

**Technical data**

Measuring unit:	case model, 500 mm x 440 mm x 190 mm (w x h x d), approx. 13 kg
Pump:	case model, 350 mm x 240 mm x 220 mm (w x h x d), approx. 12 kg
Sample probes:	case with dust and humidity probe, 1570 mm x 120 mm x 230 mm (w x h x d), approx. 6 kg; max. cable length / max. distance to measuring unit: 5 m - dust probe: length: 1550 mm; immersion depth: max. 1350 mm - humidity probe: length: 950 mm; immersion depth: max. 650 mm
Balance:	case with precision hot balance, 240 mm x 300 mm x 430 mm (w x h x d), approx. 10 kg
Accessories:	all necessary cables, hoses, filter elements as well as thermal printer; case with accessories: 410 mm x 370 mm x 210 mm (w x h x d), approx. 9 kg
Measuring gas temperature:	max. 280 °C
Dew-point spread of measuring gas:	min. +5 K
Instrumentation opening:	3"
Ambient temperature:	0...50 °C
Optimal dust content:	1...100 mg/m ³
Power supply:	230 V AC / 50 Hz, 200 W
Inputs:	2x analogue input 4...20 mA for registration of the measuring values of present automatic dust measuring systems
Display/operating:	pivoting graphic display integrated in the measuring unit; complete evaluation of measuring results; Languages: German, English, other optional (Latin characters)
Data output:	via Compact-Flash memory card (1 GB) or printer
Weighing process:	semi-automated, weighing accuracy < 1.0 mg expenditure of time per filter: 1st weighting approx. 5-30 min, every further weighting approx. 3-15 min
Measuring ranges:	- dynamic pressure: 0...10 hPa - static pressure: -300...+300 hPa - barometric pressure: 700...1100 hPa - volume flow rate (sampling): 5...60 l/min - temperature (previous to flowmeter): 0...95 °C - temperature (exhaust): 0...280 °C - humidity: 0...40 vol. % - response time: < 8 s
Optional:	- for real-time measurement of dust content : tribo-electric dust sensor PFM 13 - for measurement according to DIN EN 13284-1: - plane filter - large basket filter - fine dust filter

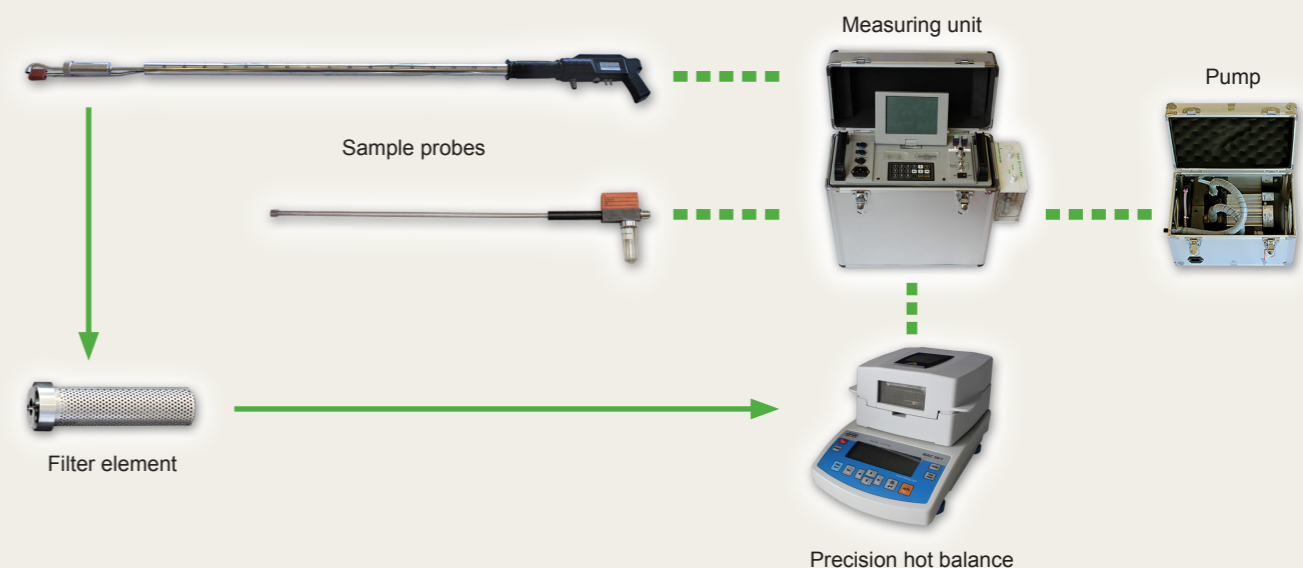
Special models are possible on request.**GMD 13****Product Information****Patented world innovation!**
Sampling and weighting
in one system on location

The GMD 13 is a compact and high-grade automated system for isokinetic gravimetric dust measurement in exhaust ducts and stacks in dependence on DIN EN 13284-1.

