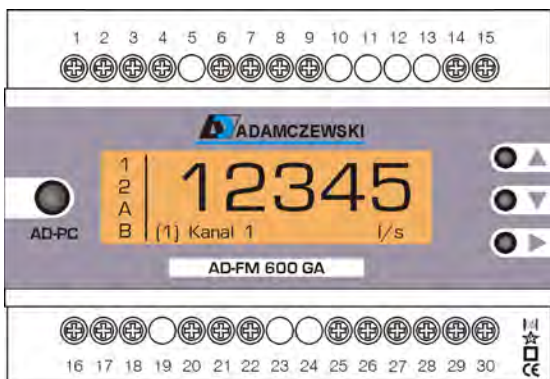


Operating Instructions

Frequency Analog Converter
AD-FM 300 FE/GA **1-channel**
AD-FM 600 FE/GA **2-channel**
(Version 1.1.5)



Please note:

All information in the following instructions relate to the functions of the 2-channel version AD-FM 600 FE/GA.
In the 1-channel version AD-FM 300 FE/GA, channel 2 is not present.

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Abbreviations:

E1.....	first physical input channel
E2.....	second physical input channel
E1+E2.....	sum of both input channels
E1-E2.....	difference of both input channels
E2-E1.....	difference of both input channels
s.....	second
h.....	hour
SP.....	switching point

Functions and applications

The FM300 (1-channel) and FM600 (2-channel) is a freely programmable, frequency/analog measuring converter with display unit, analog output steps and additional digital outputs.

The switch-on of the different input signal sources is carried out at the input terminals defined for this. Each channel can be separately parameterized at the input and the output.

For commissioning of the device, only the input of the impulse value and the required scaled maximum value is necessary, additionally to any supply voltage connection.

A list with common units is available for a free scaling display.

The input of all characteristics can be carried out directly at the device without auxiliary means.

For each channel, a potential free relay contact (change-over contact) or an opto coupler (optional instead of relay contact) is available as digital output.

The output contact evaluation is carried out with a factor/divider function.

For each channel a freely adjustable and synchronously working current/voltage output is available for analog data routing.

Due to the summator functions, which can be activated, the device is suitable, for instance, as frequency summator and also as impulse summator. With this, incoming quantity impulses can be routed weighted to following process systems. Application example: water meter with main and secondary counter.

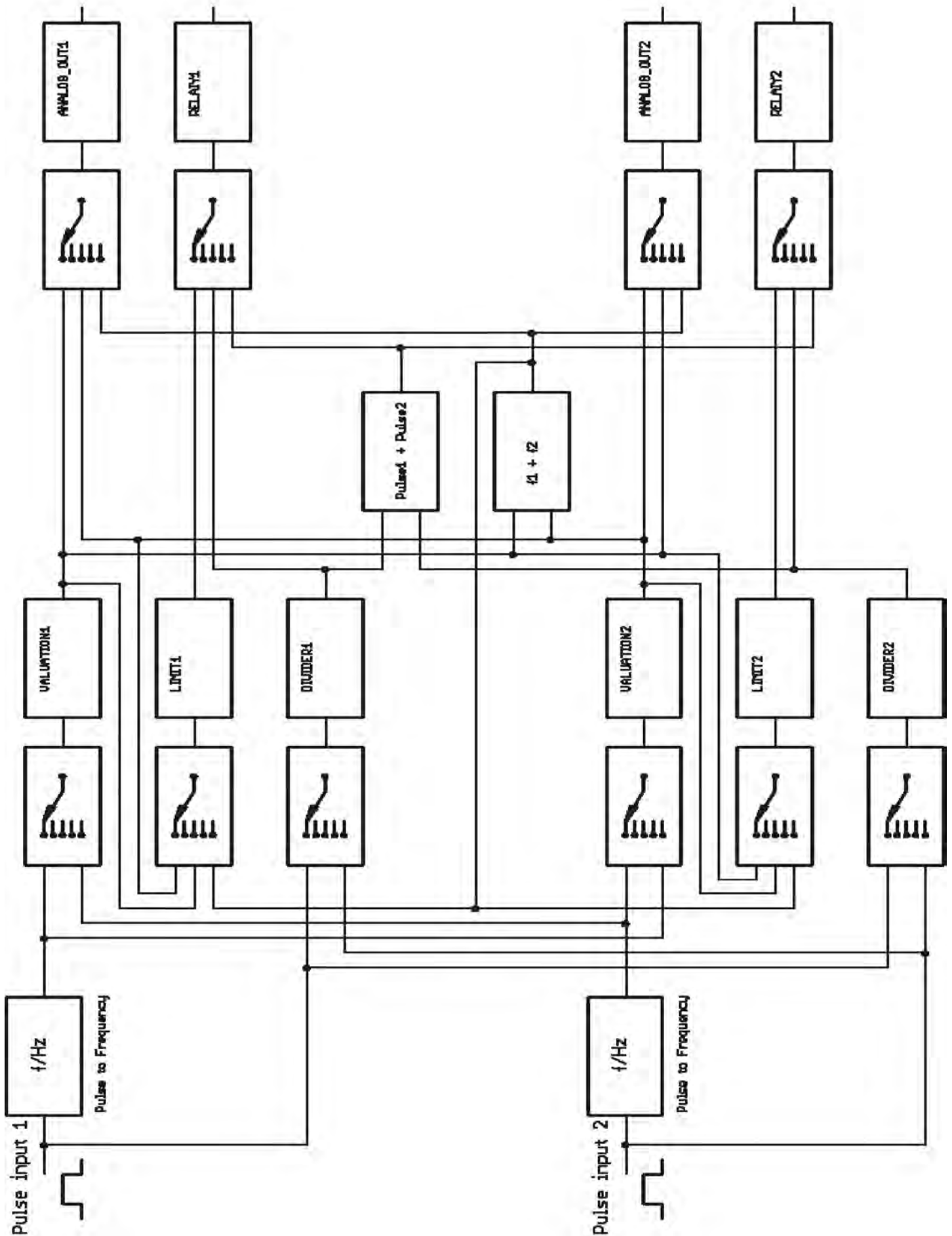
Features:

- Random signal source allocation for the different function blocks.
- Display functions each channel:
input frequency, scaled instantaneous measuring value, analog output value, quantity pulse, scaled quantity as quasi-analog bar, channel description and scaling unit in plain language
- Simulation mode, at the input, separated for each channel, adjustable in percent steps of the set input range, also with automatic ramp function (1% / s)
- Analog simulation mode, at the output (also with automatic, time-dependent switch-off), separated for each channel. Adjustable in percent steps of the set output range
- Learning function for input signal maximum value (kHz signals only)
- Analog simulation mode (also with automatic, time-dependent switch-off, separated for each channel, adjustable in percent steps of the set output range)
- Digital output each measuring channel: potential-free contact, opto-coupler (available as option), adjustable divider ratio: input/output = 1:1 to 1:9999999 or 9999999:1
- Alternative limit function (default condition)
- Switch-on /switch-off limit (hysteresis function) can be switched on instead of output impulse function
- Configuration interface for personal computer with ADAMCZEWSKI parameterizing software
- Adjustable filter function (damping)
- Measuring point description in plain language with 8 characters, can also be manually altered directly at the device
- Modification protection for the parameter via a numeric password can be switched on
- Selection of three different operating languages (German, English, French)
- Rejection of leak flow volume

