



GS-01N

Compressed Air Counter with Switching- and Analogue-Output

Description:

The GS-01N series compressed air counter is a thermal mass flow-meter for gases according to the principle of hot-wire anemometer that is equipped with an electronic unit that has been developed specifically for applications in the field of industrial compressed air. A calorimetric measuring unit consisting of a heated and a temperature measuring resistor form the sensor component of the GS-01N. A volume of compressed air passing through the measuring tube carries off the heat from the heated resistor that is proportional to the velocity. The resulting electrical change of the heated resistor is evaluated by means of the measuring bridge and the effect of media temperature is compensated by the measuring resistance. The extremely user-friendly designed electronic unit has two outputs which can be adjusted optionally as a PNP transistor output for incorporating a limit value switch or an impulse output or as an analogue output for transmitting a 4...20 mA signal (for flow, temperature or pressure). Thus, the possible combinations of outputs for the GS-01N are:

- / **2 x NO-contacts / NC-contacts**, adjustable with regard to position and hysteresis of the setpoint or as Window function
- / **1 x NO-contact / NC-contact** and an additional analogue output (scalable) or
- / **1 x NO-contact / NC-contact** and an additional impulse output (programmable).

The rotatable 4-digit digital display on the GS-01N displays either the accumulated sum of the compressed air flow (consumption of compressed air) in Nm^3 or the current value of the flow in Nm^3/min or in Nm^3/h optically. The maximum value that can be displayed is $4000 \cdot 10^3 \text{m}^3$ where at such high values a yellow LED indicates that the displayed 4-digit value must be multiplied by the factor 1000. On pressing a button, the device can display the current media temperature and the accumulated sum after the last counter reset. Using a programming device, the display can be adjusted to let it remain switched off in RUN mode. An automatic Reset function of the totalizer can be programmed to different time intervals. In addition, the GS-01N has a minimum and a maximum memory that can store the lowest and the highest value measured until its next resetting.

Features

/ **New:**

Temperature monitoring and pressure monitoring included

/ Analogue or pulse output

/ Display of current value or total

/ Can be used as preselection counter

/ Independent of pressure and temp.

/ Max. and min. value memory

/ Low pressure drop

/ Additional temperature monitoring



Application:

Today, consumption of compressed air in machines and equipment is a cost factor that cannot be ignored at all. Due to this fact the consuming industry increasingly demands measuring devices which, on the one hand, help satisfactorily monitor consumption of compressed air and, on the other hand, do not cause additional pressure drop within the system which in turn would further escalate costs. The new compressed air counter GS-01N is our answer to this problem. It enables visual check of current consumption on a clearly readable display and, it can display the volume of compressed air consumed up to a point like a „water clock for air“ and store the value. Two programmable switching contacts trigger an alarm in the event of exceeding or falling short of a defined volume flow and, optionally, they can be programmed using window technology. It means that a defined range is considered as „good“ and, on escaping this Window alarm is sounded. Optionally, the user may avoid one of the switching outputs and, instead, opt for an impulse or analogue output or program the switching output as the preselection counter. The fact that the GS-01N is a mass flowmeter based on the thermal principle also underlines the advantages of measuring volume flow largely regardless of pressure and media temperature and implies a pressure drop in the range of only few millibars.

The accuracy of $\pm 3\%$ of measured value + $\pm 0.3\%$ of full scale value and the option of operating range up to 700 Nm³/h round off a device that pays off within the shortest span of time, not the least, due to its excellent price to performance ratio.

The integrated temperature measurement enables temperature-sensitive processes, such as drying processes, to be monitored and the production quality to be ensured. The compressed air meter thus contributes to increasing process reliability.

Versions:

GS-01N Compressed Air Counter with Switching- and Analogue-Output

The GS-01N can be supplied in 5 versions with different nominal diameters and volume flow ranges measurable by them. The available connection sizes are: G1/4", R1/2", R1", R1 1/2" and R2". The tapping ranges are in the same sequence 0 - 18 Nm³/h, 0 - 90 Nm³/h, 0 - 270 Nm³/h, 0 - 492 Nm³/h and 0 - 840 Nm³/h. The sizes G1/4" and R1/2" are also available for argon, CO₂ and nitrogen.

