

BA 007E/FlowCon 200i/09.17

Valid starting from
Hardware V 2.1
Software V 1.2

FlowCon 200i

Display- and Configuration- Unit

Operating manual



General safety instructions

Please always observe the following safety instructions!

Please pay attention to the safety instructions with the following pictograms and signal words in these operating instructions:



IMPORTANT!

IMPORTANT! indicates situations or cases which, if not avoided, could result in damage or failure of the FlowCon 200i or Flowmax equipment.



WARNING!

WARNING! indicates general hazardous situations or cases which, if not avoided, could result in serious injury or death.

NOTICE!

NOTICE! is used to lead users to helpful information not related to personal injury.

Intended use

- The display and configuration unit FlowCon 200i may only be used in combination with flow meters of the Flowmax series from MIB GmbH.
- The display and configuration unit FlowCon 200i is built operationally safe in accordance with the latest state of the art technologized developments and industry standard EN 61010 regulations (corresponds to VDE 0411 "Safety specifications for electrical measurement, control and laboratory devices").
- The manufacturer is not liable for any injury, damage or harm due to inappropriate or unintended use or modifications of the flowmeter. Conversions and/or changes to the flowmeter may only be made, if they are expressly performed in accordance with the operating instructions in this operating manual.

Personnel for installation, commissioning and operation

- Assembly, electrical installation, commissioning and maintenance of the unit must be carried out by qualified, trained personnel. The qualified personnel must have read and understood the operating instructions in this operating manual and must follow the operating instructions in this manual.
- The installer has to ensure that the flowmeter is correctly connected according to the electrical connection diagrams in this operating manual.
- Serious injury or death from electric shock may occur if wiring, installation, disassembly or remove of wires is performed while electrical power is energized



WARNING!

Technological progress

The manufacturer reserves the right to revise, alter, or modify the display and configuration unit FlowCon 200i to the most current technology without special prior notice. Further information about the latest updates and potential additions to these operating instructions are available from MIB.

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1. Planning information

1.1 Areas of application

The display and configuration unit FlowCon 200i is designed to visualize flow measurements as well as programming configurations to connected Flowmax flowmeter. The FlowCon 200i is used as:

- Service tool to read and change configurations of a connected Flowmax
- Display unit for actual process parameters
- Independent voltage supply for FlowCon 200i and one connected Flowmax

FlowCon 200i has the following features and benefits:

- Wall-mounting
- Voltage supply of one Flowmax ultrasonic flow meter
- Access to all menu options and configuration
- Compact design

1.2 Operational safety

Comprehensive self-tests ensure highest possible safety.

The protection class is IP 65.

FlowCon 200i meets the general EMC immunity requirements according to CE, EN 61000-6-3, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6.

FlowCon 200i meets the safety requirements concerning the Protective Extra Low Voltage directive according to EN 50178, SELV, PELV.

2. Assembly and installation

2.1 Installation instructions

Requirement for proper functionality is the correct installation of an ultrasonic flowmeter of the Flowmax series. Detailed information about installation of Flowmax can be found in the Flowmax manual (Flowmax 30S, Flowmax 44i, Flowmax 400i).



NOTICE!

FlowCon 200i is compatible with following Flowmax hardware and software version:

Starting from HW 2.0 and SW 125 for Flowmax 400i

Starting from HW 2.1 and SW 125 for Flowmax 44i

Starting from HW 2.1 and SW 128 for Flowmax 42i

2.2 Mounting

For an easy and smooth wall-mounting use the mounting plate with the Ø8mm bores. The distance between the two holes is 145mm. Mounting can be done horizontally or vertically therefore the display is rotatable in 90, 180 and 270°. If FlowCon 200i is not used permanently, but for service or configuration, no mounting is required. For more information about mounting see chapter 5.1 Dimensions and weight.

2.3 Electrical wiring

Serious injury or death from electric shock may occur if wiring, installation, disassembly or remove of wires is performed while electrical power is energized.

Always shut off or disconnect electrical power at service panel and lock switch or breaker and tag to prevent energizing electrical power during work or while FlowCon 200i is not assembled and installed.

Wiring installation, disassembly and removal must be performed by qualified persons experienced and knowledgeable about electrical work.

Observe the connection polarity and the permissible operating voltage.

The housing of the FlowCon 200i should not be opened for electrical wiring and commissioning.

Via a T-fitting a Flowmax ultrasonic flowmeter is connected to the FlowCon 200i. Also via the T-connector power supply for FlowCon 200i is fed via a 24V switching power supply. An additional external power supply is not needed.



WARNING!

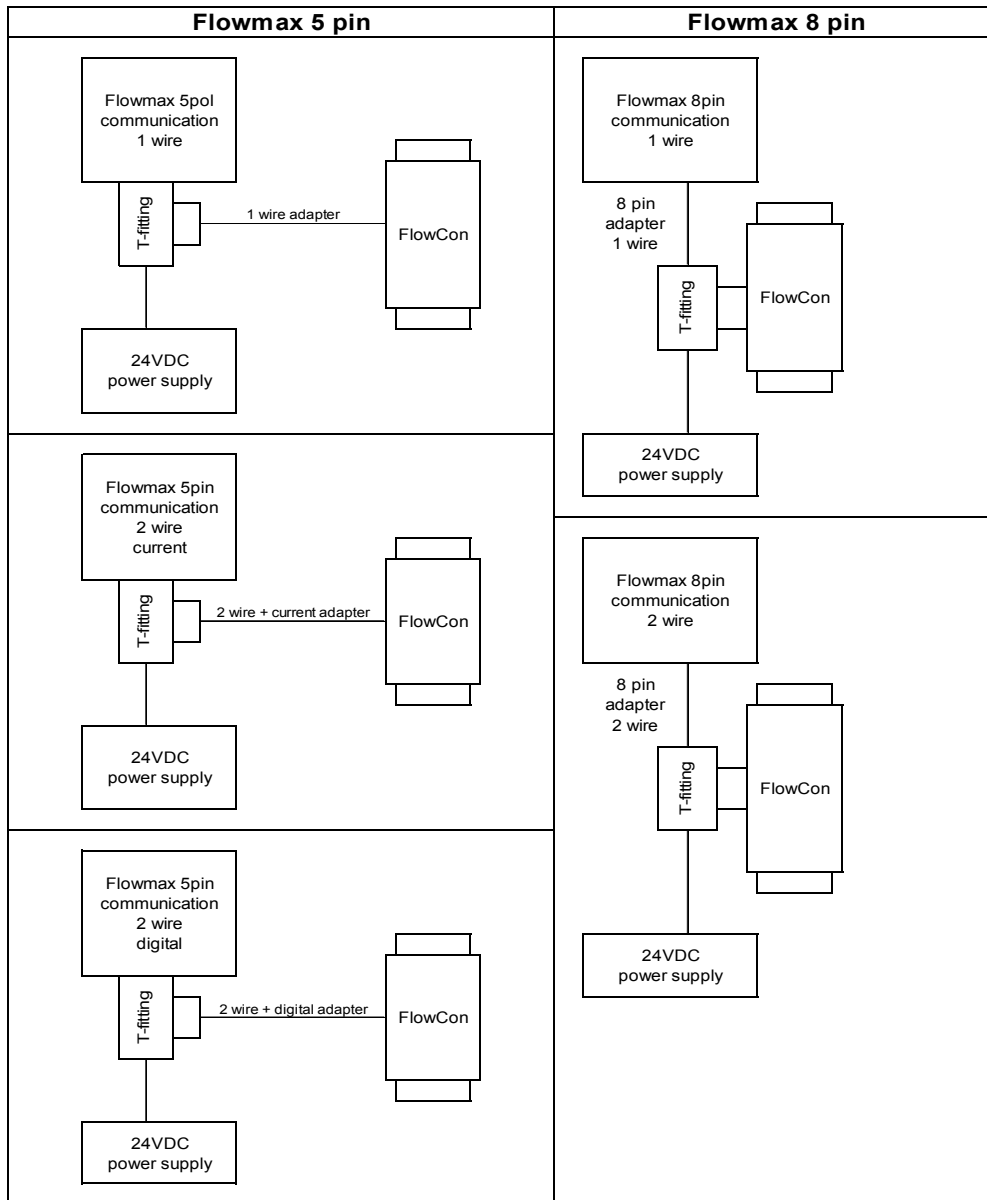


Figure 1: Connection of FlowCon 200i

For power supply and Flowmax connectivity the delivered connection material should be used.



