



### Special Features

- The FM-1D/K is a  $\mu$ P-controlled frequency converter with display. It converts input pulses to an analog current signal proportional to the momentary flowrate.  
The incoming pulses are converted to:
  - standard signal current output
  - pulse totalisation
  - LED indication of flowrate or totalisation
- Simple key input calibration
- Wall mounted or clipped onto a top hat rail acc. to EN 50022
- Accommodates a wide range of pulser inputs
- Pulse output through relay
- Current output ranges 0 or 4 ... 20 mA
- Reverse flow identification
- Input pulse monitoring
- Test mode
- Integrated on site indication of:
  - flowrate
  - counter reading
  - programming data
- Data retention in case of power failure by non-volatile memory

### Application

- Flowrate indication
- Remote reading
- Remote indication
- Remote transmission
- Batching and dosing
- Automation

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## ■ Performance Data

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### Power supply

230 V AC (209...253 V), 115 V AC (105...126 V),  
24 V DC (20...27 V) and 24 V AC (17...27 V)

### Power consumption

3.5 VA (3 W)

### Dimensions

100 x 73 x 114 mm (W x H x D)

### Weight

approx. 650 g

### Protection class

IP 40

### Temperature range

operation: 0 ... +70 °C  
storage: -10 ... +80 °C

### Input

Universal sensor input for external switch or proximity  
sensor acc. to DIN 19234 (Namur)  
2-wire, 8.2 V, approx. 1 kOhm

### Auxillary voltage for feeding 3-wire sensor

12 V, 10 mA

### Input frequency range

0...0.1 to 0 ...1000 Hz (for 0/4 ... 20 mA)

### Maximum cable length

approx. 6 km (depending on cable quality)

### Contact bounce suppressing

automatic (depending on the input frequency)

### Output

#### Current output

0 ... 20 mA or 4 ... 20 mA (selectable)

#### Load

max. 1000 Ohm (at nominal supply voltage)  
(max. 700 Ohm with connected 3-wire pulser)

#### Response time

14 step selectable (no damping = 1, max. damping = 14)

#### Max. transmission distance

approx. 14 km at 500 Ohm-load  
with a cable cross section of 1mm<sup>2</sup>

#### Pulse output

Relay closure, max. 48 V AC/DC, 1 A, voltage free,  
closing time 500 ms, max. 1 Hz

#### Maximum transmission distance

approx. 500 m for a contact closure pulser  
12 km with an additional transistor relay

### Display

- 4-digit, 7-segment LED, 10 mm digit height
- momentary flowrate
- counter reading
- programming data:
- flowrate range
- input pulse validity
- output pulse validity
- standardized current range
- response time

### Calibration

3 input keys used in conjunction with LED dialog  
display with selectable protection code

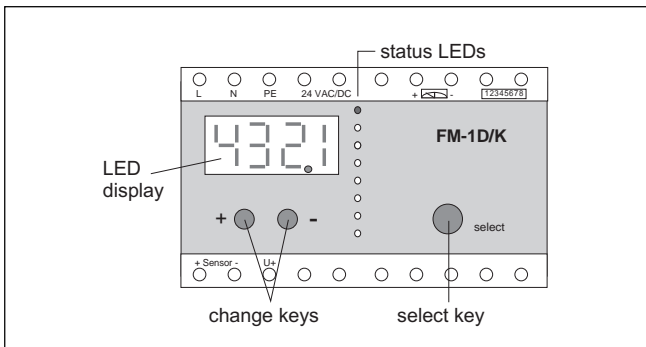
### Lightning Protection

To protect the FM-1D/K from voltage surges caused  
by lightning installation of adequate lightning protection  
devices is recommended.

### Intrinsic Safety

Is the water meter/pulser installed in a hazardous area  
the FM-1D/K must be installed in a safe area with the  
pulse input isolated by means of a suitable transistor  
relay.

## Display



The numeric display of the FM-1D/K performs a dual function:

- In program mode the settings are entered with the aid of the interactive display dialog.
- In standard mode the momentary measured values are displayed.

## Program Mode

Select key (select)

Select the indicated dimension.

Change key (+) or (-)

Change to program mode  
(flashing status LED, flashing digit).

Change key (+) or (-)

Modify the selected (flashing) digit.  
The flashing status LED indicates the related dimension.

Select key (select)

Change the selected place digit.

Select key (select)

After the last (right) place: The modifications will be stored in a non-volatile memory and will not be lost in the case of power failure.

## Protection

Change keys (+) and (-) and select key

Move to protect menu

Change keys (+) or (-)

Toggle between protected (Loc8) and open for changes (Loc6)

Select key (select)

Confirm the setted protection mode

- „Loc8“ indicates settings are protected against being overwritten: At program mode the display will indicate „Loc“ and it is not possible to enter changings.

## Standard Mode

Select key (select)

Selection of the measuring value to be indicated

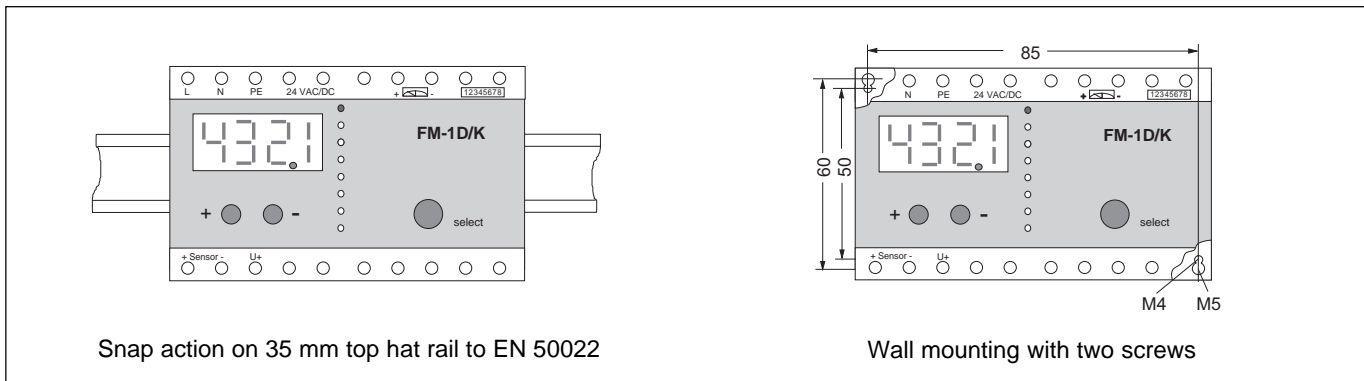
### Numeric display



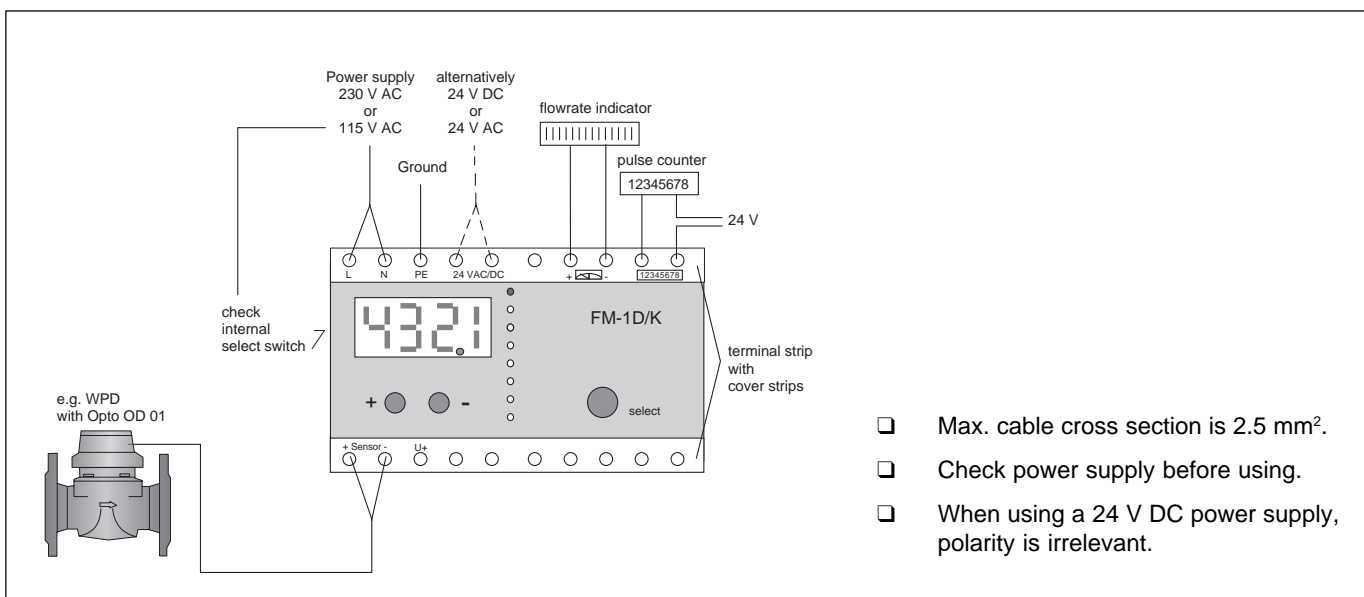
Status LEDs	Program mode	Standard mode
●  m³/h	Flowrate range. Setting the end value directly in m³/h from 0.001 ... 9999 m³/h.	Flowrate. The momentary flowrate is indicated in m³/h. At reverse flow  is indicated
●  1234 5678	Counter reading. Presetting the start value; digits 1...4 and 5...8 are set separately. *)	Counter reading. Indicating the momentary totalization; digits 1...4 and 5...8 are indicated in two steps. *)
● Sensor I/	Pulse value input. Entry in liters per pulse.	Pulse value input. Checking the settings.
●  123.4 m³/	Pulse value output. Entry from 0.001...9999m³ per pulse.	Pulse value output. Checking the settings.
● 0/4 ... 20 mA	Current range output. Selectable 0...20 mA or 4...20 mA.	Current range output. Checking the settings.
●  1 ...  14	Response time of current output. Setting from 1 (no damping) to 14 (max. damping).	Response time of current output. Checking the settings.
● Test	Test mode. Monitoring the cabling and function of the remote totalizer and flowrate indicator.	Test mode. Shows in standard mode the firmware revision of the FM1-D/K.

\*) