

flowcom2

**Gas compensation and energy quantity calculator**  
Precise, simple, safe

# flowcom2

## Gas compensation and heat calculator



**systemec**  
CONTROLS

# The intelligent compensation and energy calculator

It was practically impossible to find a compensation computer that met the high demands of current applications in terms of performance and quality. The flowcom2 from systec Controls closes this gap. Without compromise and exactly as users want it. The flowcom2 is produced in Europe and fulfils the high quality requirements that systec Controls also places on all its other products.

## The function of the flowcom2

The flowcom2 compensates for the error of flow meters caused by pressure and temperature and calculates mass or standard volume flows of gas or steam - even for two measuring points simultaneously. In the saturated steam, superheated steam, water and heat or cold carriers, power and total heat are calculated. This can be done for a single pipe or for a feed- and return system.

## Why the flowcom2 calculates more accurately

The determination of densities and enthalpies in gases, vapour and heat transfer media using models is problematic. All model equations are subject to errors and only provide satisfactory results in a limited range. Especially at high pressures and low temperatures, near phase transitions or around the critical point, many model equations are completely unusable.

The flowcom2 has a large number of tables permanently stored in which the medium states in the technically relevant pressure and temperature range are contained. You can also easily upload your own tables. If no tables are known for a medium, the flowcom2 can of course also calculate according to the relevant model equations.



### Important features at a glance:

- Easy to setup
- The electronics are calibrated
- Large data memory, easy data readout
- Interfaces RS485, USB, Modbus
- Splitting range or averaging
- Large fluid tables stored with density and enthalpy values
- Customised tables can be uploaded
- Can also calculate model equations
- Suitable for all common flow measurement methods

# Advantages and possible applications of the flowcom2

## Unique advantages and diverse application possibilities

- Two complete flow measurements with pressure and temperature compensation in one computer. This enables two separate measurements, feed-return balances, summation, redundant, averaging or splitting range operation.
- Suitable for all common flow meters such as deltaflow pitot tube, orifice plate, nozzle, venturi, vortex, turbines, Coriolis, magnetic flowmeters...
- Power supply for all connected two-wire transmitters from the flowcom2.
- Programming in plain text menu on large, menu-guided display via integrated front keypad or with self-explanatory flowcom2 communication software via USB interface.
- All physical units are freely selectable (metric, SI, US...).
- Calibrated electronics: The error of the analogue components is compensated by a factory calibration.
- Data memory for recording 2,600 data records consisting of pressure, temperature, standard volume and mass flow or output, user-defined recording interval.
- Comprehensive alarm log for fail-safe registration of past alarm states including transmitter monitoring and power failures. Fault occurrence and fault rectification time are also logged.
- Integrated password protection.

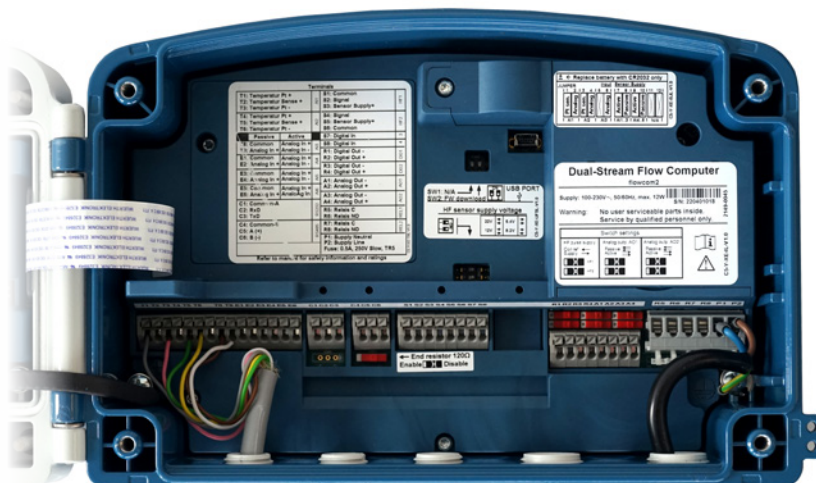
## The flowcom2 for gas and energy

- Fixed compressibility tables for: Air, nitrogen, carbon dioxide, methane, oxygen, hydrogen.
- Possibility to enter user-defined compressibility tables (14 x 18 interpolation points).
- Possibility to calculate density according to an improved, ideal gas equation.
- The flowcom2 is capable of calculating natural gas according to the GERG88 equation. This equation was developed for billing purposes and approved by all major European natural gas suppliers such as Ruhr-Gas (D), British Gas (GB), Distrigaz (B), Gaz de France (F), N.V. Nederlandse Gasunie (NL), S.N.A.M. S.p.A. (I) and the PTB (D). The GERG88 is significantly more accurate than the previously used AGA NX-19-mod. for L-gas and AGA-NX-19-mod. BR. KORR. 3H for H-gas.

In addition to flow compensation, flowcom2 also calculates power and energy in common heat and cooling media. These can be both vapour and liquid. With flowcom2 for energy, a balance between circuit 1 and 2 is also possible, as well as the energy balances of a consumer via flow and return.

## The most important advantages of flowcom2 for energy quantity calculations

- Integrated tables for the enthalpies and densities of water, saturated steam and superheated steam.
- Uploading your own density and enthalpy tables such as e.g. ammonia as a vapour or liquid is possible.
- Calculation according to an improved, ideal gas equation.
- Simple calculation with constant heat capacities, such as with thermal oils.



# flowcom2

**Also masters difficult flow profiles, is easy to parameterise**

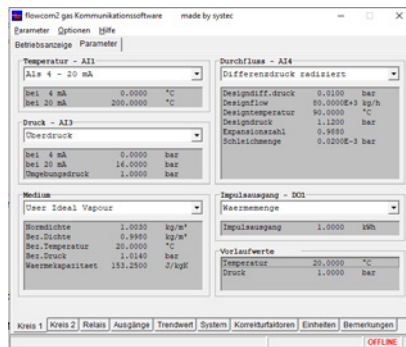
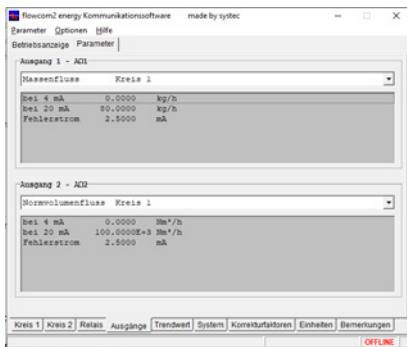
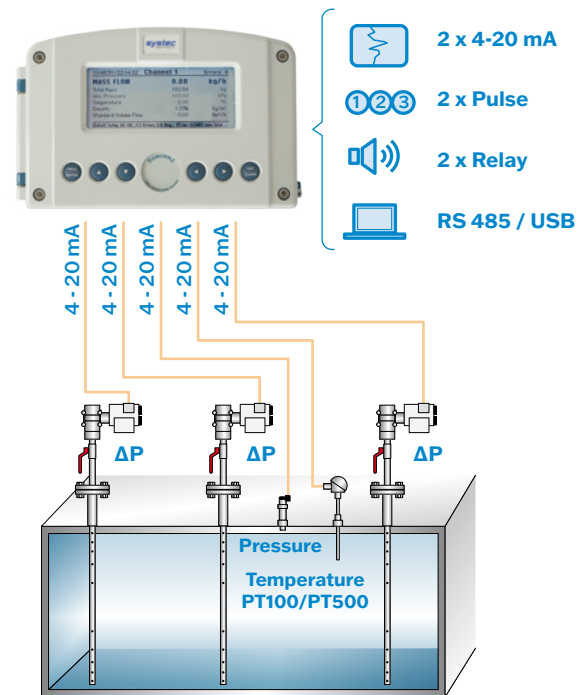
**Application example “Averaging”**

flowcom2 also masters difficult flow profiles. The inlet sections are often very short, especially in pipelines and rectangular ducts with large cross-sections.

system Controls has developed a powerful complete solution for this problem. From up to four deltaflow dynamic pressure probes the flowcom2 calculates the average value. This means that even extreme flow asymmetries can be compensated for.

**Making work easier: flowcom2 communication software**

The flowcom2 communication software enables simple and clear setup and readout of all data. It can not only be used to read out the current operating status, but also to record previous alarm statuses, the last eight meter totalizers and much more.



# flowcom2

## flowcom2 calculator - Technical data

General information	
Digital interfaces	RS485 (Modbus-capable), USB
Supply of the inputs and outputs	All analogue inputs and outputs are supplied either externally or internally by the flowcom2. Configuration is simple using jumpers.
Power supply	100-240 VAC or 16-27 VDC.
Display	Graphics-capable, with backlighting; 121 x 52 mm (4.8" x 2.0") ideal for simple device parameterisation
Keyboard	6 silicone buttons, UV-resistant
Language	English, German
Setup	Via keypad and display or via communication software
Housing	Die-cast aluminium housing for field and control cabinet mounting on DIN rail (optional)
Protection class	IP65/IP67 (IP66 - NEMA 4 x in preparation)
Operating conditions	Temperature -40°C to +55°C (-40°F to 131°F), Humidity max. 95%, non-condensing
Insulation	All inputs are isolated from the communication ports. This applies to the power supply and the passive and analogue outputs.
Resolution	Analogue inputs and outputs: 12 Bit (< 0.05%) Pt100: @0°C (100 Ω) / @500°C (280 Ω) <±0.15°C / <±0.35°C Pt500: @0°C (500Ω) / @400°C (1235Ω) <±0.75°C / <±1.7°C
Calculation accuracy	< 0.05%

Inputs	
Flow channels	2 independent flow channels, suitable for flow meter types: dp transmitters (orifices, nozzles, venturis, V-cones). Pulse-generating type (turbine meter) and flow meter with linear, analogue output signal
Analogue inputs selectable as active or passive	2 x temperature (4...20 mA or PT100/500), 2 x pressure (4...20 mA), 2 x flow rate (4...20 mA or frequency input)
HF pulse	2x HF pulse inputs, individually configurable (NAMUR, coil, PNP, NPN, reed sensor or active input).
Pulse inputs	Voltage setting-dependent max. 27 V; max. 10 kHz

Outputs	
Analogue	2 configurable analogue (4-20 mA) outputs, selectable as active or passive.
Digital	2 configurable isolated NPN outputs: Pulse, alarm or switching output. Frequency max.100 Hz. Modbus RTU (RS485)
Relay	2 configurable relay outputs: Alarm or switching output.
Dimensions	
Housing	240 x 150 x 95 mm (6.45" x 5.91" x 3.74")
Display	121 x 52 mm (4.8" x 2.0") - 256 x 121px.
Weight	2,5 kg (5.51 lbs)

### Important information for your order:

- Voltage VAC or VDC
- Languages German and English
- Parameterisation by systec Controls possible?

## Flow metering technology „by systec“

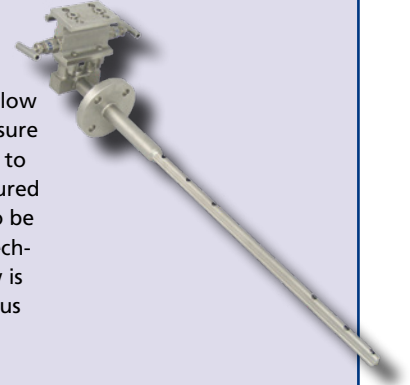


### deltawaveVER2 flow meter for channels, pipes and rivers

deltawaveVER2 measures the flow of water and wastewater according to the multi-path ultrasonic transit time difference principle. Thanks to this and modern digital signal processing, accuracies of better than 0.5% are achieved. The deltaxwaveVER2 can operate up to 16 paths to increase measurement accuracy and redundancy. Precise, reliable and practically maintenance-free, deltaxwaveVER2 is predestined for demanding monitoring, control and billing measurements in accordance with ISO 6416, ISO 60041 and ASME\_PTC\_18.

### deltaflow flow measurement for gas, vapour and liquids

The deltaflow pitot tube has proven its effectiveness a thousand times over for measuring the flow and volume measurement of gas, steam and liquids in pipes. Pitot tubes induce the lowest pressure loss of all differential pressure elements, which means that many applications can look forward to energy savings of several thousand Euros per year. With an accuracy of up to 0.4% of the measured value as tested by the Physikalisch-Technische Bundesanstalt (PTB), the deltaflow probe can also be reliably used in the most adverse conditions. deltaflow is extremely robust and TÜV (German Technical Inspection Agency) tested for use in condensing, aggressive and dirty flue gases. deltaflow is available for pipe diameters from 1 mm – 15 m and a pressure level of up to 690 bar and can thus be used for the vast majority of flow applications.



### deltaflowC2

The deltaflowC2 measures the mass flow of gases in pipes and channels. Thanks to the integrated differential pressure, pressure and temperature sensors and patented microprocessor technology, measurement accuracies of greater than 2% can be achieved. The deltaflowC2 is particularly impressive on the strength of its high dynamic performance, zero-point stability and ease of operation. In addition, deltaflowC2 offers multiple connection options to your process control system with 4...20 mA, 0...10 V, pulse output, CAN and Modbus. Practical, maintenance-free and available at good value for money, deltaflowC2 enables you to keep your process costs under control.



The head office of systec Controls is located in Puchheim, near Munich. Here, we develop and manufacture our products according to DIN EN ISO 9001. But innovation and product quality alone are not enough for us. We have also had our systems tested by independent institutes – with

clear, proven success. And of course, we are there for you even after the installation of your system. Our service-crew will assist you at your plant. systec Controls – the specialist in flow measurement technology.

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