IMPORTANT!

2.3.1 Connector cable 5pin configuration defined by manufacturer

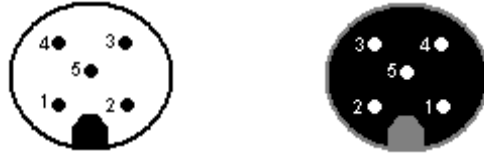


Figure 2: Pin code: Connection plug / socket for 5-pin version

Pin	Function	Description
1	24 VDC	Power supply: 18...30 VDC
2	No function	-
3	GND	Ground: 0 V
4	Communication	Communication interface
5	No function	-

2.3.2 Connector cable 8pin configuration defined by manufacturer



Figure 3: Pin code: Connection plug / socket for 8-pin version

Pin	Function	Description
1	24 VDC	Power supply: 18...30 VDC
2	No function	
3	GND	Ground: 0 V
4	No function	
5	No function	
6	Communication	Communication interface
7	No function	
8	No function	

IMPORTANT!

The display and configuration unit FlowCon 200i may only be operated within the limits specified on the nameplate and in this manual / data sheet. When unauthorized operating conditions can lead to overloading, damage or defect.



IMPORTANT!

3. Commissioning

3.1 Operation

3.1.1 Display and user menu

FlowCon 200i is equipped with a display to visualize actual measurement values and to change parameters of a connected flowmeter. Menu navigation and parameter changes are controlled by the four keys on the keypad.

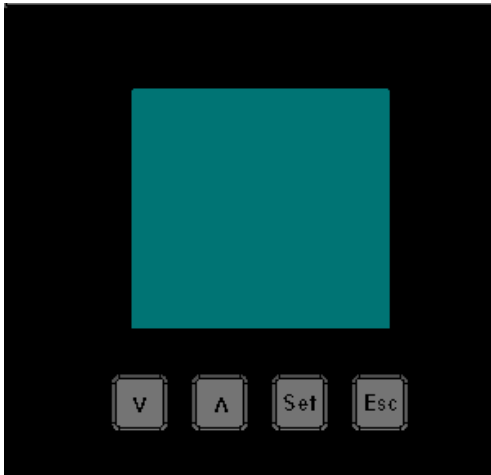


Figure 4: Operating with the keypad

NOTE:

If FlowCon 200i is operating without a connected Flowmax the display shows “Searching Flowmax”. As soon as a Flowmax is connected correctly the display shows the actual measured values.

NOTICE!

Press the “Set” key to display the main menu. Different menu options can be selected by using the two arrow keys.

To enter e.g. analog limits “Analog output – Upper limit” use the arrow keys to change values and press “Set” to confirm. To switch back to the last menu level press the “Esc” key. As soon as the operator tries to change values the user will be prompted to enter a password. Password protection is used to ensure changes to values or configurations are done by authorized personnel. The default password is **41414**. The password can be changed with FlowSoft. The user level will remain active for 30 minutes after the last press on any button. After 200 seconds FlowCon 200i jumps back into the start screen if no button is pressed while using the menu except while FlowCon 200i is in the “Dosing” or “Diagnostic” menu.

NOTE:

Always the actual set-activated menu parameters are shown in the display. The activated parameter is displayed inverted.

NOTICE!

NOTE:

In the menu all the possible functions of the instrument are visible

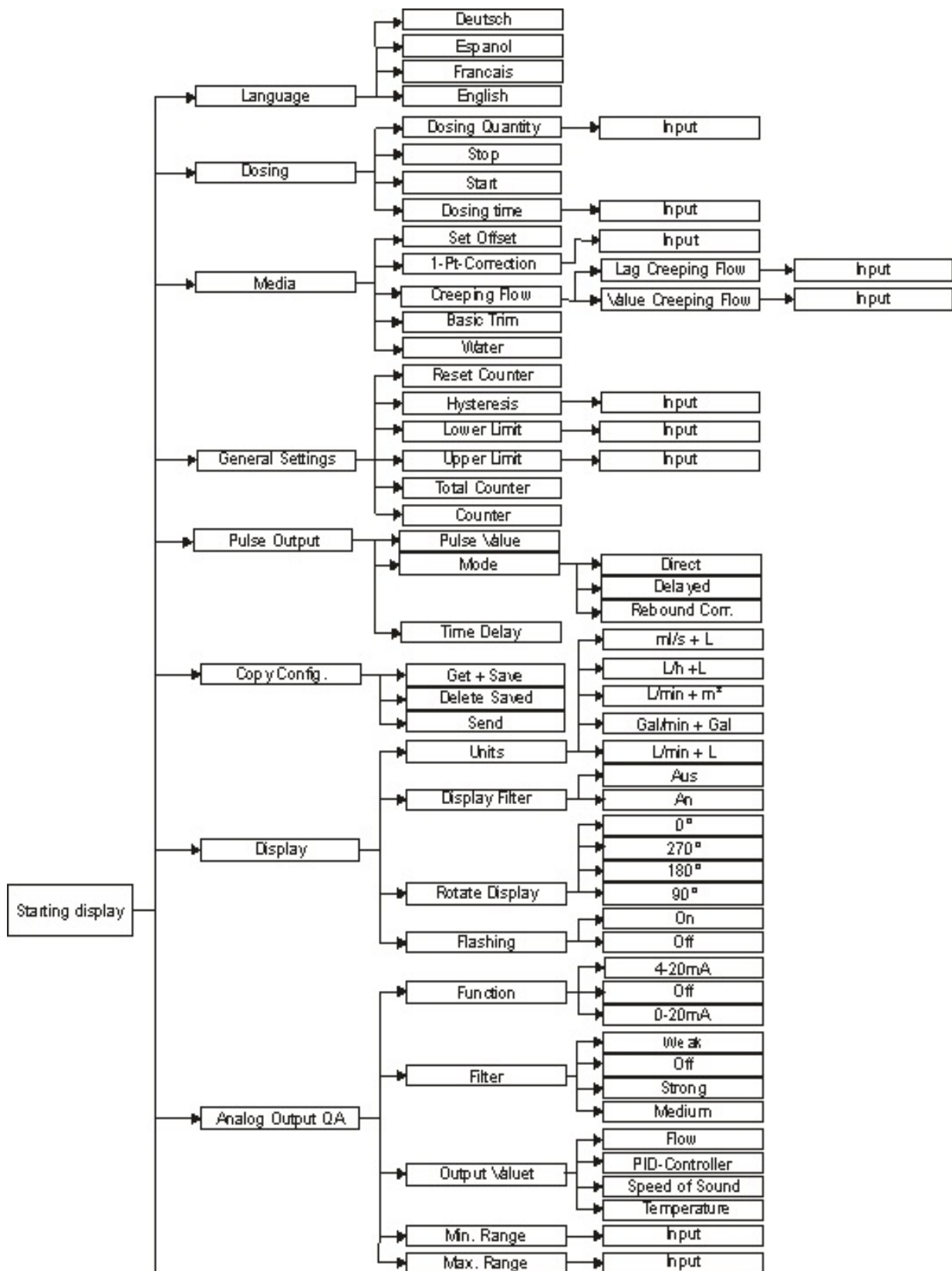
NOTICE!