Ordering Codes:

Order number	GS-01N.	1.	1.	1
GS-01N Compressed Air Counter with Switching- and Analogue-Output				
Size /				
0 = operating range 0.04 to 15 Nm ³ /h, connections in G1/4"-female				
1 = operating range 0.2 to 75 Nm ³ /h, connections in R1/2"-male				
2 = operating range 0.7 to 225 Nm ³ /h, connections in R1"-male				
3 = operating range 1.3 (1.5) to 410 Nm ³ /h, conn. in R1 1/2"-male				
4 = operating range 2.3 (3) to 700 Nm ³ /h, connections in R2"-male				
Medium /				
0 = compressed air (all sizes)				
1 = argon, CO ₂ , N ₂ switchable (only GS-01N.0, GSN-01.1 and GS-01N.2)				
Option /				
0 = no option				
1 = counter plug 4-pole series 713				



Technical Specifications:

Measuring/setting range for compressed air and gases (Ar, CO₂, N₂)

Values in Nm ³ /h	GS-01N.0.0/1	GS-01N.1.0/1	GS-01N.2.0/1	GS-01N.3.0	GS-01N.4.0
Display-range	0..18	0..90	0..270	0..492	0..840
Operating-range	0,05..15	0,25..75	0,8..225	1,4..410	2,5..700
Setpoint	0,13..14,99	0,65..74,97	1,9..224,9	3,6..409,8	5,9..699,7
Reset point	0,06..14,92	0,28..74,6	0,8..223,8	1,6..407,8	2,5..696,3
Analogue startpoint	0..12	0..60	0..180	0..327,9	0..560
Analogue endpoint	3..15	15..75	45..225	82,1..410	140..700
In steps of...	0,01	0,01	0,1	0,1	0,1
Process connection	G 1/4"-IG	R 1/2"-AG	R 1"-AG	R 1 1/2"-AG	R 2"-AG

Measuring, display and setting ranges refer to the standard volume flow according to DIN ISO 2533.

Volumetric flow quantity monitoring

Values in Nm ³ /h	GS-01N.0.0/1	GS-01N.1.0/1	GS-01N.2.0/1	GS-01N.3.0	GS-01N.4.0
Pulse value (m³)	0,001..10000000	0,001..10000000	0,001..10000000	0,001..10000000	0,001..10000000
In steps of... (m³)	0,0001	0,0001	0,0001	0,0001	0,0001
Pulse length (s)	0,01..2	0,002..2	0,007..2	0,004..2	0,002..2

Media /	compressed air, process gas	Medium temperature /	-10..60°C
Air quality (ISO 8573-1) at medium temperature 23°C /	class 141 (measuring errors value A) class 344 (measuring errors value B)	Ambient temperature /	0..60°C
Measuring errors /		Storage temperature /	-20..+85°C
Air quality A:	± (2% MW + 0,5% MEW)	Max. rel. humidity /	90%
Air quality B:	± (6% MW + 0,6% MEW)	Vibration proof /	5 g (DIN EN 68000-2-6, 55-2000 Hz)
Argon/ CO ₂ / N ₂ :	± (6% MW + 0,6% MEW)	Housing materials /	GS-01N.x.x.x:/ PBT+PC-GF30; PPS GF40; stainless steel (1.4301 / 304); stainless steel (1.4305 / 303); steel (1.5523) galvanised; 2.0401 (brass / CW614N); FKM
Temperature coefficient /	± 0,07 % MW 1/K	Sensor materials /	GS-01N.x.x.x:/ stainless steel (1.4301 / 304); stainless steel (1.4305 / 303); FKM; ceramics glass passivated; PPS GF40; Al ₂ O ₃ (ceramics); acrylate
Repeatability /	± (0,4 % MW + 0,1 % MEW)		
Response time /	< 0,1 s (dAP = 0 s)		
Damping for the switching output /	0..5 s		
Measuring dynamics /	1:300		
Pressure rating /	16 bar		
Min. bursting pressure /	64 bar		



Electrical Spezifikation:

Supply voltage / 18. . .30 VDC (to EN 50178 SELV/PELV)

Protection class / IP65, IP67

Current / < 80 mA

Polarity reversal protection / yes

Inputs / outputs

Number: 2 digital outputs, 1 analog output

Inputs: counter reset

Outputs /

Output signal: switching signal; analogue signal; pulse signal; IO-Link; (configurable)

Electrical version: PNP/NPN

Output function: normally open / normally closed; (parameterisable)

Max. voltage drop: 2,5 V

Power consumption: 150 mA; (per output)

Analogue current output: 4. . .20 mA (scalable)

Max. load: 500 Ω

Pulse output: consumed quantity meter

Short-circuit protection / yes; pulsed

Overload protection: yes

Electrical connection / connector: M12

Display /

Colour display: 1,44", 128 x 128 pixels
2 x LED, yellow

Pressure monitoring

Measuring range / -1. . .16 bar

Display range / -1. . .20 bar

Resolution / 0,05 bar

Set point / -0,92. . .16 bar

Reset point / -1. . .15,92 bar

Analogue start point / -1. . .12,8 bar

Analogue end point / 2,2. . .16 bar

In steps of / 0,01 bar

Response time / 0,05 s

Repeatability / ± 0,2% of the final value

Characteristics deviation / < ± 0,5% of the final value,
(BFSL = Best Fit Straight Line)