Technical data

Design FE (for front assembly)	switchboard DIN 43 700, 48x96 mm WxHxD 91.5x43x131 mm
Design GA	Switchboard cut-out: 92x44 mm switchboard thickness 1.5-10 mm top-hat rail housing, WxHxD 100x74x119 mm Terminal cross section: mains terminal 2.5 mm ² , all others 1.5 mm ²
Weight	approx. 230 g
Input signal sources	Namur generator, contactor, open collector, 3-core opto-generator, 24V active
Frequency generator supply active	approx. 13.5V (max. 19mA) or for Namur generator 8V/8mA
Contact debouncing function	can be activated, requires minimum impulse duration > 40 milliseconds
Input frequency	0...1 mHz to 0...10 kHz (= 0...100%)
Accuracy, frequency measurement:	+ / - 0.1 %
Analog outputs	each channel 0...20 mA at max.500Ω (no load running max. 15 V) and 0...10 V at minimum 10kΩ (short circuit max. 24 mA) The analog grounds must not be connected to the same potential! In this case, one of the analog signals has to be galvanic isolated. Use an 1:1 analog converter.
Accuracy, analog output	0.3 % of full scale
Linearity, analog output	+ / - 0.1 % of full scale
Contact output	U max.: 250 VAC or 50 VDC ; I max.: 2 A
Opto coupler output (option)	Umax.: 30 VDC ; I max.: 20 mA
Maximum output frequency	10 Hz (> 1Hz order opto coupler output)
Pulse length	adjustable from 10...65535 ms
Display unit	FM300/600FE: graphic LCD, grey, 122 x 32 pixel FM300/600GA: graphic LCD, amber , 122 x 32 pixel 5-digit, can be configured freely , background lit
Supply voltage	ALLPOWER: 20...253 V DC or 50...253 V AC
Power consumption	max. 4 W or 5 VA
Ambient conditions	admissible ambient temperature 0...+50°C
Electric protective measures	Class II Type of protection: terminals IP 20, front FE housing IP 65
Signal separation I/O test voltage	2kVAC
Test voltage for supply	4kVAC
The following guidelines form the base for the CE conformity:	
Emission	according to DIN EN 50081-2 radio interference voltage according to DIN EN 55011 (industrial area) radio interference immunity according to DIN EN 55011 (industrial area)
Interference immunity	according to DIN EN 50082-2 ESD according to DIN EN 61000-4-2 burst according to DIN EN 61000-4-4 surge according to VDE 0843-5 HF current supply according to DIN 61000-4-6 electro-magnetic fields according to DIN EN 61000-4-3

Signal flow



Commissioning

Switch off the voltage supply prior to any connection work.

Ensure sufficient protection against contact for the connections during assembly.

The current supply and the measuring inputs must be provided with suitable overvoltage protection.

All connections must be protected against electro-static discharge.

This device is constructed according to VDE 0411 part 1 (protective measures for electronic measuring devices) and tested and it has left the works in a safety-technical satisfactory condition. To maintain this condition and to ensure operation without danger, the user must observe the notes, which are contained in these operating instructions.

The commissioning must be carried out by personnel sufficiently qualified. Connection and maintenance work must only be carried out with switched off current supply.

The device complies with protection class II for permanent connection. The connection between a possibly available protective conductor connection and a protective conductor must be enabled before any other connection.

The device is delivered ready for assembly. It does not have to be opened, either for connection or for input of the characteristic values.

Assembly is admissible in any position, however, not in the immediate vicinity of sources of interference.

The display device is designed for fitting in dry rooms, i.e. switchboards, frames or cabinets.

Every time the current supply is switched on, the last selected display operating condition is restored.

The frequency measurement converter must generally be mounted outside explosion endangered areas!

The interface is potential connected with the inputs. To prevent error functions of the device, the PC, with which the device is parameterized, must not have any galvanic connection to the input signals!

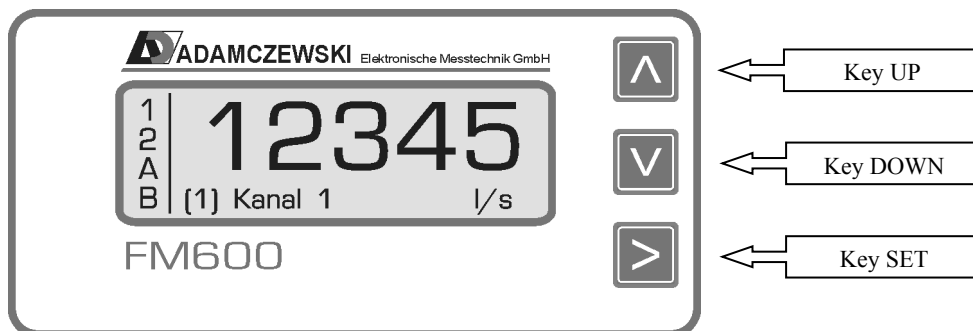
Operation of the device

Display and operating elements

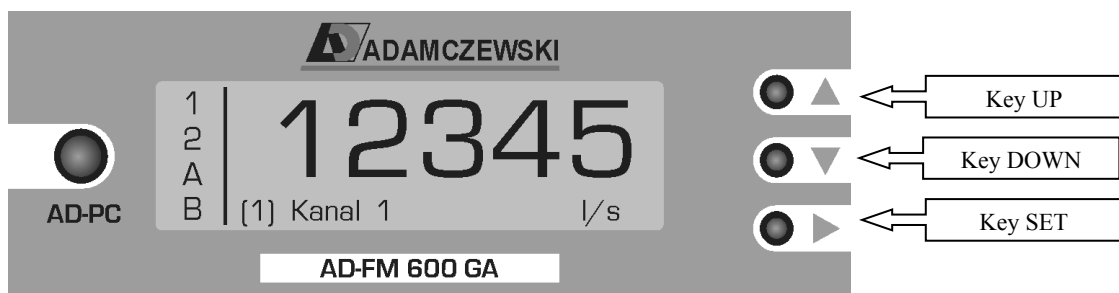
The device has three short-stroke keys for operation and parameterizing (UP, DOWN and SET).

A graphic display with background lighting serves the display of the measuring value and the parameter.

