



Calibration Gas Mixer GM1



Why settle for standard when you can have exceptional?

The GM1 Calibration Gas Mixer is a modular, scalable, and cutting-edge solution for precise gas dilution and humidity control.

Designed for calibrating and verifying the linearity of automatic gas analyzers, GM1 delivers accurate dilutions from various gas matrices or liquid solutions containing acidic compounds.

GM1 features an integrated, modular platform, perfectly suited for both laboratory and field applications. Its flexible design allows configurations from 1 to 3 MFCs, with options such as a vapour generator and ISO 17025-certifiable liquid flowmeter, all controllable locally or remotely.

Everything is housed in a single compact chassis - no external modules or additional hardware required.

Don't settle for standard. Choose excellence.

GM1 is built to perform - wherever you are.

Whether in the lab or in the field, GM1 is ready. It's housed in a rugged, portable case for mobile use, and can also be rack-mounted for permanent setups.

Its modular design supports 1 to 3 MFCs, with or without a vapor generator, all integrated into a compact enclosure: no need for external modules or extra hardware.

GM1 is also the ideal tool for verifying stack moisture absorption efficiency in accordance with EN14790, and for assessing the repeatability of adsorption lines for gas-phase compounds such as SO_x, HCl, or HF.

This allows GM1 to simulate real stack conditions, with controlled gas concentrations and humidity levels, using both gas cylinders and liquid solutions.

Unmatched modularity, maximum efficiency.

Experience precise control in gas dilution processes with our advanced system, featuring high-accuracy digital mass flow controllers (MFCs)

MFCs feature real-time thermal compensation algorithms tailored to the specific gas properties, and a dedicated automatic procedure allows them to be checked and calibrated using an external flow calibrator, such as the Dado Lab CF1.

With its advanced manifold panel, GM1 effortlessly handles up to 6 gases at once, giving you unparalleled flexibility in any testing scenario.

The manifold is designed for total adaptability: mount it front or rear to fit seamlessly into any setup.



Take full control of your dilution process.

The GM1 gives you complete traceability of every parameter and real-time digital acquisition of data from the analyzer under test.

It doesn't just monitor its own performance: GM1 acquires and logs directly from the analyzer under test, synchronizing both data streams into a clear, comprehensive calibration report that's ready the moment your test ends.

The integrated software supports multiple languages, includes built-in libraries for gas cylinders and aqueous solutions, and features an intuitive touchscreen interface.

It supports automated dilution sequences to reduce manual effort, while also offering a manual mode enhanced with intuitive smart synoptics. Everything you need, right at your fingertips.

Revolutionizing vapour generation The GM1 advantage.

GM1 introduces an innovative approach that overcomes the limitations of conventional technologies.

Unlike traditional systems, it does not require connection to proprietary scales for monitoring solution weight changes.

This eliminates the need for instruments that are sensitive to vibrations, cumbersome to use in the field, and often a source of significant uncertainty.

At the core of the system is the dosing pump, which can be automatically calibrated using any balance already available at the customer's site.

Liquid Mass Flowmeter? Only if you need it.

GM1 delivers outstanding performance even without a liquid Mass Flowmeter, as the dosing pump remains the central component of the system.

However, when GM1 is operated remotely without on-site supervision, immediate feedback on the generated flow becomes essential.

In such cases, you can choose the integrated Mass Flowmeter option, which also enables compliance with ISO 17025 certification requirements.

With a single procedure, both the flow generator (dosing pump) and the measuring device (liquid Mass Flowmeter) can be calibrated.

Total Control, in Real Time

GM1 provides real-time graphical visualization of the last 30 minutes for all MFCs, both gas and liquid.

This feature ensures proper stabilization of the generated value, confirming GM1 as the reference device for calibration and downstream instrument control.

One Solution, Endless Possibilities

GM1 generates vapour or acidic solutions with a single integrated instrument, guaranteeing less than 1% uncertainty in vapour concentration.



We've raised the bar for the evaporator, too.