Temperature monitoring

Measuring range / -10. . .60°C

Display range / -24. . .74°C

Resolution / 0,2°C

Set point / -9,7. . .60°C

Reset point / -10. . .59,7°C

Analogue start point / -10. . .46°C

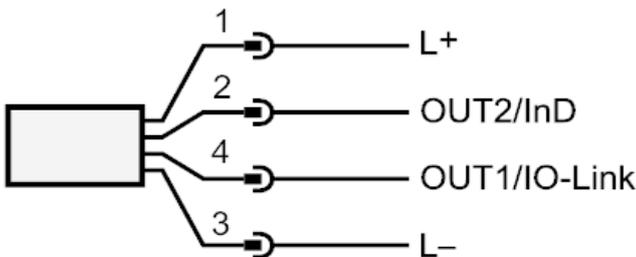
Analogue end point / 4. . .60°C

In steps of / 0,1°C

Accuracy / ± 0,5 K (medium flow in the limit area of the flow measurement range)

Dynamik T05 - T09 / T09 = 0,5 s

Connection diagram:



OUT1/IO-LINK /

- switching output flow
- switching output temperature
- switching output pressure
- pulse output quantity meter
- signal output preset counter

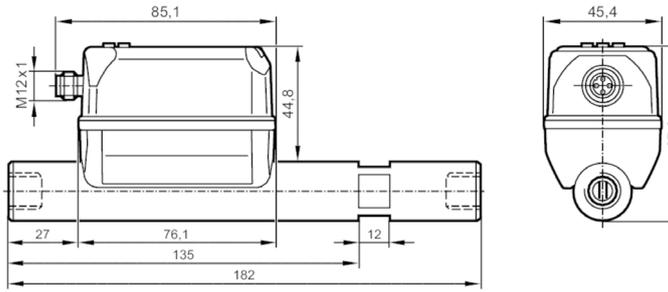
OUT2/InD

- switching output flow
- switching output temperature
- switching output pressure
- analogue output flow
- analogue output temperature
- analogue output pressure
- signal output preset counter
- pulse output quantity meter
- input counter reset

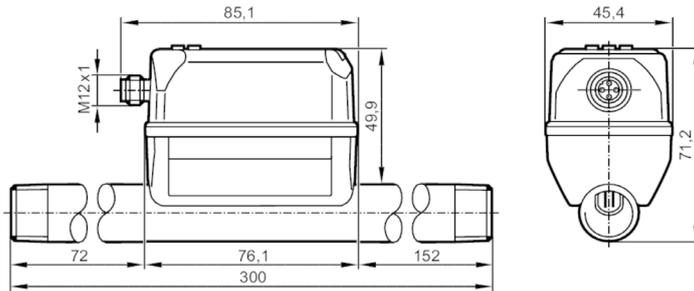


Dimensions in mm:

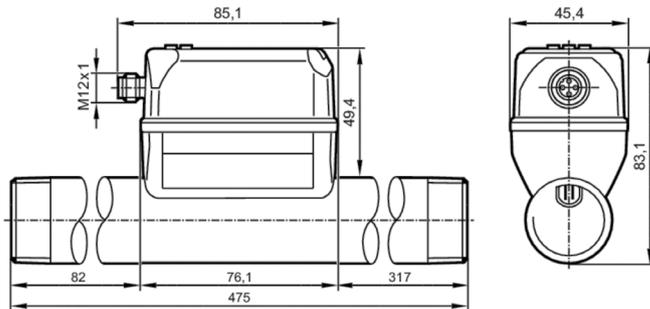
GS-01N.0



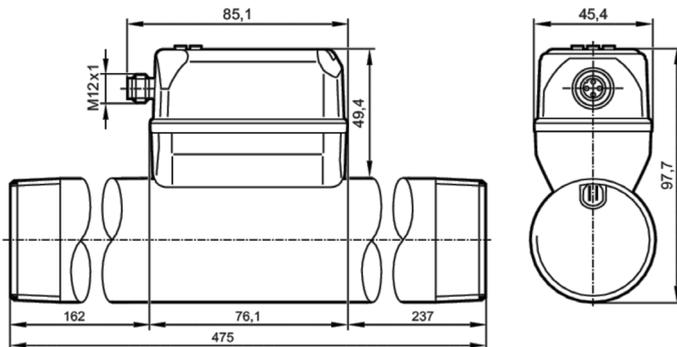
GS-01N.1



GS-01N.2



GS-01N.3



GS-01N.4