FM 600 FE



FM 600 GA



Operation

The device can be fully parameterized and set with the three keys UP, DOWN and SET.
The keys have the following functions, dependent on the current operating mode:

Key	Function
UP	In normal operation, you can change to the relevant display mode with this key, for instance, quasi-analog bar, „BIG NUMBERS“ or „true“ measuring value. In parameterizing mode, a menu input or a list element can be selected or a number can be edited.
DOWN	As key UP, only other direction. A comma will be displayed under zero.
SET	By pressing the SET key briefly, the display changes to the alternative channel. Each channel is shown in the same display mode (for instance, all in BIG NUMBERS or all as bar display etc.). The device function is not influenced by this. When pressing the key SET for a longer period (>1s) you change from normal operation to parameterizing mode and back again, if you want to return before time without having to run through the whole menu tree. This key also has the function of a confirmation key for numeric inputs or when selecting an element from a list.

The different operating modes

The device is always in one of the two operating modes „Normal operation“ or „Parameterizing“. After switching the device on, it is in „Normal operation“ mode. During parameterizing, the device also carries out all the functions set according to its parameter. With the keys UP and DOWN you can switch between the different display operating modes. When briefly pressing SET you change to the relevant alternative channel. The current channel number is shown in the display in round brackets.

Switching the operating language

The device is equipped with three language modules at the works: German, English and French.
The operating language is set in a separate menu parameter, however, it can also be set in normal operation with pressing all three keys at the same time for some seconds.
A message appears, which must be confirmed with SET.

Parameterizing

The parameterizing mode is reached from normal operation with pressing the key SET for a longer period (>1s). Please note that the required channel to be parameterized must first be selected in normal operation prior to carrying out the longer pressing of the key.

A switch over of the channels is not possible within the parameterizing plane!

The selected channel number can be seen in the left upper indicator corner during parameterizing.

The current position during navigation is shown with a flashing „>“, in the following called *Cursor*.

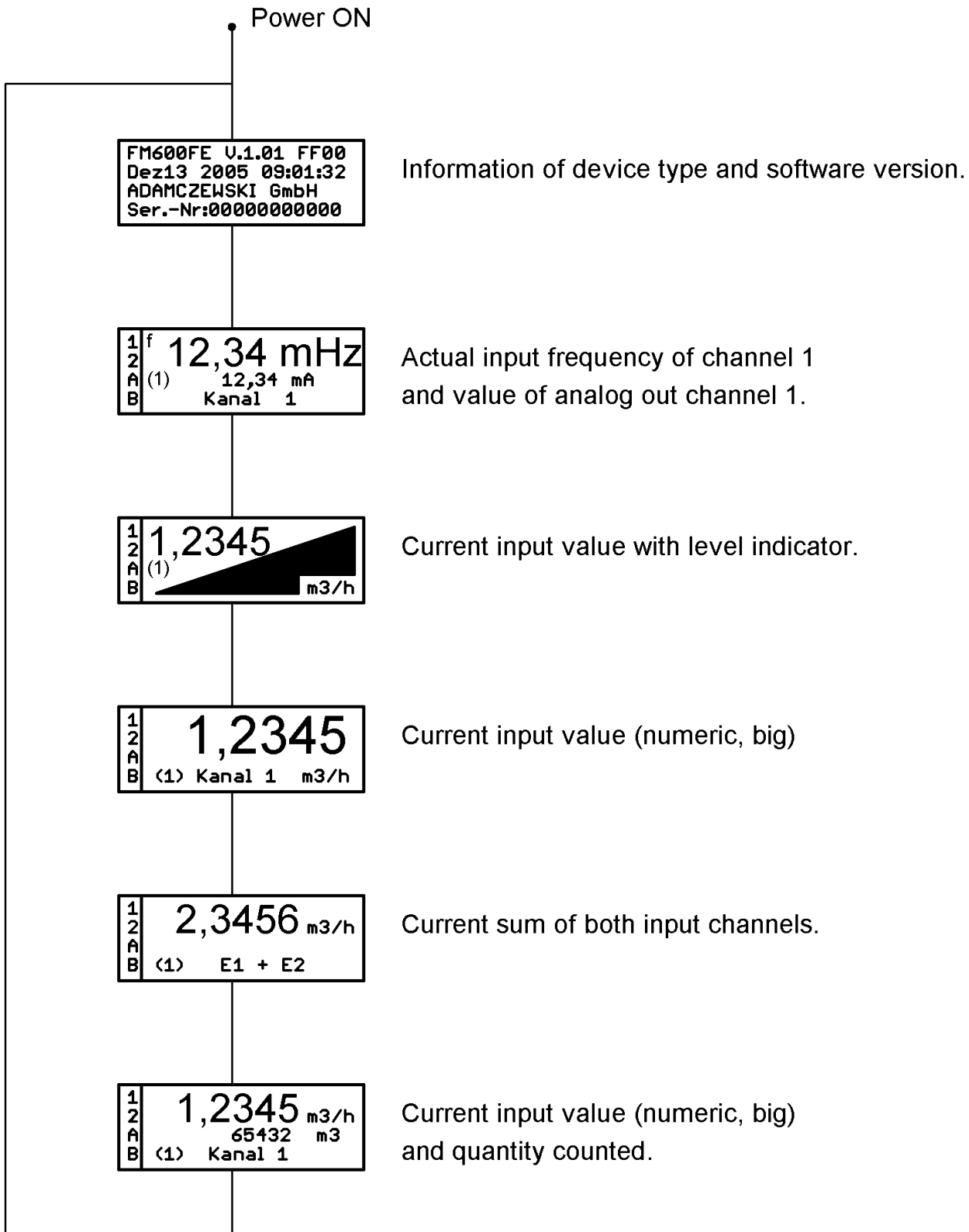
Modified parameter become effective immediately. With pressing the key SET for a longer period (>1s) you return to normal operation, if you do not want to run through the entire menu tree.

The settings carried out are accepted under the following conditions:

Numeric values	If the last digit has been confirmed and the value lies within the validity range.
List elements	Always when confirmation has been carried out with the SET key.
Strings	Always if the last character is confirmed.

If the value is ended with a longer pressing of key SET (>1s) , the cursor returns to the selection position, whereby possibly modified values are rejected.

Navigation in normal operation



Rotating the views with the keys (UP & DOWN).

The actual number of the input channel is displayed in parentheses.

Press key SET short, to change the view to the other channel.

After power on, the device will show you the last view before power off.