The GM1 evaporator is engineered for precision and durability. Its temperature is finely adjustable, and the unit is thoroughly insulated to ensure optimal thermal performance.

At the heart of the design is the Dado Lab Locking Ring, a proprietary solution that prevents cold spots and preserves the integrity of the heated line over time.

When working with acidic solutions, frequent

cleaning is essential. That's why we developed a removable core system, allowing for quick maintenance and significantly reducing downtime and replacement costs.

Additionally, with a selection of interchangeable nozzles, you can control droplet size to ensure long-term generation stability tailored to your application.

The evaporator can manage a heated line of up to 10 meters in length for connecting the analyzer under test. The standard temperature sensor used is a PT100, with a TCK sensor available upon request.

Part number and accessories

Gas Mixer

300 107 0001	Gas mixer GM1-1 (no MFC)
300 107 0002	Gas mixer GM1-2 (no MFC)
300 107 0003	Gas mixer GM1-3 (no MFC)

Mass Flowmeter Controller

Standard accuracy

300 107 0200	Measurement system integration 2 NI/min 1% F.S.
300 107 0500	Measurement system integration 5 NI/min 1% F.S.
300 107 1000	Measurement system integration 10 NI/min 1% F.S.

High Accuracy

300 107 0201	Measurement system integration 2 NI/min 0,5% reading $\pm 0,1\%$ F.S.
300 107 0501	Measurement system integration 5 NI/min 0,5% reading $\pm 0,1\%$ F.S.
300 107 1001	Measurement system integration 10 NI/min 0,5% reading $\pm 0,1\%$ F.S.

Vapour generator

Delivered with 0.5, 1 and 2 mm inner diameter tubes and 1m cable

300 107 0005	Dadolab GM1 Vapour generator
300 107 0015	Dadolab GM1 Vapour generator 110Vac

Heated line control management

300 107 2001	Heated line temperature control management PT100
300 107 2003	Heated line temperature control management TC Type K

Heated line thermoregulated by the GM1

101 105 1029	Terminals for thermoregulated heated line with locking ring
101 105 1030	1m thermoregulated heated line [Max 10 meters]

Interfaces

300 107 2005	Ethernet interface w/ LAN socket for GM1
300 107 2010	8-channel 4-20 mA input acquisition module

Mass Flowmeter for liquids:

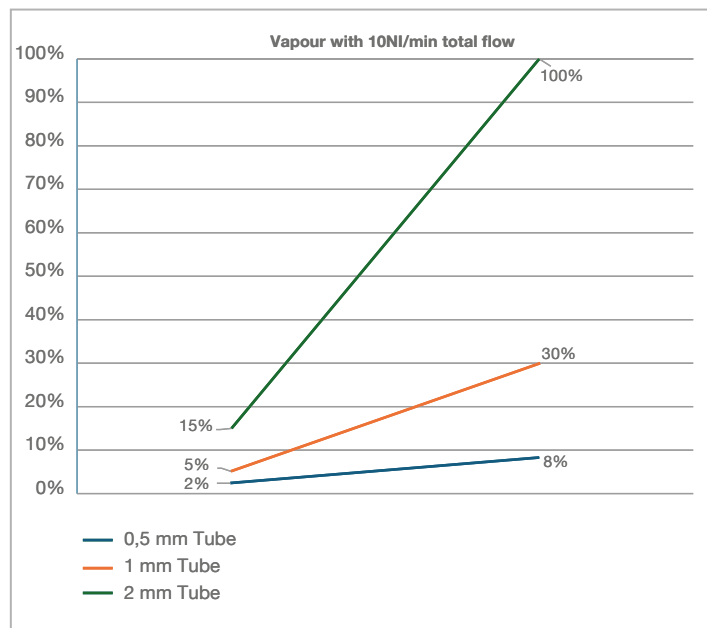
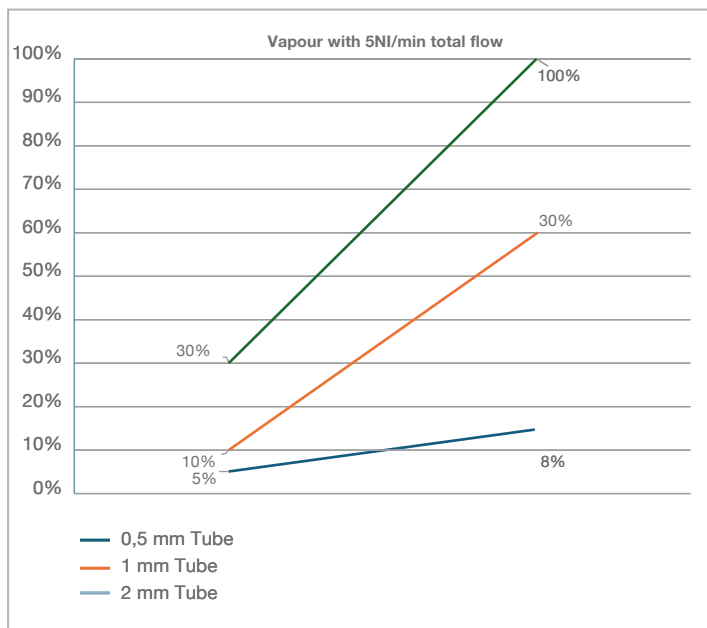
300 107 0100	Mass Flowmeter for liquids
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(ISO 17025 certification available upon request)