The gravimetric measuring device consists of measuring unit, pump, sample probes, precision hot balance and special accessories, e.g. filters. All components are inserted in separately portable cases.

Features

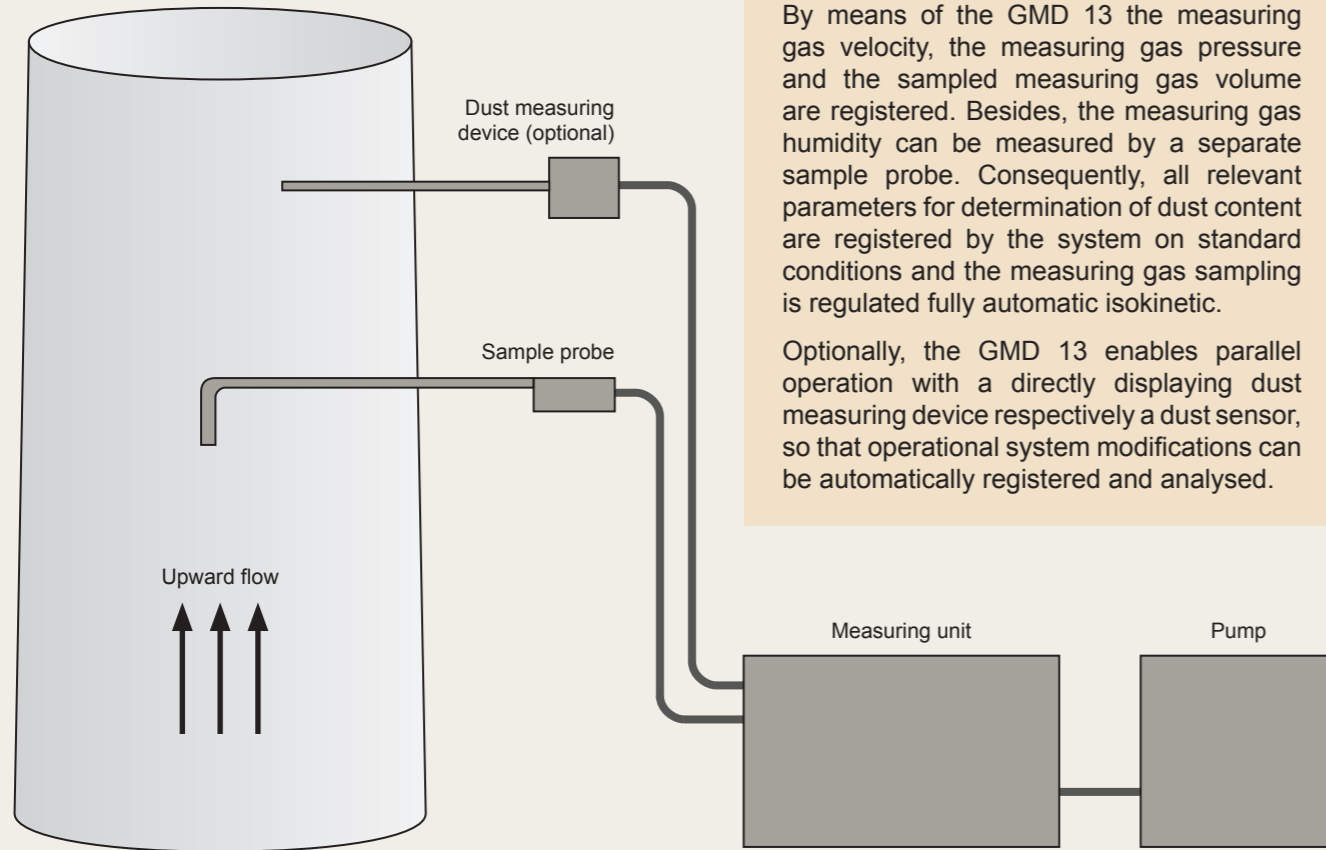
As the world-wide first measuring system the GMD 13 features an integrated hot weighting with the possibility of evaluation on location without additional laboratory equipment. The weighting is completely controlled and evaluated by the measuring unit. Easy and safe design of the system as well as project-based software provide precise measuring results.