The display

The logical signal conditions of inputs and outputs are shown in the first display column:

Line 1 = statical condition of the first input channel as „1“,

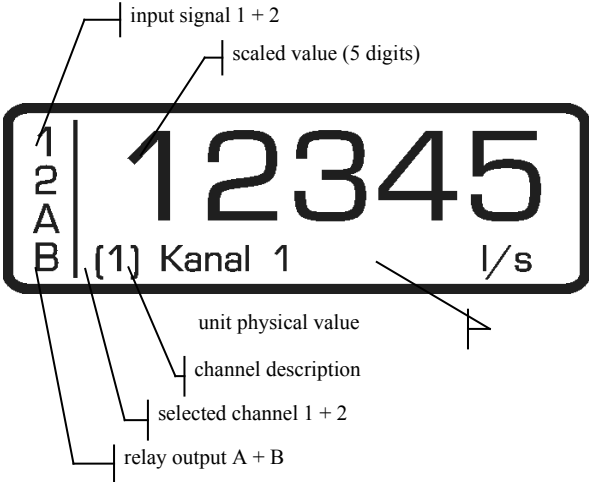
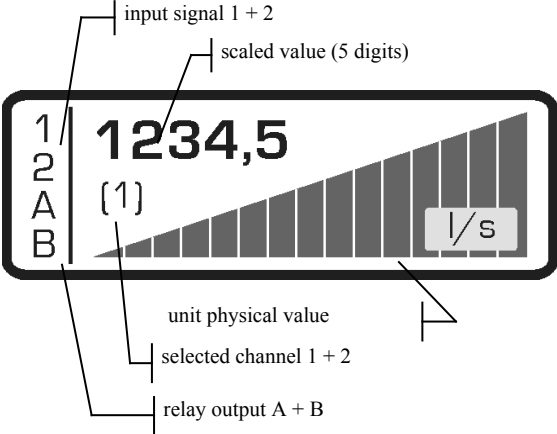
Line 2 = statical condition of the second input channel as „2“,

Incoming input impulses greater than 1 Hz are shown as flashing number.

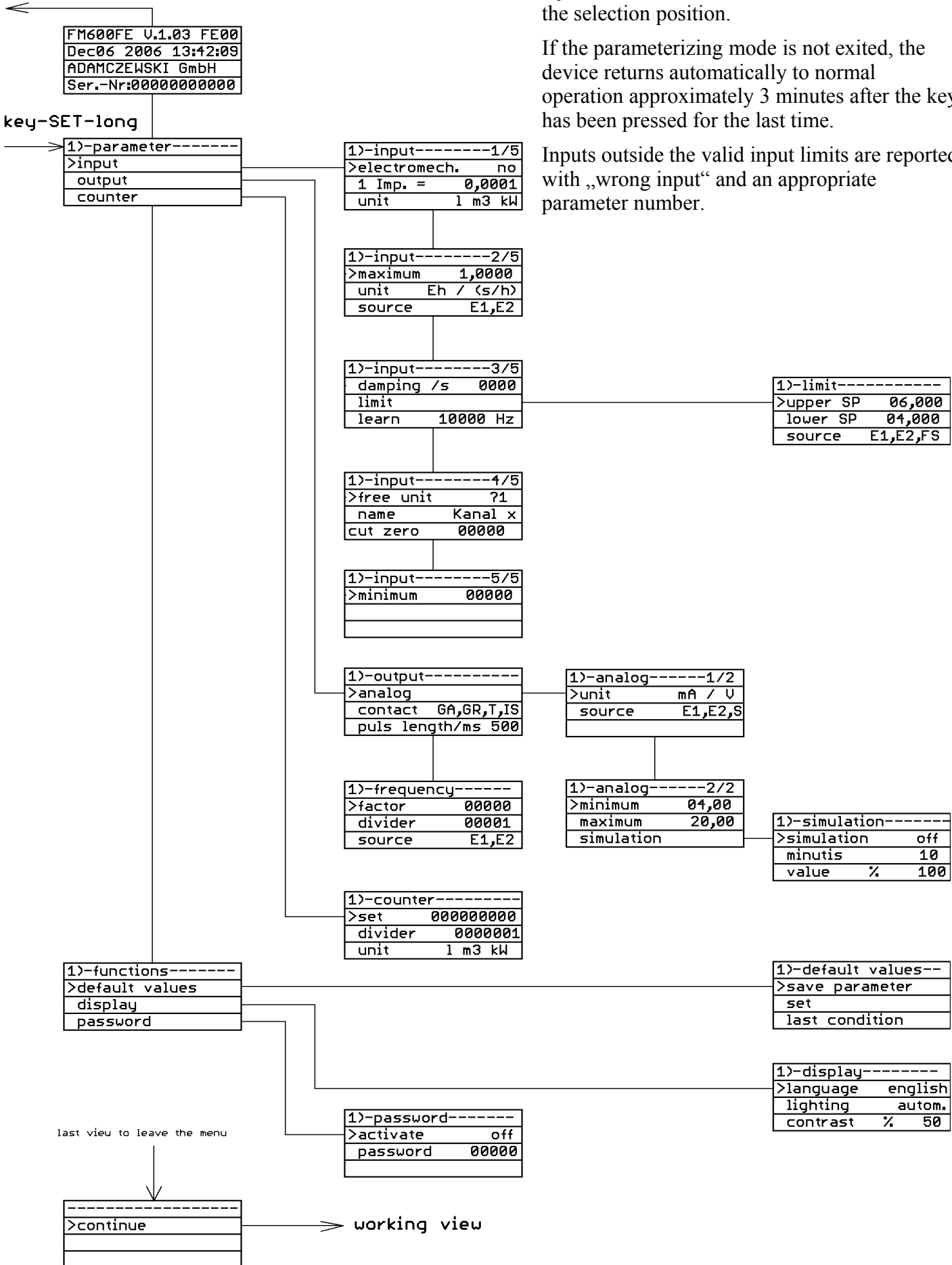
If a maximum (dependent on hardware) input frequency is exceeded, an „>“ is additionally shown at the side of the flashing number.

Line 3 = statical condition from the first output contact as „A“,

Line 4 = statical condition of the second output contact as „B“.

Views	Display image	Comment
Standard	 <p>The diagram shows a rectangular display area. On the left side, there are four lines labeled '1', '2', 'A', and 'B'. The main display area shows the number '12345'. Below the number, it says '[1] Kanal 1' and 'l/s'. Labels with arrows point to: 'input signal 1 + 2' (pointing to the top of the display area), 'scaled value (5 digits)' (pointing to the number '12345'), 'unit physical value' (pointing to 'l/s'), 'channel description' (pointing to 'Kanal 1'), 'selected channel 1 + 2' (pointing to '[1]'), and 'relay output A + B' (pointing to the left side of the display area).</p>	<p>After switching the device on, it goes into normal operation and shows the standard display of the device.</p>
Quasianalog	 <p>The diagram shows a rectangular display area. On the left side, there are four lines labeled '1', '2', 'A', and 'B'. The main display area shows the number '1234,5'. Below the number, it says '[1]' and 'l/s'. A diagonal bar with vertical lines of increasing height from left to right is shown across the bottom half of the display. Labels with arrows point to: 'input signal 1 + 2' (pointing to the top of the display area), 'scaled value (5 digits)' (pointing to the number '1234,5'), 'unit physical value' (pointing to 'l/s'), 'selected channel 1 + 2' (pointing to '[1]'), and 'relay output A + B' (pointing to the left side of the display area).</p>	<p>In „Quasianalog display“ mode, a diagonal bar appears, which shows the measuring range.</p>

Programming
Navigation for parameterizing setting
working view



During Parameterizing, the key SET (>1s) rejects the selection and the cursor returns to the selection position.

If the parameterizing mode is not exited, the device returns automatically to normal operation approximately 3 minutes after the key has been pressed for the last time.

