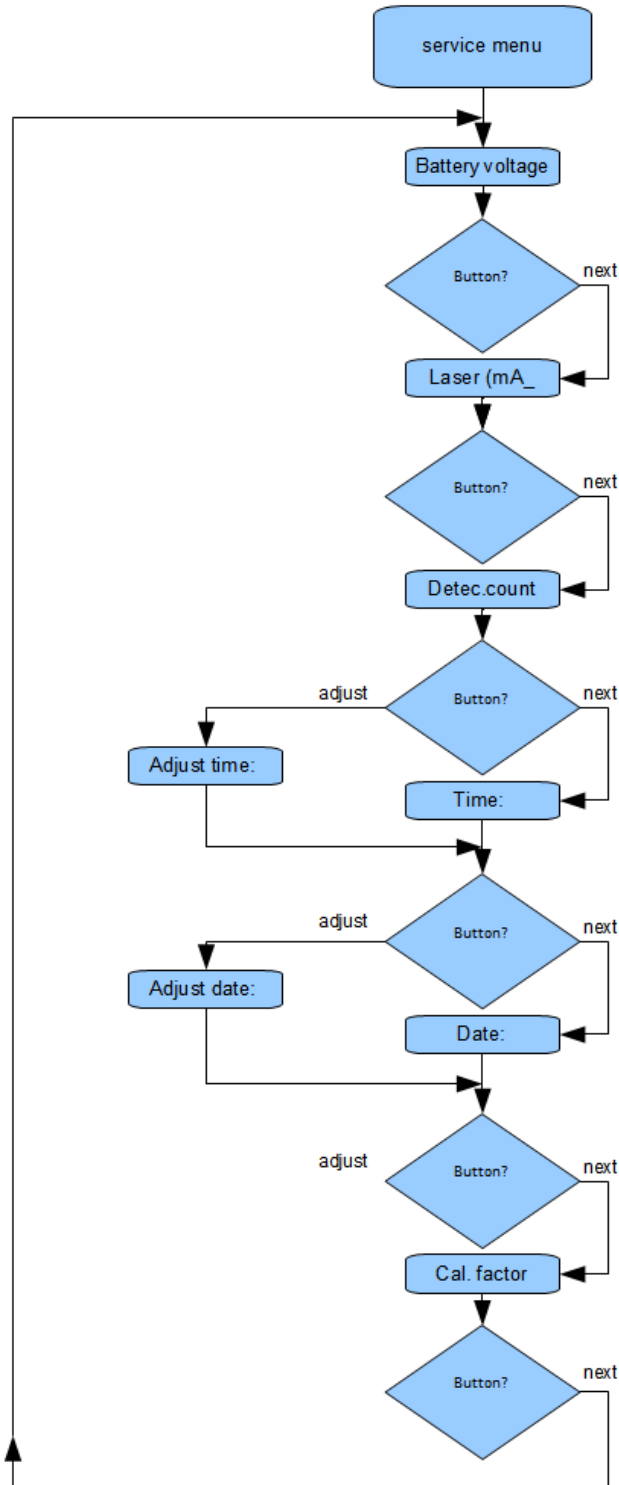
Appendix A: Flowchart Main program



Appendix B: Flowchart Measurement



Appendix C: Flowchart Service menu



Appendix D: installation of the PC driver.