The functions of Digital Output Q2 and Digital Input I1 are only available on the Flowmax version with 8-pin plug.

In the menu Analog Output there are displayed the output value functions PID - Controller and Speed of Sound. They are provided only with functionality, if they were considered in the order (optional).

Slavemodus

For technical service, update or to repair FlowCon 200i can put in the slave mode. Before you can switch the unit to the slave mode it must be ensured that no Flowmax meter is connected to the FlowCon 200i and the message "Search Flowmax" appears on the display. To switch to Slave mode you have to hold down the "▲" button for about 3 seconds. While FlowCon is in slave mode the display shows the message "Slave Mode". By pressing the "Esc" key the slave mode is terminated and FlowCon 200i jumps back in the search mode.



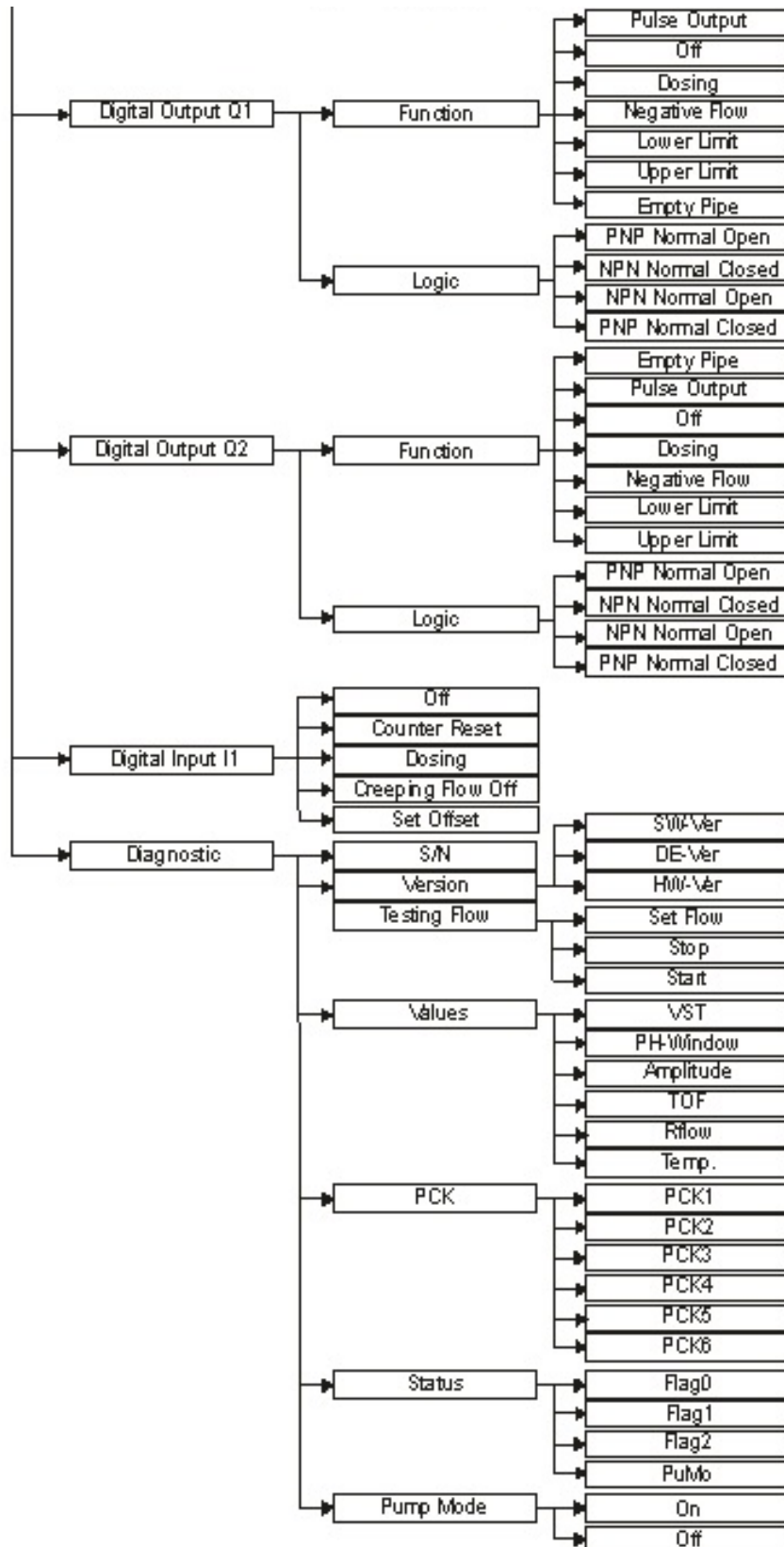


Figure 5: Menu structure FlowCon 200i

3.2 Functionalities of flowmeter and default settings

3.2.1 Language

The language of the display can be changed. Available languages are English, Spanish, French and German.

3.2.2 Dosing

A manually dosing can be configured by choosing the dosing function via the user display. The Volume “Dosing Quantity” and the “Dosing Time” are freely adjustable. The dosing time is intended as a safeguard against unintentional overspill. When “Dosing Time” is set to zero, the timer control is inactive. A dosage can be started and stopped with the menu function keys “Start” and “Stop”.

Setting range “Dosing Quantity”: 0 – 3500 Liters, in steps of 0.001 L
 Default setting “Dosing Quantity”: 0 Liters

Setting range “Dosing Time” 0 –30000 Seconds, in steps of 0.1 sec,
 having an accuracy of +0/-1

Default setting “Dosing Time”: 3 Seconds

IMPORTANT!

If Dosing Time =0 the time switch-off is inactive.

Example:

Dosing time = 3 seconds. That is Flowmax is sending the closing signal after 2.1 to 3.0 sec to the valve. The dosing time is designed as a security feature. An exact dosage purely on the dosing time is not useful.

WARNING!

The customer has to provide a technical solution for overflow protection and an emergency stop switch. Both functions must run for safety to valve closure.

3.2.3 Media

3.2.3.1 Set Offset

In the sub menu “Set Offset” it is possible to set the actual offset of the flow meter. Use this function only when the flowmeter is completely filled with liquid, and there is no flow. If the offset is set while flow is present or when the pipe is empty it will cause an offset drift what results in a faulty measurement. Example of operation see appendix.

A small offset change, e.g. caused by variable temperatures, is automatically done by the flowmeter. It is also possible to set the offset via the configurable digital inputs.

3.2.3.2 1-Pt-Correction

Setting range: -50.0...50.0 % in steps of 0.1%

Example of operation see appendix.



IMPORTANT!



WARNING!

3.2.3.3 Creeping suppression

The creeping suppression excludes flow measurements that result from convection in a narrow band around zero, even with a closed valve. At the factory, the creeping suppression is set at a standard value in relation to the cross-section of the flow meter. Changes to a smaller value of the parameter may cause an offset drift what results in a faulty measurement.

Creeping suppression works with a hysteresis of - 25%.

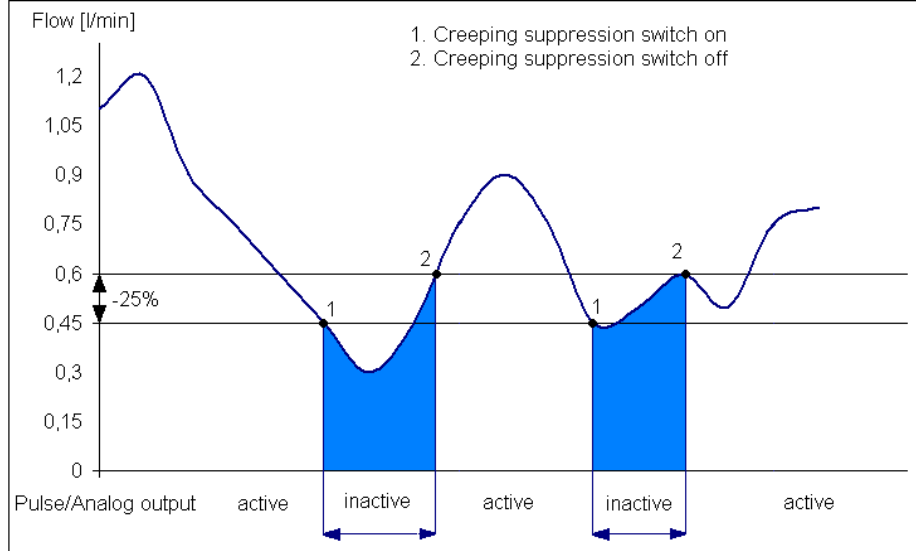


Figure 6: Function of creeping suppression illustrated with 0.6 l/min

Example: Creeping suppression = 0.6 l/min
 If the flow rate is lower than 0.45 l/min the pulse output/analog output becomes inactive. If the flow rate exceeds 0.6 l/min a pulse is output again and added to the totalizer. Similarly, a value is transmitted to the analog output again.

Setting range: 0.0...20 l/min, in 0.006 l/min steps

Lag Creeping Flow (only active, in Flowmax starting from SW129)

The activation of the creeping suppression can be delayed. The value is adjustable via menu.

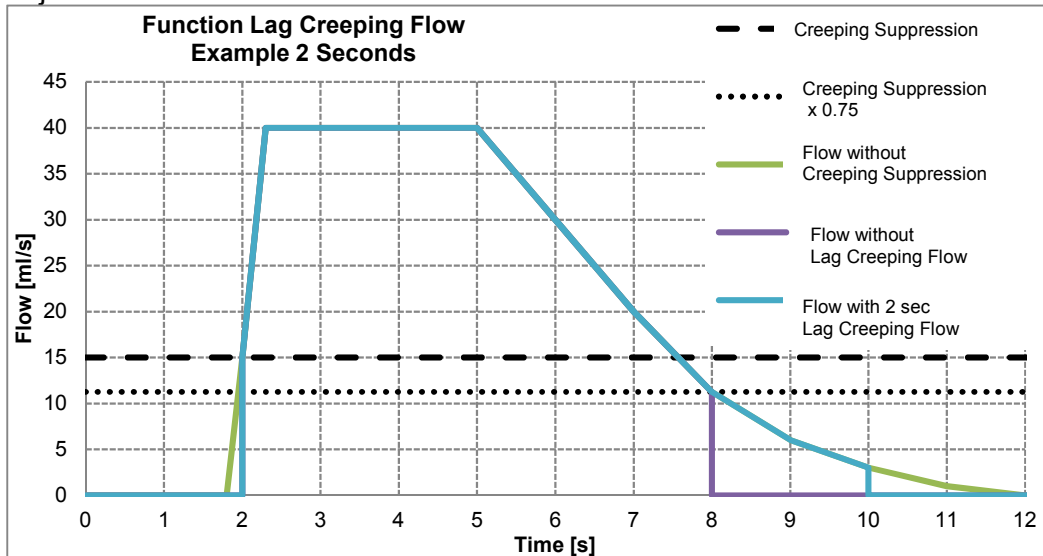


Figure 7: Function Lag Creeping Flow

Setting range: 0...99.9 s in steps of 0.1 s

3.2.3.4 Basic Trim

The “Basic Trim” function insures that the flowmeter is conforming to the media specific characteristics. To execute this function, Flowmax runs a self-diagnostic function which optimizes all important parameters. This process lasts approximately 1 minute.



NOTICE!

IMPORTANT!

To make sure the basic trim is correctly done, the flowmeter has to be filled with liquid without a flow.

When there is an error detected while performing the basic trim function, the display shows “Error”. After successfully finishing the basic trim function, the display will show “Done”.



IMPORTANT!

3.2.3.5 Water

In this menu item, the correction values of the media matrix, previously entered with FlowSoft are written back to the water value.

3.2.4 General Adjustment

3.2.4.1 Reset Counter

The volume counter of Flowmax can be reset.
Example of operation see appendix.

IMPORTANT!

Once reset, counter values cannot be restored. After a reset the counter works normally.



IMPORTANT!

3.2.4.2 Hysteresis (only aktive, in Flowmax starting from SW129)

The limit values can be provided with a hysteresis. This is to avoid frequent switching of the outputs when the flow moved to a limit around.

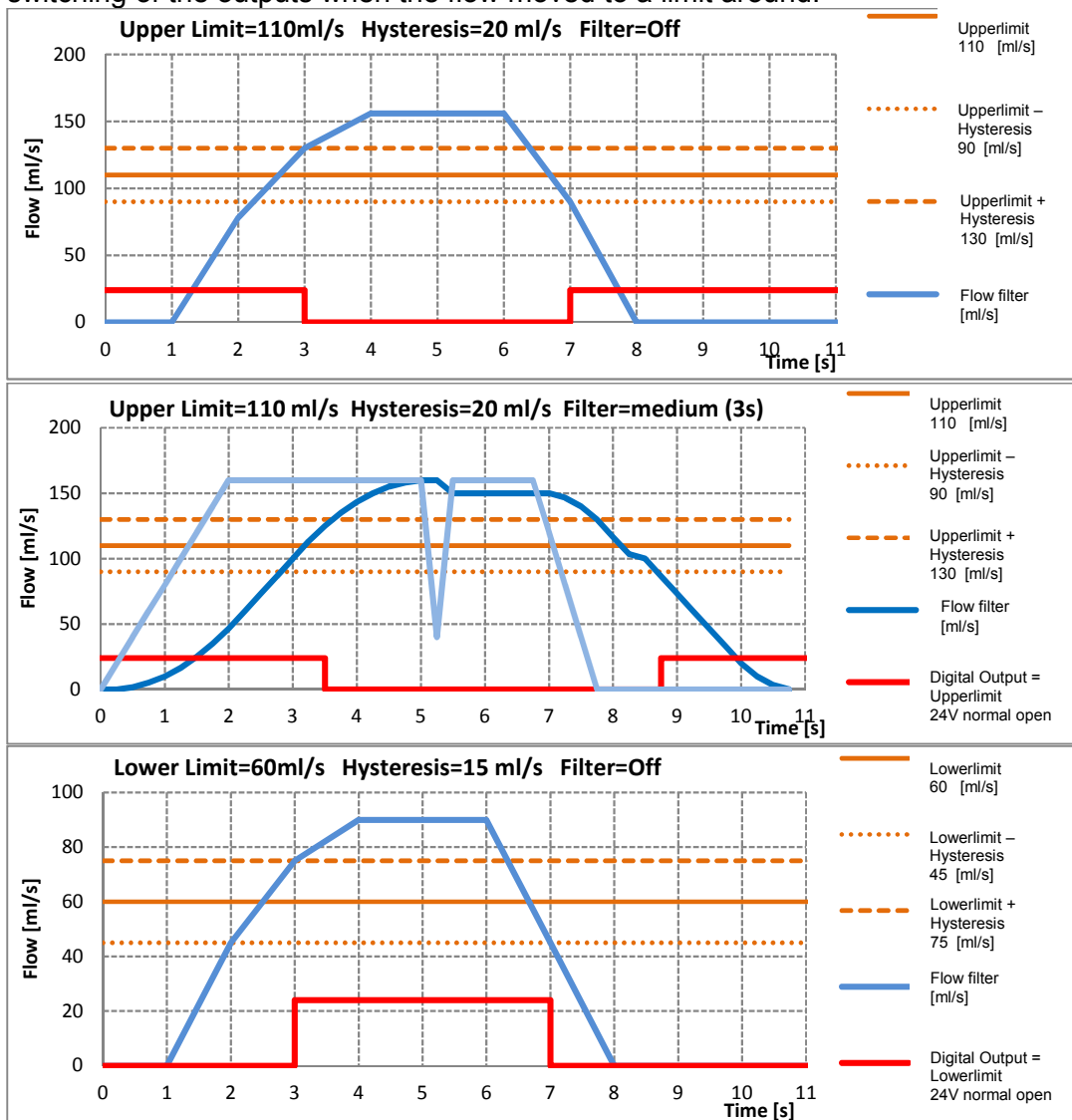


Figure 8: Function Hysteresis at limit

Setting range: 0 to 8000ml/s in steps of 0.01 ml/s.

3.2.4.3 Lower Limit

Here, the lower limit for the digital output is set.

Setting range: 0 to 8000ml/s in steps of 0.01 ml/s.

3.2.4.4 Upper Limit

Here, the lower limit for the digital output is set.

Setting range: 0 to 8000ml/s in steps of 0.01 ml/s.

3.2.4.5 Total Counter

The Total Counter can be displayed in the menu. The unit is fixed to m³. This counter is unidirectional and can therefore differ from the daily counters.

The Total Counter can not be set to zero!

3.2.4.6 Counter

The daily counters is the one that appears by default in the display. The unit corresponds to each set. The behavior of the daily quantity counter

a) at daily amount in [l]

from [l]	to [l]	resolution display [l]
0,000	14000	0,001
14000	28000	0,002
28000	56000	0,004
56000	112000	0,008
112000	225000	0,016
225000	445000	0,032
445000	1000000	0,064

Once the counter has reached 1.000.000 liters, it automatically begins to count up from zero. Total counter runs without resetting on.

b) at daily amount in [m³]

from [m ³]	to [m ³]	reolution display [m ³]	rounding error -0,05%
0,000	14000	0,001	
14000	28000	0,002	
28000	56000	0,004	
56000	112000	0,008	
112000	225000	0,016	
225000	461204	0,032	

Once the counter has reached 461.204 m³ it automatically begins to count up from zero. Total counter runs without resetting on.

c) at daily amount in [US-Gal]

from [Gal]	to [Gal]	resolution display [Gal]	rounding error +0,12%
0,000	14000	0,001	
14000	28000	0,002	
28000	58000	0,004	
58000	112000	0,008	
112000	225000	0,016	
225000	460000	0,032	
445000	1000000	0,064	

Once the counter has reached 1.000.000 Gal it automatically begins to count up from zero. Total counter runs without resetting on.

3.2.5 Pulse Output

3.2.5.1 Pulse value

The pulse value determines the flow volumes for which an output pulse will be emitted.

Choose a configuration which will neither exceed the maximum output frequency of the Flowmax (10kHz) nor the maximum input frequency of the control. If the maximum frequency is exceeded the Flowmax will not output pulses correctly.

Example: 2.0 ml/Pulse

This means: a pulse is emitted every 2.0 ml.
 Setting range: 0.1...3000.0 ml/Pulse, in steps of 0.1 ml/Pulse

Flow	Pulse value	Frequency	Period	Duration of the pulse	
ml/s	ml/Pulse	Hz	s	s	ms
1	1	1	1	0,5	500
100	1	100	0,01	0,005	5
1000	0,1	10000	0,0001	0,00005	0,05
100	10	10	0,1	0,05	50
0,5	10	0,05	20	1	1000

In the last case every 20 seconds, a pulse of 1 second duration is put out.

3.2.5.2 Mode

The mode of the pulse output is set.
 Setting range: Direct, Delayed, Rebound Corr.

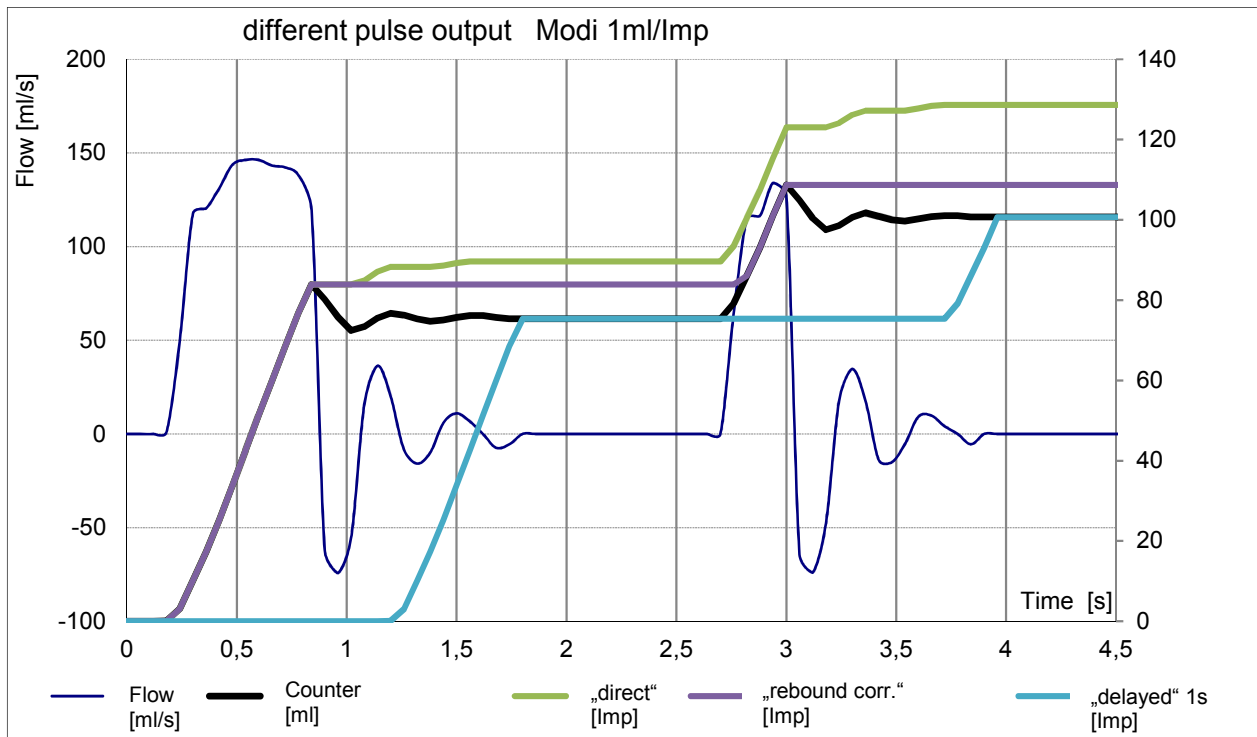


Figure 9: Modi Pulse output

3.2.5.3 Mode „direct“

Function:

From the moment at which an upward fluid flow is measured, pulses are output.

Typical application:

For fast response, dosing application, if a PLC which counts pulses to close a valve after a predetermined amount.

3.2.5.4 Mode „rebound corrected“

Function:

The pulse output is delayed until the already counted amount of the internal daily counter is reached. From then further pulses are output.

Typical application:

For timely energy metering, but not when "Real time" is necessary.

3.2.5.5 Mode „delayed“

Function:

The pulse output is delayed. If the number of pulses reaches the amount counted by the internal daily counter, the pulse output is stopped.
The delay time must be greater than the swing of the hydraulic.