Inputs outside the valid input limits are reported with „wrong input“ and an appropriate parameter number.

Parameter selection / input

In this menu, all necessary parameter for input signal evaluation can be set.

Parameter	Admissible value range	Default values	Comment
Mechan. contact	„no“, „yes“	„no“	Type of pulse generator, mechanical contacts are, for instance, relay contacts. Required minimum pulse width: 40 ms.
1 pulse =	0,0000...99999	1	Pulse valence of a single pulse, i.e. 1 pulse = 10 m ³ .
Unit	„l“ „hl“ „mg“ „kg“ „kt“ „W“ „MW“ „km“ “??“	„l“ „m3“ „g“ „t“ „mW“ „kW“ „m“	Physical meaning of a single pulse: i.e. pulse in litres. The required unit can be selected from a list. With future firmware versions alterations of this list are possible. The last unit can be freely defined via the PC programming software. Can also be edited manually (two characters).
Maximum	0,0000...99999	10000	This value is equivalent to the scaling maximum value = 100% = 20mA = 10V = bar maximum.
Unit (time)	s, h, min	s	The maximum value is achieved through input pulses per time unit.
Source	E1, E2	E1 or E2	Allocation of the physical input channel as signal source.
Damping	0...9999 seconds	0	Filter function for display and analog output.
Learning	Measuring frequency from 1 kHz	10000 Hz	The existing input frequency is set up as maximum value (measuring range maximum).
Free unit	Two characters	„??“	Last unit list input per channel.
Name	Eight characters	„Channel 1“	Free measuring position description.
Cut zero	0,0000...99999	0	Rejection of leak flow volum
Scale begin	0,0000...99999	0	Usable to reject an input offset (zooming)

Parameter / input / limit

Set up of a limit message with switchpoint (SP) on a logical, scaled channel

(selected via **Parameter / input / source**). **Not a physical channel!**

Activation of each output contact to the limit message is carried out during the output contact function. The decimal point setting of the input maximum value is valid.

Parameter	Admissible value range	Default values	Comment
Upper SP	0,0000...99999	6000	Switch-on threshold value
Lower SP	0,0000...99999	4000	Switch-off threshold value
Source	E1, E2, E1+E2, E1-E2, E2-E1	E1 or E2	Logical channel or sum of both channels. Not a physical channel!

Parameter / output / analog values

In this menu, the analog output ranges can be determined.

Parameter	Admissible value range	Default values	Comment
Unit	mA, V	mA	Selection of the required analog output signal. The alternative output runs synchronous at the same time.
Source	E1, E2, E1+E2, E1-E2, E2-E1	E1 bzw.E2	The scaled input signals are shown on the analog output.
Minimum	0-20mA or 0-10V	00,00	Range minimum for analog value.
Maximum	0-20mA or 0-10V	20,00	Range maximum for analog value.

Parameter / output / analog values / simulation

In this menu the simulation operation is set up. The relevant channel number flashed in active simulation operation for visual monitoring in normal operation.

Parameter	Admissible value range	Default values	Comment
Simulation	off tempor., constant	off	Activation of the required simulation function. At „temporary“ a switch back to normal operation is carried out according to the set minutes .
Minutes	0...100	10	Determine the required simulation time.
Value	0...100	00,00	Percentage analog value modulation, dependent on the set output signal range.

Parameter / output / contact

Set up of the output contacts for certain functions. Limit functions are derived from a logical, scaled signal channel. Pulse functions are determined directly from the physical input channel. See **signal flow!**

Parameter	Admissible value range	Default values	Comment
Contact	Working, rest, divider E1+E2, E1-E2, E2-E1	Working	Limit contact working current operation, limit contact rest current operation, pulse output function, pulse summator under consideration of factor / divider.
Pulse length /ms	10...65535	500	Pulse length (in milliseconds) with pulse output functions.

Parameter / output / frequency

Set-up of a pulse output for conduction of separately evaluated input pulses. These can be conducted to following devices scaled, transformed or 1:1 This way, fractionals can also be generated.

Parameter	Admissible value range	Default values	Comment
Factor	0...9999999	0	0 = no pulse output
Divider	1...9999999	1	Do not mathematically divide by zero!
Source	E1 or E2	E1 or E2	Selection of pulse source. Equivalent to physical channel!

Parameter / counter

In this menu, the quantity counter is set up.

This counter serves the pure display of evaluated input signals in a preset quantity unit.

A sum of both quantity counters is only displayed with the same quantity unit of both channels.

The counter status is saved automatically every 180 minutes in a non volatile memory (EEPROM).

When activating the „SET Key“, it will be saved immediately.

During a voltage supply failure, fractional (scaled) counter status portions are lost

Parameter	Admissible value range	Default values	Comments
Set	0...999999999	0	Manual presetting of a quantity counter status.
Divider	1...9999999	1	Determine quantity divider (never zero!). Example: 1000 Litre = 1 m ³
Unit	For unit list see input	1	Selection of a quantity unit to be displayed for the quantity counter.

Functions / default values

For a functional basic device setting, the parameter predefined by the manufacturer can be set, or already functional and secured parameter can be restored.

Parameter	Admissible value range	Default values	Comment
Parameter storage	No selection	Default values	Current device settings and counter states are filed in a safety area.
Set	No selection	Default values	All parameter and counter states are reset to a works delivery condition and a device rest is carried out.
Last setting	No selection	Default values	Last parameter storage is restored.

Functions / display

These values are not altered by „Default values“.

Parameter	Admissible value range	Default values	Comment
Language	German, English, French	German	Setting the operating language.
Lighting	„autom.“ or „on“	autom.	The display background lighting is switched off approximately 3 minutes after the last key depression. This automatic function is permanently deactivated with „on“.
Contrast %	0...100	0...100	Dependent on the viewing angle.

Functions / password

All parameter are always accessible for viewing for all operators.

If the password is activated, the operator is asked to enter the password when trying to alter the parameter.

This password input remains active approximately three minutes after the last key depression.

The password is not altered through „Default values“. An incorrect password input is reported with „Password“ and a number entered by the operator.

Password lost or forgotten:

With stating a random number: „XXXXX“ in the password field, a replacement password to be used once can be requested from the device manufacturer, to regain access to all device parameter.

Parameter	Admissible value range	Default values	Comment
Activate	no, yes	no	Activation of a parameter alteration protection.
Password	00000...99999	00000	Inserted random number, actual password display.

Input signal simulation

The input signal simulation mode of the currently shown channel can be activated in operating mode through pressing the keys UP & DOWN simultaneously for a longer period.

During this, "s" appears in the appropriate position in the status column.

The required display mode must first be selected.

Brief pressing of the keys UP or DOWN effects an accentuation or lowering of the input frequency by one simulation step (1% of the set scaling maximum value).

The relevant input display flashes alternating as "1" and "s" or "2" and "s".

An appropriate longer key pressure effects the start of a ramp function with one simulation step per second.

