

# Frequency Converter

AD-FM 300 GT

AD-FM 600 GT

## Description

The AD-FM 300 GT (1-channel) and AD-FM 600 GT (2-channel) are freely programmable frequency/analog measuring transducers with integrated display unit. Due to its multifunctional processing of the input frequency and the up to 2 analog outputs (current/voltage) per channel or the evaluable digital outputs, the device is optimally suited for the display of instantaneous flow rates with simultaneous evaluable counting pulse output for water meters with main and sub meters. Especially for large water meters with bypass, a scaled summation is integrated in the AD-FM 600 GT. Both the instantaneous flows and the counted quantities are output. A low level suppression is shiftable.

## Application

The main area of application is the through-flow measuring at water meters. Further applications are the measuring of rotation speed or energy consumption.



## Specific characteristics

- 1 (AD-FM 300 GT) or 2 (AD-FM 600 GT) channels in just one housing
- Inputs: NAMUR, contact, open collector, 3-conductor Opto, 24V activ
- Analog outputs: each channel 1 current and 1 voltage (synchronous)
- Digital outputs: relay respectively optocouple (puls function or limit contact)
- Scaled summation and shiftable low level suppression
- Programming directly on the device or free programming software
- DIN rail mounting

## Business data

### Order number

AD-FM 300 GT	1 relay output
AD-FM 300 GT-O	1 semiconductor output
AD-FM 600 GT	2 relay outputs
AD-FM 600 GT-O	2 semiconductor outputs

### Accessory (optional)

USB programming adapter	AD-VarioPass / AD-Studio
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## Information

### Downloads

Tender text  
Instruction manual

[fm600gt.zip](#)

[man-fm600gt-ad-de.pdf](#)



## Technical specifications

### Digital inputs

Input	NAMUR (EN 60947-5-6), reed contact, open-collector, 3-lead opto-transmitter or 24V active
Input frequency	min. 0 ... 10 mHz; max. 0 ... 10 kHz
Frequency generator supply	active: max. 10V/10mA; NAMUR:8V/8mA
Contact debouncing	activatable, pulse duration > 40 ms

### Current outputs

Output range	0 ... 20 mA; 4 ... 20 mA
Max. burden	400 Ohm
Residual ripple	< 50 µAss

### Voltage outputs

Output range	0 ... 10 V, 2 ... 10 V
Min. burden	10 kOhm
Residual ripple	< 20 µVss

### Relay outputs

Maximum switching load AC	250 V, 2 A
Maximum switching load DC	50 V, 2 A
Contact construction	changeover contact
Switching operations mechanical	10000000
At 230V/2A AC, cos(phi)=1	600000
At 230V/2A AC, cos(phi)=0,4	200000
At 24V/1 A DC	200000

### Semiconductor output (optional)

Max switching voltage	30 V DC
Max. switching current	50 mA DC
Voltage drop	< 1 V

### Display

Graphic-LCD	122x32 Pixel, background lit
Digital display	5-digit, can be configured
Display functions each channel	input frequency, scaled instantaneous measuring value, quantity impulse, scaled dimension as quasi analogue bar

### Accuracy

Unit	0,3%
Temperature influence	<100 ppm / K
Update rate	1 s

### Supply

Supply voltage	20 ... 253 V DC / 50 ... 253 V AC
Max. power consumption	4,5 W / 7,5 VA



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## RS485-Bus

Software protocol	Modbus-RTU
Data format	19200, e, 8, 1
Max. bus users	247
Bus termination	120 ohms both sides at the end
Max. length of bus	500 m (no stubs)
Cable	twisted and shielded

## Housing

Dimensions (WxHxD)	105x90x58 mm
Type of protection	IP 20
Connection method	screw clamp
Terminals, wire cross section	2,5 mm <sup>2</sup> flex wire / 4 mm <sup>2</sup> one wire
Bolting torque terminals	0,6 Nm
Skinning length	6 mm
Weight	~ 300 g
Manner of fastening	35 mm DIN rail

## Environmental conditions

Ambient temperature	-10 ... 50 °C
Storage and transport	-10 ... 70 °C (no condensation)

## EMC

Product family standard	EN 61326-1
Emitted interference	EN 55011, CISPR11 Cl. B, Gr. 1
	In a critical EMC environment, shielded encoder cables are recommended.

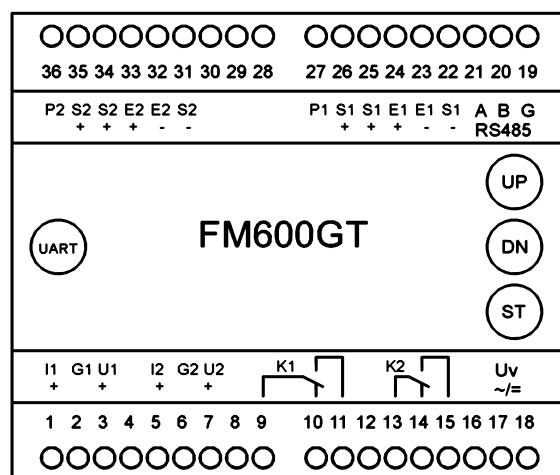
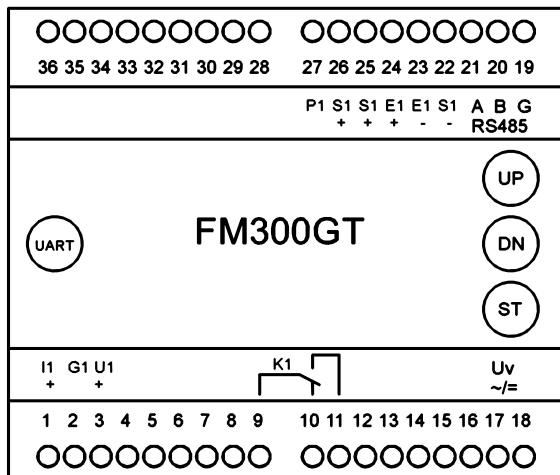
## Electrical safety requirements

Product family standard	EN 61010-1
Overvoltage category	II
Pollution degree	2

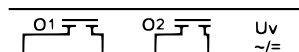
## Galvanic isolation, test voltages

Input/output	1 kV RMS (1 min.)
Signal/auxiliary voltage	3 kV RMS (1 min.)

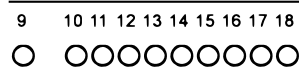
## Block and wiring diagram



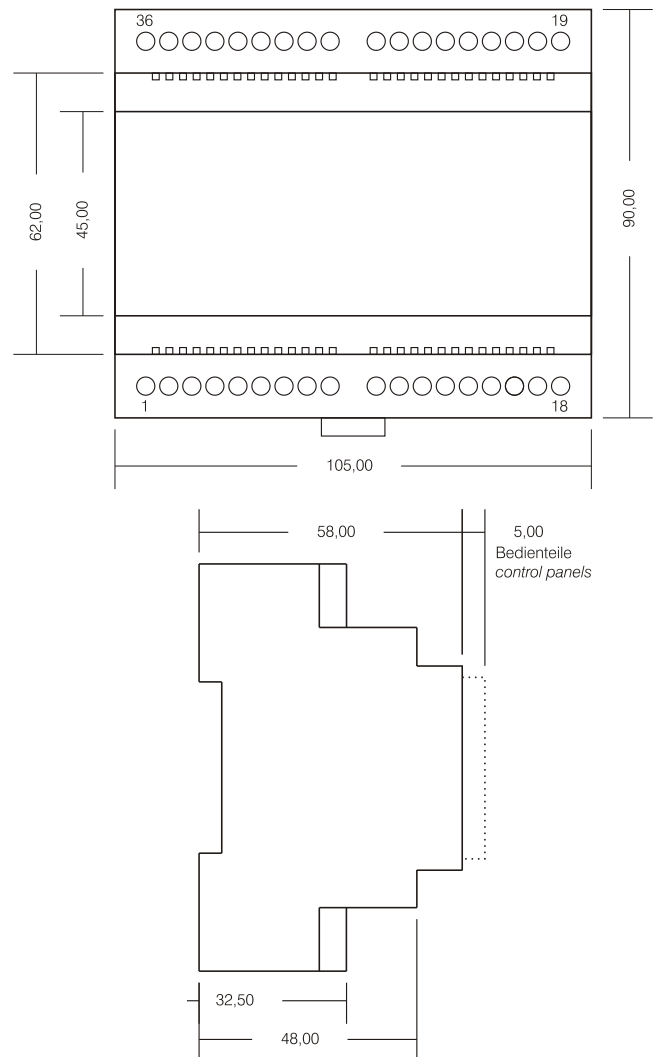
Halbleiterausgang  
(Option)



Semiconductor  
output  
(option)



## Dimensions



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## Modbus Communication

The AD-FM 300 GT / AD-FM 600 GT has an RS485 bus interface on which the Modbus-RTU protocol is used. All measured values of the device can be read out via this bus interface. The preset standard data format is 19200, e, 8,1. The bus address can be set (1...247). Adaptation to a different data format is possible at any time. The device configuration can be carried out manually using the menu navigation or using AD Studio software on one of the interfaces itself.

With the **Read Holding Registers (0x03)** function, data can be read individually from the device.

The device does not support **multiple register read**. The individual register width is 16 bits. Please see the Modbus specification for detailed explanations of the Modbus communication.

The following Modbus data are accessible via the RS485 bus:

Start address	Reg. number	Name	Datatype	[Code] = Value
40102	2	Counter Z1	U32	
40103	2	Input frequency F1	float	Hz
40104	2	Scale value E1	float	Unit / [s, min, h]
40105	2	Analog output value A1	float	V / mA
40601	2	Digital output value D1	U16	0 / 1
40112	2	Counter Z2	U32	
40113	2	Input frequency F2	float	Hz
40114	2	Scale value E2	float	Unit / [s, min, h]
40115	2	Analog output value A2	float	V / mA
40611	2	Digital output value D2	U16	0 / 1

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## Circuit examples