Typical application:

For quantity measurement for a long time or if the pulses do not have to be counted with the river at the same time.
When piston or peristaltic this mode is recommended, with delay time as 1s.

3.2.5.6 Time Delay

The time is set at what the pulse output should be delayed.

Setting range: 0...25 s in steps of 0.1s

3.2.6 Copy Configuration

In Flowmax of same type in the same application, the once determined configuration can be transferred to other Flowmax.

ATTENTION!

To use this function properly, the target Flowmax must be the same type (for example, Flowmax 44i) and the same nominal size (e.g., DN15). Otherwise, parameters can be configured with incorrect values, which leads to malfunction.
Setting range: Get+save, Delete saved, Send

3.2.6.1 Get+save

The configuration from the Flowmax connected to the FlowCon 200i is read and stored in FlowCon.



IMPORTANT!

3.2.6.2 Delete saved

The configuration saved in FlowCon 200i will be deleted.

3.2.6.3 Send

The configuration currently stored in FlowCon 200i will be dubbed in the connected Flowmax.

3.2.7 Display

ATTENTION!

The parameters set under the menu item display are all related to the display of the FlowCon 200i.



IMPORTANT!

3.2.7.1 Units

The actual flow or the volume can be shown in different units.

Setting range: ml/s + l , l/h + l, l/min + m³, Gal/min +Gal, l/min + l
Default setting: ml/s + l

Example: ml/s + l

Here, the flow appears in the unit "ml / s" (milliliters per second) and the daily amount in "l" (liters).

Gal are US Gal with 1 Gal = 3,785 l.

3.2.7.2 Filter for Display

The indicated flow can additionally be filtered. This filter is an average over the last 16s. It can be activated and deactivated via the menu.

Setting range: Off, On
Default setting: Off

3.2.7.3 Rotate Display

The display can be rotated in steps of 90°.

Setting range: 0°, 270°, 180°, 90°
Default setting: 0°

3.2.7.4 Flashing

The display flashes in case off an error. This can be switched off

Setting range: On, Off
Default setting: On

3.2.8 Analog Output QA

3.2.8.1 Function

The Analog Output is an active current output with 0-20mA or 4-20mA. It can be adjusted via the display menu or FlowCon.

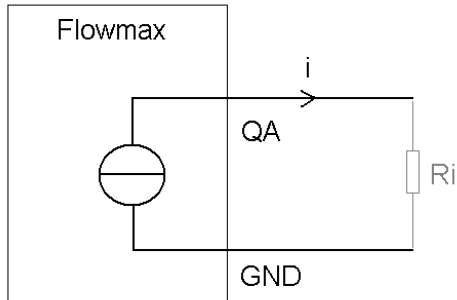


Figure 10: The current output is active

Setting range: 0-20mA, 4-20mA, Off

The current output ranges from 0 to 22.6mA measuring the flow rate or the condition of the flow measurement.

The values here signify for 4-20mA configuration:

- 20 mA the upper limit of the relevant measurement
- 4 mA the lower limit of the relevant measurement
- 3.5 mA empty pipe

Upper and lower limit parameters can be set within the type-specific measurement of the device. The value of the upper limit must be greater than the value of the lower limit, so that the values are stored. By default, the lower limit is 0 mA or 4 mA and the respective end of the measuring range is set to 20 mA.

Setting range: 0-20mA, 4-20mA, off

Default setting: Flow, Temperature

ATTENTION!

When current output is used, the load must not be higher than 500Ohm. A higher load prevents the device from providing the maximum current of 22.6mA.

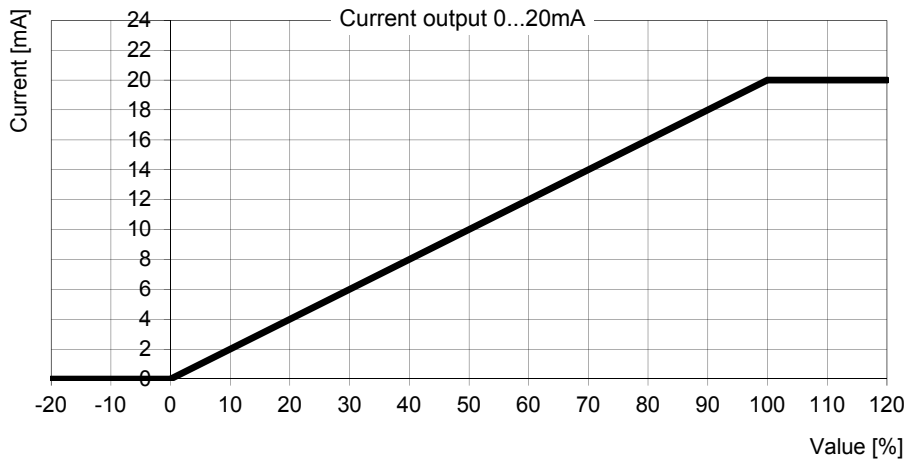


IMPORTANT!

Characteristic curves analog output

- **0 - 20mA**

For the following graphic “min Range” is used for 0% and “max Range” is used for 100%.

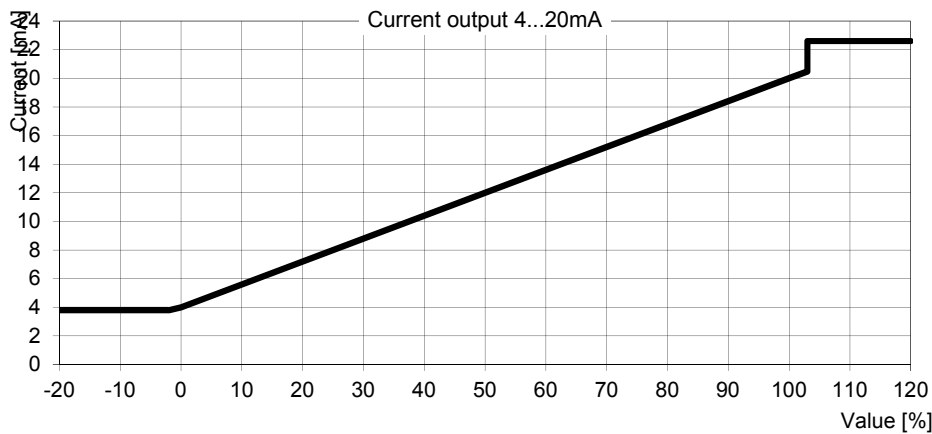


Value	Current [mA]
Smaller 0%	0
0% (min Range)	0
Between 0% and 100%	Linear interpolation from 0 to 20 mA
100% (max Range)	20
Bigger 100%	20

Figure 11: Characteristic curve 0 to 20mA

- **4 bis 20mA**

For the following graphic “min Range” is used for 0% and “max Range” is used for 100%.



Value	Current [mA]
Empty pipe	3.5
Smaller -1.2%	3.8
Between -1.2% and 0%	Linear interpolation from 3.8 to 4mA
0% (min Range)	4
Between 0% and 100%	Linear interpolation from 4 to 20mA
100% (max Range)	20
Between 100% and 103%	Linear interpolation from 20 to 20.5mA
Bigger 103%	22.6

Figure 12: Characteristic curve 4 to 20mA

3.2.8.2 Filter

The function "Filter" averages the analog output signal. Possible settings:

Setting range: Weak, Medium, Strong, Off

The analog output signal reacts faster to signal changes when average determination is set to "weak". Whereas the analog output signal reacts slower when average determination is set to "strong".

For further information see the manual of Flowmax.

3.2.8.3 Output Value

In the menu all output values are visible. The optional features are only available when they are ordered. If a not ordered function is selected, the output remains on flow.

Setting range: Flow, PID-Controller, Speed of Sound, Temperature

Flow measurement for the analog output

Via the analog output of the measured flow is output.