A display change to another display image is no longer possible in this simulation mode. The change to the alternative channel with the SET key is still possible.

The switch back to the operating mode is again carried out with simultaneous longer pressure on the keys UP & DOWN.

Application example of a manual parameter device for a compound water meter

- Required:
- Through flow sum forming on analog output 1: 0...1000 m³ in 0...20 mA
- Pulse sum output: one output pulse per 10000 m³ at contact output 1
- Alarm message with contact output 2 when exceeding an instantaneous through flow sum of 800 m³/s and alarm release at 700 m³/s.
- Absolute through flow quantity display each channel and also as sum in m³.

Necessary specifications or device settings:

For analog sum forming, the scaling units of both addends must be identical,

i.e.:

scaling maximum value 1 = 1000.0 m³/s

scaling maximum value 2 = 100 m³/s.

- Pulse counter source 1 (main counter): 1 pulse = 1 m³
- Pulse counter source 2 (secondary counter): 1 pulse = 100 Litre = 0.1 m³
- Through flow maximum value for display 1 and analog output 1 : 0...1000.0 m³/s in 0...20 mA
- Through flow maximum value for display 2 and analog output 2 : 0...100 m³/s in 0...10 V

Device parameterizing (inputs for input channel 1):**Parameter / input (input channel 1)**

Parameter	Admiss. value range	Setting	Comment
1 pulse =	0.0000...99999	1	Pulse valence of a single pulse. 1 pulse = 1 m ³ .
Unit	Unit list see input	„m3“	Physical meaning of a single pulse in m ³
Source	E1, E2	E1	Allocation = 1st pulse input
Maximum	0.0000...99999	1000.0	Scaling maximum value = 1000.0 m ³ .
Unit (time)	s, h	m ³ / s	The maximum value is reached at 1000.0 m ³ per second.

Parameter / output / analog values (input channel 1)

Parameter	Admiss. value range	Setting	Comment
Unit	mA, V	mA	Selection of the required analog output signal. The alternative voltage output runs synchronously.
Source	E1, E2, E1+E2 E1-E2, E2-E1	E1+E2	The sum of both scaled input signals is shown on analog output 1.
Minimum	0-20mA or 0-10V	00.00	Range minimum = 0 m ³ per second.
Maximum	0-20mA or 0-10V	20.00	Range maximum = 1000.0 m ³ per second.

Parameter / output / contact (input channel 1)

Parameter	Admiss. value range	Settings	Comment
Contact	See list	E1+E2	Pulse summator function

Parameter / output / frequency (input channel 1) for pulse summator function

Parameter	Admiss. value range	Setting	Comment
Factor	0...9999999	1	No pulse transformation
Divider	1...9999999	10000	10000 pulses per 1 m ³ = 10000 m ³
Source	E1 or E2	E1	1st pulse source supplies 1 m ³ each pulse

Parameter / counter (physical input channel1)

Parameter	Admiss. value range	Setting	Comment
Divider	1...9999999	1	Display resolution 1 x 1 m ³ = 1 m ³
Unit	Unit list see input	„m3“	Quantity counter display in m ³ .

Device parameterizing (inputs for input channel 2):**Parameter / input (input channel 2)**

Parameter	Admiss. value range	Setting	Comment
1 pulse =	0.0000...99999	000.10	Pulse valance of a single pulse. 1 pulse = 0.1 m ³ .
Unit	Unit list see input	„m3“	Physical meaning of a single pulse in m ³
Source	E1, E2	E2	Allocation = 2nd pulse input
Maximum	0,0000...99999	100	Scaling maximum value = 100 m ³ .
Unit (time)	s, h	m3 / s	The maximum value is reached at 100 m ³ per second.

Parameter / input / limit (input channel 2)

Parameter	Admiss. value range	Setting	Comment
Upper SP	0.0000...99999	800	Switch-on threshold value at 800 m ³ /s
Lower SP	0.0000...99999	700	Switch-off threshold value at 700 m ³ /s
Source	E1, E2, E1+E2 E1-E2, E2-E1	E1+E2	Set limits to input sum

Parameter / output / analog values (input channel 2)

Parameter	Admiss. value range	Setting	Comment
Unit	mA, V	V	Selection of required analog output signal. The alternative current output runs synchronously.
Source	E1, E2, E1+E2 E1-E2, E2-E1	E2	The scaled input signal is shown on analog output 2.
Minimum	0-20mA or 0-10V	00.00	Range minimum = 0 m ³ per second.
Maximum	0-20mA or 0-10V	10.00	Range maximum = 100 m ³ per second

Parameter / output / contact (input channel 2)

Parameter	Admiss. value range	Setting	Comment
Contact	See list	Working	Limit as output contact function

Parameter / output / frequency (input channel 2) for pulse summing function

Parameter	Admiss. value range	Setting	Comment
Factor	0...9999999	1	No pulse transformation
Divider	1...9999999	100000	100000 pulses per 0.1 m ³ = 10000 m ³
Source	E1 or E2	E2	2 nd pulse source supplies 0.1 m ³ per pulse

Parameter / counter (physical input channel 2)

Parameter	Admiss. value range	Setting	Comment
Divider	1...9999999	10	Pulse division, 10 x 0.1 m ³ = 1 m ³
Unit	Unit list see input	„m3“	Quantity counter display in m ³ .

Firmware update

In the course of technical further development it may become necessary to bring the specific device features up to date. For this there is the possibility to transfer a new firmware to the device with a personal computer. A special data cable is available from the manufacturer. The current device firmware can usually be downloaded from the internet website of the company ADAMCZEWSKI in the area „Download“.

If necessary, the device parameter must be saved with the configuration software „VarioConfig“ prior to a firmware download, as these and also the secured area will be overwritten with default values.

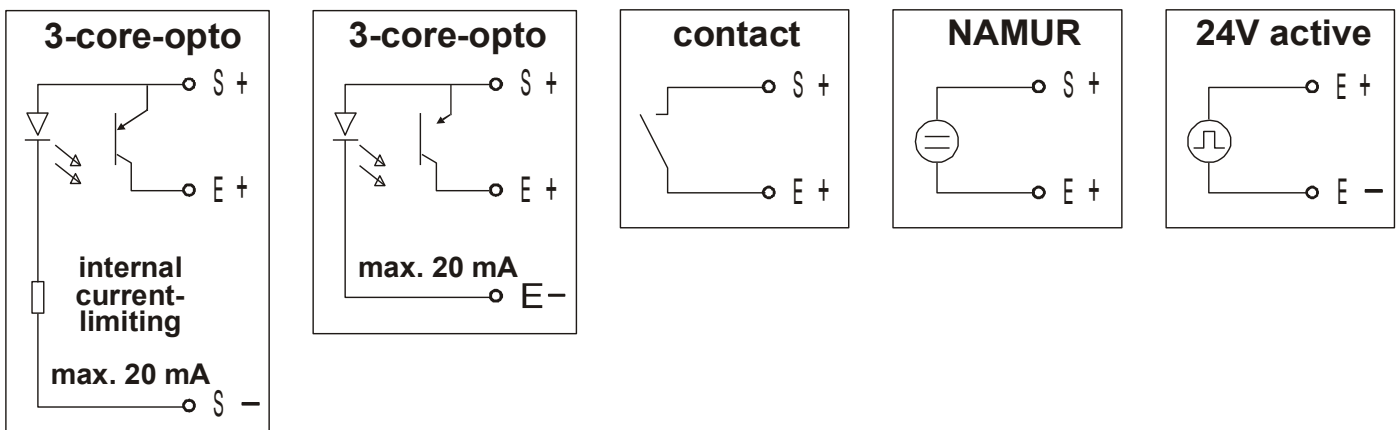
Update procedure:

1. Connect the device to the voltage supply and connect it with the PC via a serial data cable.
2. Start the file "BOOTFLASH.EXE".
3. After the device has been found, the file dialogue is opened, with which the new firmware file "FM600_VX_XX.hex" (also valid for FM300) can be selected.
4. Wait until the firmware update is completed. Do not interrupt the build up and the data transfer. This procedure takes a few minutes. Afterwards, a device restart is carried out.
5. The completion of the procedure is reported with „Device update successful“.

Transferring external device firmware to the connected device results in function inability.

In this case, the device must be sent to the manufacturer

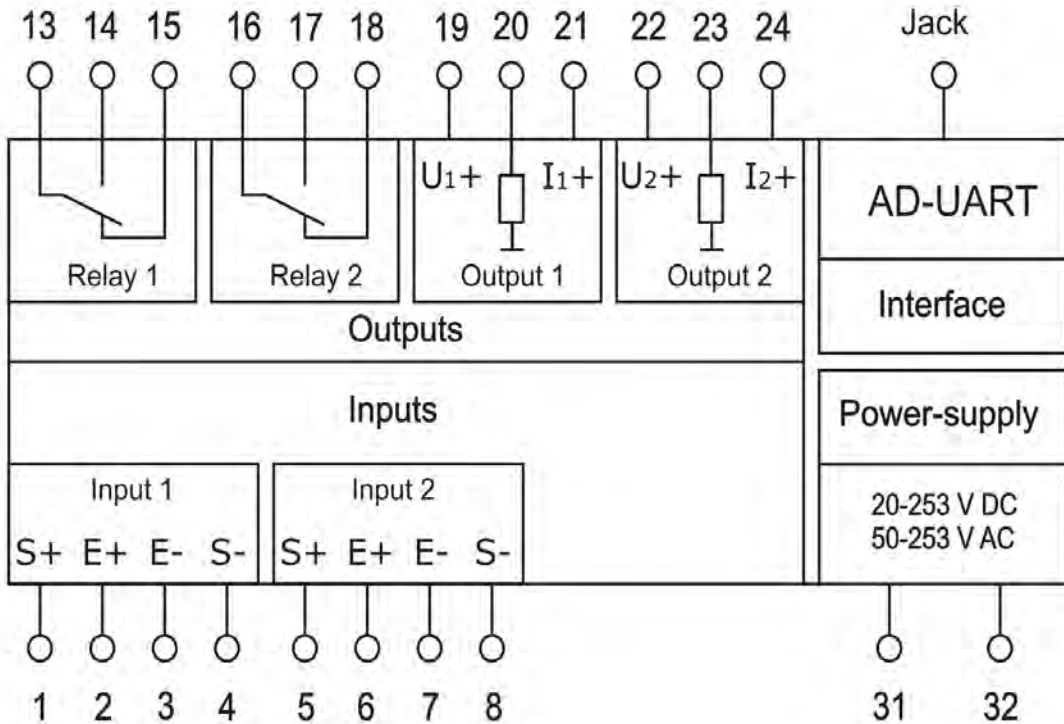
Input allocation of different sources



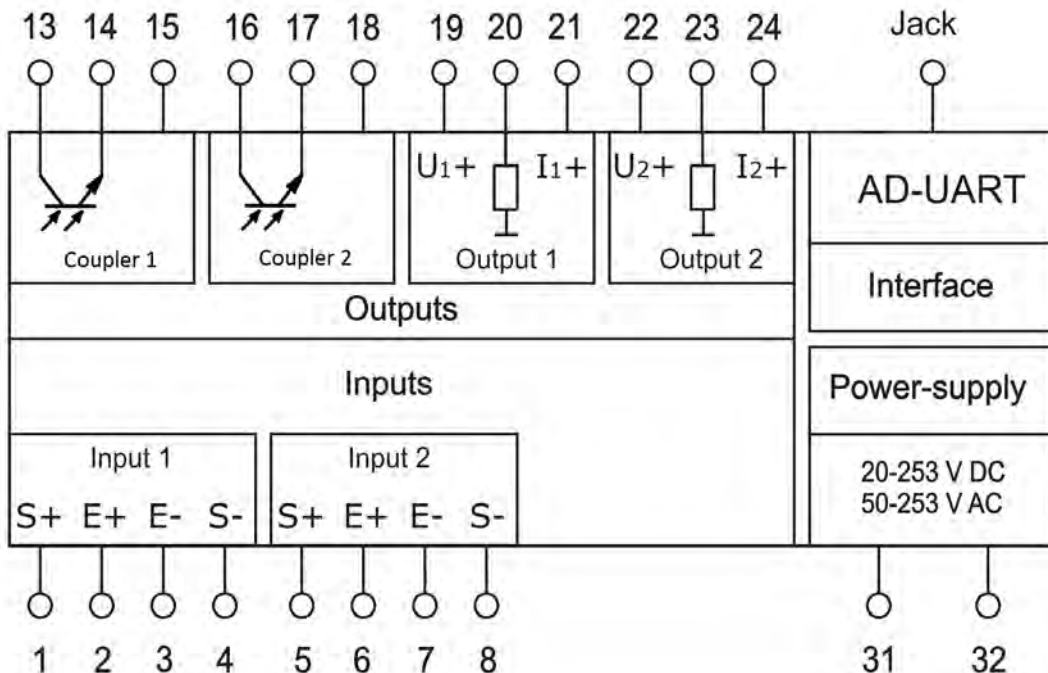
Terminals FE (switchboard)

In the 1-channel version AD-FM 300 FE, channel 2 is not present.