Technical characteristics

General Features	
Dimensions	4U 19" Rack in anodized aluminum
Case	IP54 with removable covers
Display	5-inch screen with resistive touch panel
Warm-Up Time	30 minutes with skip function
Language	English (11 languages available)
Connectivity and Interfaces:	Standard: Wireless, USB and RS232 (for analyzer data acquisition) Optional: Ethernet RJ45 and 8-channel acquisition module (4–20 mA inputs)
Storage	USB pen (included)
Power supply	230/110 Vac $\pm 10\%$ - 50/60Hz
Weight	16,5 KG with case
Mass Flowmeter Controller	
Number of Pneumatic Lines	1 to 3, with 4-way manifold on line 2
Inlet pressure	2÷4 bar(g)
Pneumatical connections	Configurable upon request using fittings of 3, 6, or 8 mm, either with AISI316 Swagelok double ferrule nuts or quick-connect fittings. Standard configuration includes: Line 2 inlet: AISI316 Swagelok double ferrule nut, 3 mm Line 1 and 3 inlet: AISI316 Swagelok double ferrule nut, 6 mm Outlets: AISI316 Swagelok double ferrule nut, 6 mm
Manifold Material	AISI 316
Other Contact Materials	PTFE, Viton O-rings. Additional configurations available upon request
Mass Flowmeter Controller	Available in Standard Accuracy (Std) and High Accuracy (H.A.) versions
Full Scale	2-5-10 NI/min. Other flow rates available upon request When paired with the vapour generator, MFC1 should be 5 NI/min or 10 NI/min.
Accuracy and Linearity	$\pm 1\%$ FS (Std) / $\pm 0,5\%$ Reading $\pm 0,1\%$ FS (H.A.)
Repeatability	<2% Reading
Thermal Sensitivity	Zero: < 0,1% FS/°C (Std) < 0,05% FS/°C (H.A.) Span: < 0,1% Rd/°C (Std) < 0,05% Rd/°C (H.A.)
Evaporator	
Material	AISI 316
Temperature	Up to 240°C (user-selectable)
Heating power	600W @ 230 Vac
Dosing pump	Digital speed control
Inner tube diameter	Standard supply: 0.5 – 1 – 2 mm
Uncertainty/Repeatability	Less than 1% in vapour concentration (excluding MFC contribution)
Liquid mass flowmeter	
Full Scale (H ₂ O)	5000 mg/min
Accuracy	$\pm 0,2\%$ FS
Repeatability	$\pm 0,02\%$ FS

Vapour



Dimensions (mm)