Portable cases
(e.g. accessories)**Project-based software**

The software of the GMD 13 acts project-based. By different filters all measurements and settings of a measuring point are summarised in a project and evaluated together. Besides, the results of a weighting according to DIN EN 13284-1 can be input into the measuring unit and used for evaluation.

In the display at dust sampling the current duct values (temperature, pressure, velocity), the current gas sampling (flow, volume) and isokinetics are displayed. Furthermore, the pressure loss over the filter element and optionally the signals of the mA inputs are diagrammed during the measurement.

Installation example



Function

By means of the GMD 13 the measuring gas velocity, the measuring gas pressure and the sampled measuring gas volume are registered. Besides, the measuring gas humidity can be measured by a separate sample probe. Consequently, all relevant parameters for determination of dust content are registered by the system on standard conditions and the measuring gas sampling is regulated fully automatic isokinetic.

Optionally, the GMD 13 enables parallel operation with a directly displaying dust measuring device respectively a dust sensor, so that operational system modifications can be automatically registered and analysed.

Filters

The essential advancement of the GMD 13 is the patented method of hot weighting of the filter integrated in the measuring system. Thereby the extensive conditioning before and after the dust sampling does not apply and there is the possibility to determine the measured dust content promptly still on location.

The used filters consist of pressed fibre glass and are protected by a robust filter holder. The weighting of the complete filter element is admissible according to DIN EN 13284-1.

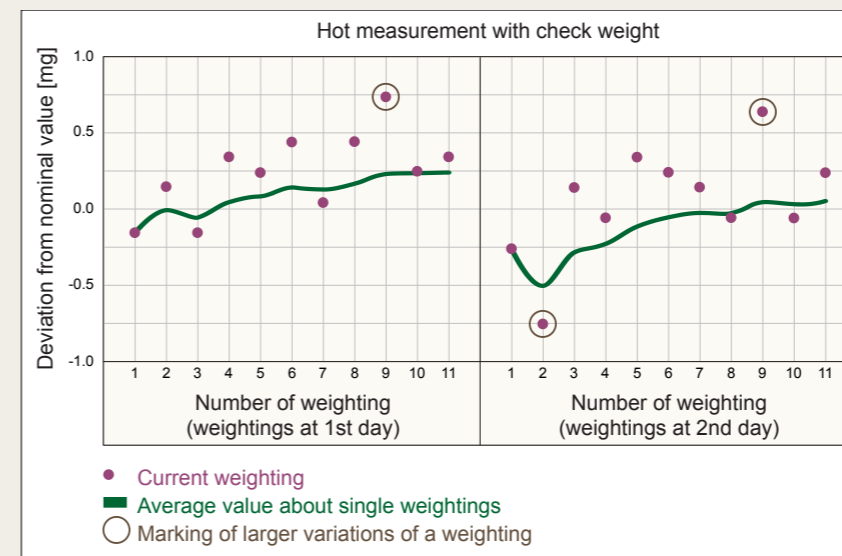


Value accuracy by hot weighting

The weighting with the precision hot balance is carried out before and after the gravimetric measurement. Thereby the control leads through the weighing process and adopts the measuring values. The weighting is carried out semi-automated with a weighing accuracy of less than 1.0 mg. By multiple weighting of the same filter element the weighing accuracy can be improved to 0.4 mg with passable expenditure of time. Already after approx. 3 to 5 weightings a steady average value results, so that precise measuring results can be achieved.

The figure of hot measurement with check weight shows typical measuring values of a multiple weighting at two measuring days with 11 weightings in each case. Already after the 5th repetition weighting the weighing difference of the determined average values lies under 0.25 mg. Even larger variations, for example by the large deviation of a single weighting (see marking), affect the average value non-significant.

A comparison of the determined dust contents by hot weighting with the GMD 13 and by weighting according to DIN EN 13284-1 with 32 measurements at the dust duct is shown in the lower figure.



Highlights of the device

- easy and safe handling of the complete system by separately portable cases
- weighting and evaluation with precision hot balance on location
→ economises transportation travelling, exsiccation and laboratory equipment (laboratory analysis additionally possible)
- semi-automated weighting process
→ no settings at precision hot balance necessary
- robust special filter element
- easy, menu-driven operating with project-based software
- selection of the appropriate sample nozzle is assisted by the measuring unit
- storage of the current measuring values during measurement for future analysis