Signal terminal wiring (relay contact)



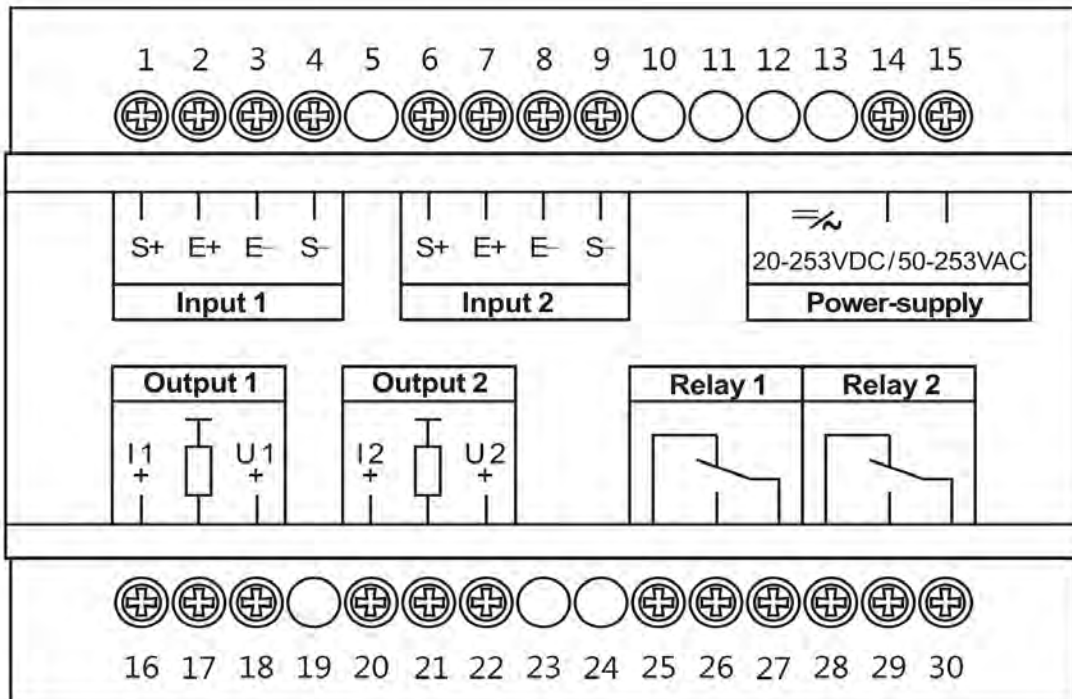
Signal terminal wiring (opto coupler)



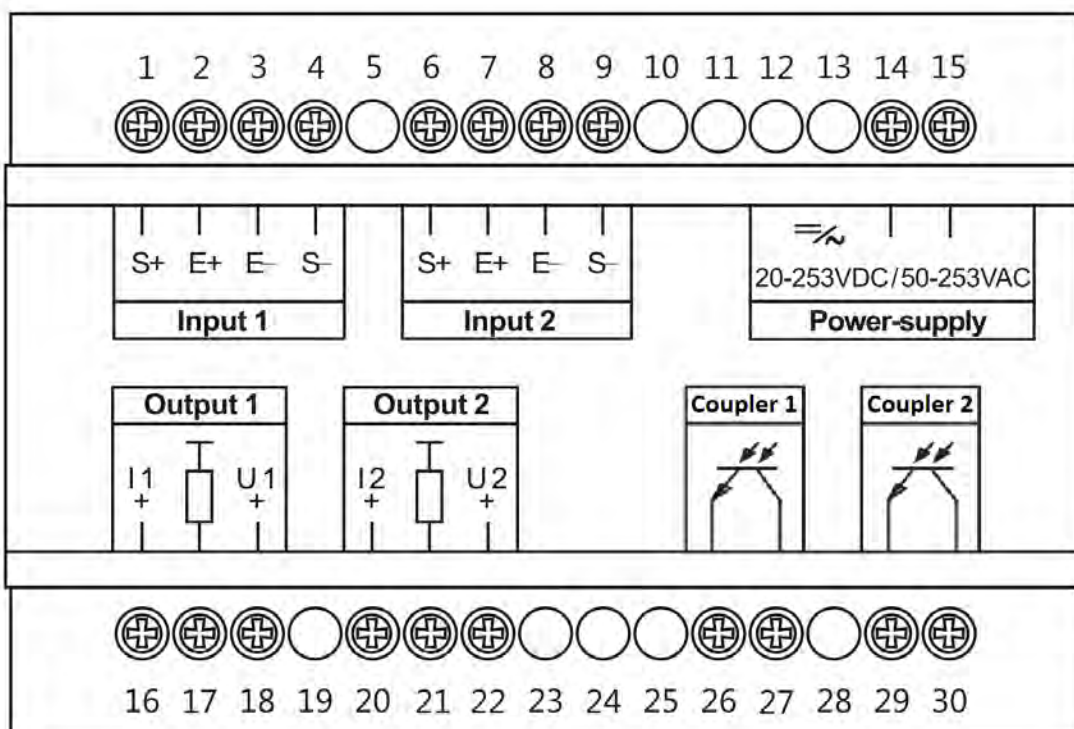
Terminals GA (top hat rail)

In the 1-channel version AD-FM 300 GA, channel 2 is not present.

Signal terminal wiring (relay contact)

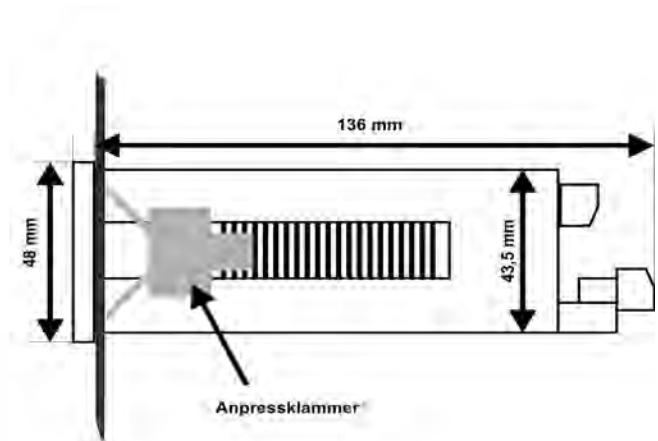
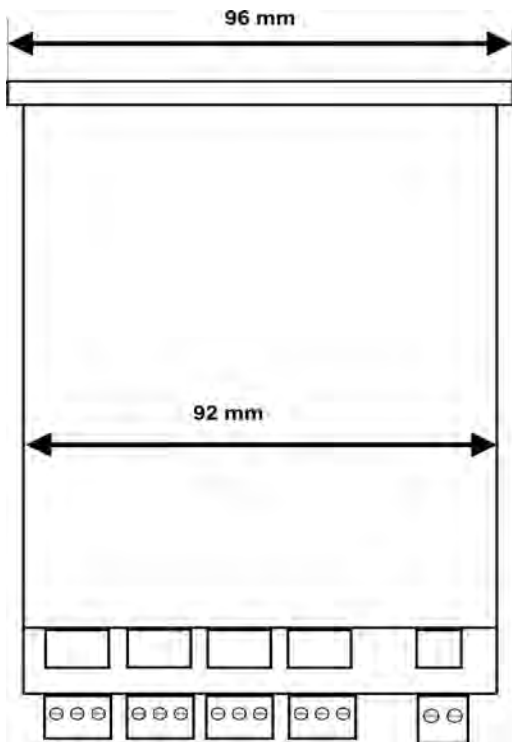


Signal terminal wiring (opto coupler)



Body dimensions

Body housing FE (switchboard)



Body housing GA (top hat rail)