PID controller for the analog output (Option)

On the current output, it is possible to realize a flow control. For setting the parameters (target flow, proportional gain, integral gain and differential gain) FlowSoft is necessary.

When this function via the menu (see Section 3.1 Fig 5. Menu structure FlowCon 200i with analog output QA - Output value) is selected and the function PID controller was not ordered, the function flow is output.

Speed of Sound for the analog output (Option)

When this function via the menu (see Section 3.1 Fig 5. Menu structure FlowCon 200i with analog output QA - Output value) is selected and the function Speed of sound was not ordered, the function flow is output

Temperature measurement for the analog output

Via the analog output the measured temperature is output.

The temperature sensor is not wetted. It is used to calculate the extent of the measuring channel. The sensor is influenced by the ambient temperature. The temperature value will become sluggish, because it measures the plastic - Temperature inside the sensor pocket.

For further information see the manual of Flowmax.

3.2.8.4 Min Range

Here, the value is set at the 0 or 4 mA to be output.

Setting range: 0 to 8000ml/s (or °C or m/s) in steps of 0.01

3.2.8.5 Max Range

Here, the value is set at the 20 mA to be output.

Setting range: 0 to 8000ml/s (or °C or m/s) in steps of 0.01

3.2.9 Digital Outputs Q1 and Q2 (Q2 only with 8-pin plug available)

The digital outputs Q1 and Q2 can be used as a pulse output, for signaling the empty pipe message for controlling a dosing valve or to limit monitoring. All outputs become high resistant if voltage falls below 16V. The digital outputs become high resistant after about 100us for 2s when short circuit or overload. Then it will retrying to actuate the output.

Setting range: Off, Pulse Output, Empty Pipe, Dosing, Lower Limit, Upper Limit, Negative Flow

NPN- or PNP-Logic can be selected.

Setting range: PNP / NPN, normal closed / normal open

Empty pipe output

	Empty pipe	Filled, no flow
0V normal closed	High resistance	0V
0V normal open	0V	High resistance
24V normal closed	High resistance	24V
24V normal open	24V	High resistance

Pulse output

	Empty pipe	Filled, no flow	Filled, flow
0V normal closed	0V	0V	High resistance
0V normal open	0V	0V	High resistance
24V normal closed	High resistance	High resistance	24V Pulses
24V normal open	High resistance	High resistance	24V Pulses

Upper limit output

	Below lower limit	Between the limits	Above upper limit
0V normal closed	High resistance	High resistance	0V
0V normal open	0V	0V	High resistance
24V normal closed	High resistance	High resistance	24V
24V normal open	24V	24V	High resistance

Lower limit output

	Below lower limit	Between the limits	Above upper limit
0V normal closed	0V	High resistance	High resistance
0V normal open	High resistance	0V	0V
24V normal closed	24V	High resistance	High resistance
24V normal open	High resistance	24V	24V

Dosing output

	Startup of device	While dosing	Before/after dosing
0V normal closed	High resistance	High resistance	0V
0V normal open	High resistance	0V	High resistance
24V normal closed	High resistance	High resistance	24V
24V normal open	High resistance	24V	High resistance

IMPORTANT!

When using the dosing function the output should not be configured as normal closed!

If the dosing output is configured as normal closed the valve will stay open after the dosing batch.



IMPORTANT!

IMPORTANT!

Inductive load on the digital outputs without an installed diode may cause damage on the Flowmax electronics.



IMPORTANT!

Example 1: Flowmax via npn, external relay

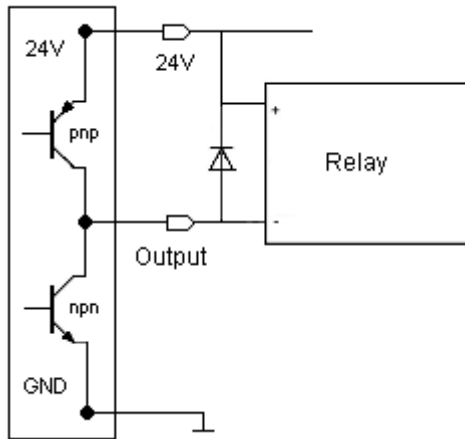


Figure 13: Connecting Digital Output to relay

Example 2: Flowmax via pnp, external counter e.g. PLC

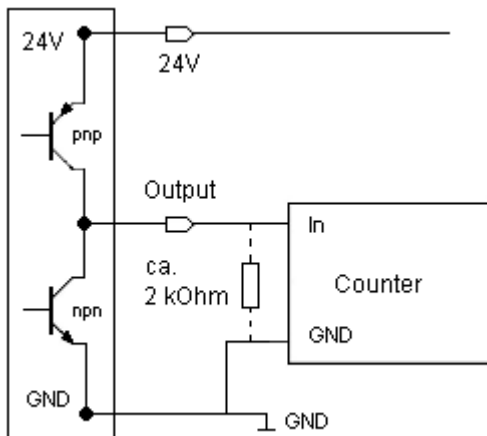


Figure 14: Connecting Digital Output to counter

With high impedance input counters and high speed counting, it may be necessary to include a resistor to have clean edges.

3.2.10 Digital input I1 (only available with 8-pin plug)


Flowmax has a digital input that is programmable for the following functions: dosing input, set offset, creeping suppression inactive and reset counter. In order to start a dosing process, 24V DC power is required. The status of the dosing parameters or modifications can be done via user display or FlowCon.

Setting range: Off, Reset Counter, Dosing, Creeping Flow Off, Set Offset

The dosing input is locked so that a re-start is not possible during a running dosing process.

Available input functions:

	Set offset	Creeping flow off	Dosing	Reset counter	Off
0V	-	-	-	-	-
24V	Rising edge: 0->24V Set offset	State: deactivating creeping flow	Rising edge: 0->24V start dosing	Rising edge: 0->24V counter is reset	-

 run only in stationary medium

The input function “Set Offset“ may only be used when there is no flow through the meter. If an offset trim is done while liquid flow is present an offset drift will cause measurement deviations. If the Flowmax shows an offset drift caused by a wrong offset setting, run the function “Set Offset“ or “Basic Trim“ again with filled flowmeter and no present flow.

3.2.11 Diagnostic

The sub menu “Diagnostic“ shows the software/hardware version and other helpful values for analysis. Actual values and the instrument’s present status are important to analyze the measurement or failure by the manufacturer service.

3.2.11.1 Testing Flow

For commissioning of the process plant, a test flow can be adjusted. In that case the flowmeter will behave as if the test flow is really flowing, even if the flowmeter is empty. To start the simulation “Start“ must be selected, “Stop“ ends the simulation.

When you restart the flowmeter, the test flow is stopped and the value deleted.

Setting range: 0...3200ml/s in steps of 0.1

3.2.11.2 Pump Mode (only active, in Flowmax starting from SW129)

This mode can be switched on and off via the menu.

With pulsating promotion the flowmeter sets the display and analog filter on strong.

If the pulsating delivery stops, the device behaves again as set.

Setting range: On, Off

3.3 Overview of default settings

The default settings are shown in the manual of the Flowmax.

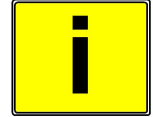
3.4 General Information

Please check the following before powering the FlowCon 200i for the first time:

- Check the electrical connections and cable allocations.
- Check the installation position of the connected flowmeter. Is the direction of the arrow on the housing/name plate and the actual flow direction in the pipe congruent?
- Is the measurement pipe completely filled with fluid?
- Check the back pressure in the system.
- Is the connected Flowmax operational?

When everything has been checked, switch on power.

FlowCon 200i is operational!



IMPORTANT!

4. Exchange of Device

- **Switch off power before disconnecting the electrical connections!**
- **Wiring installation, disassembly and removal must be performed by qualified persons experienced and knowledgeable about electrical work.**
- **Serious injury or death from electric shock may occur if wiring, installation, disassembly or remove of wires is performed while electrical power is energized**

- Please note that after replacing the flowmeter
 - a) Specific programming of the previous flowmeter should be noted and programmed to the new flowmeter
 - b) when using the dosing function, set a quantity



WARNING!

Repair, hazardous substances

Before sending the FlowCon 200i for repair, the following precautions must be taken:

- **Clean all process chemicals from the device.**

Devices judged to be insufficiently cleaned will be returned to sender. No inspection of device will be done until proper cleaning is completed by user.

Costs due to inadequate cleaning of the instrument for possible disposal or injury (burns, etc.) will be charged to the sender of the flowmeter into account.

- **With the device send a detailed report describing the failure, the application and the physical-chemical properties of the medium parameters. (e.g. a decontamination declaration).**



WARNING!

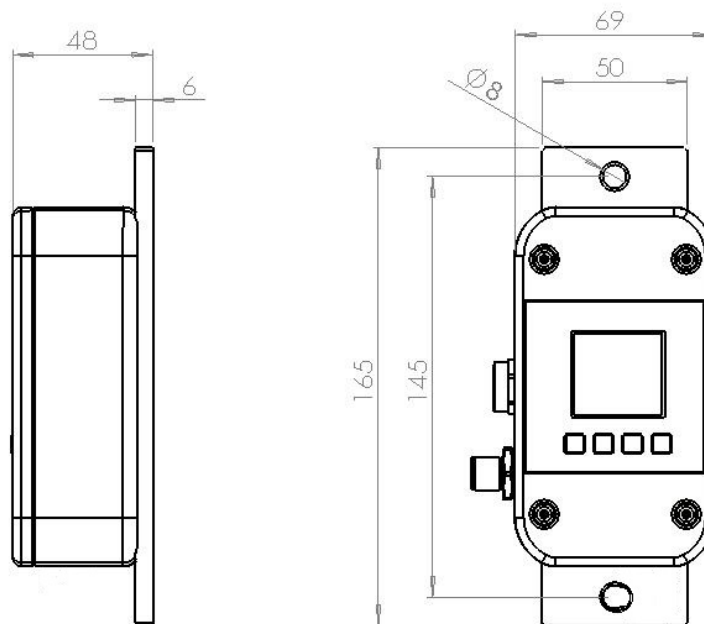


WARNING!

In order to be able to process your repair order quickly and smoothly it is important that you provide a technical contact person including phone and fax number as well as e-mail address.

5. Technical specifications

5.1 Dimensions and weight



Weight: 330g

5.2 Technical specifications

Housing

Protection class	IP 65
Material	Electronic housing made of PSU (Polysulfone) Mounting plate made of PE black

Electronics

Power supply	18...30VDC
Power input	bei 24VDC 3,6W
Connection	5-pin plug
Ambient temperature	+5...+60°C
Storage temperature	0...+70°C
Data interface	Data interface for parameterize
Display	LCD illuminated
Folientastatur:	4 Tasten mit Druckpunkt

The Display- and Configuration Unit FlowCon 200i meets the general EMC immunity requirements according to CE, EN 61000-6-3, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6. It is in conformity with the requirements of the EC directives and has the CE label.

Possible error text FlowCon 200i

Display text	Description	Behavior
Empty Pipe	When "Empty Pipe" is detected, no flow measurement.	Display flashing + text
Low Voltage	When power supply is less than 16V the outputs are inactiv.	Display flashing + text
Searching Flowmax	Message appears if no suitable Flowmax is connected to the FlowCon 200i or a connection problem is present.	only text
Sonic Speed	Actual sonic speed out of specified value. Run basic trim!	only text
Short Circuit	When over load of the digital outputs is detected (>100mA), outputs are inactive.	only text
Lower Limit	When the flow is less than an adjustable limit and the output is configured for limit control. At the same time the configured output is switched.	only text
Upper limit	When the flow is more than an adjustable limit and the output is configured for limit control. At the same time the configured output is switched.	only text
Data safety	Message appears if changes have been carried out by FlowCon 200i and the display menu is left.	only text
Slave mode	Message appears when FlowCon 200i is added for service purposes in the slave mode	only text
Overflow	Message appears if the measuring range is exceeded. This may occur when starting up or when air bubbles. The message is 30 seconds visible even when the flow is within the allowable range. The measurement works but then immediately	only text, message is displayed 30 sec

6. Accessories

Flowmax 44i

Ultrasonic flowmeter for conductive and non-conductive liquids. Inline measurement of dynamic processes with high accuracy. Nominal diameters DN10 to DN25 with ranges up to 240L / min. Available with different hydraulic connections: inch, NPT and Clamp.

Ordercode see pricelist Flowmax 44i

Flowmax 42i

Ultrasonic flowmeter for conductive and non-conductive liquids. Inline measurement of dynamic processes with high accuracy. Sizes DN5 to DN15 with ranges up to 60L / min. Available in HDPE and PVDF.

Ordercode see pricelist Flowmax 42i

Flowmax 54i

Ultrasonic flowmeter for conductive and non-conductive liquids. Inline measurement of dynamic processes with high accuracy. Sizes DN32 with ranges up to 300L / min. Available in HDPE.

Ordercode see pricelist Flowmax 54i

Flowmax 400i

Ultrasonic flowmeter for conductive and non-conductive liquids. Inline measurement of dynamic processes with high accuracy. Nominal diameters DN7 to DN20 up with ranges up to 120L / min. Excellent chemical resistance of the plastic (PFA).

Ordercode see pricelist Flowmax 400i

7. Shipment

- FlowCon 200i
- Power supply 24V
- T-fitting
- 5-pin- or 8-pin-adapter for cabling

Appendix

Examples of operation:

Enter Password

Key	Display picture
Set	Password
4 x ^	40000
Set	X0000
^	X1000
Set	XX000
4 x ^	XX400
Set	XXX00
^	XXX10
Set	XXXX0
4 x ^	XXXX4
Set	

Reset Counter

Set	Dosing Media General Adjustment Display Analog Output QA
Set	General Adustment Reset Counter
Set	General Adjustment Reset Counter Start?
Set	General Adjustment Reset Counter Done

Set Offset

Use this function only when Flowmax is completely filled with liquid, and there is no flow. If the offset is set while flow is present or when the pipe is empty it will cause an offset drift what results in a faulty measurement.

- Set
 - Dosing
 - Media
 - General Adjustment**
 - Display
 - Analog Output QA

- ^
 - Language
 - Dosing
 - Media**
 - General Adjustment
 - Display

- Set
 - Media**
 - Set Offset

- Set
 - Media**
 - Set Offset**
 - Start ?

- Set
 - Media**
 - Set Offset**
 - Start ?
 - Done

1-point correction

With the 1-point correction, the meter is calibrated to an operating point. Given an arbitrary amount of volume is filled into a container and measured with a weight. Attention: subtract the weight of the container.

With inclusion of the density of the medium, the volume (volume = mass / density) is obtained. This has to be compared with the meter display.

Shows the meter for instance 2% more than determined by the scale a value of -02.0% must entered for the 1-point correction.

[Set] Dosing
Media
General Adjustment
Display
Analog Output QA

[^] Language
Dosing
Media
General Adjustment
Display

[Set] **Media**
Set Offset

[V] **Media**
1-Point-Correction

[Set] **Media**
1-Point-Correction
-00.0%

Setting the sign
Setting the value

[Set] **Media**
1-Point-Correction
Done

To enable the correction back to delivery, a correction of 00.0% is to be entered.

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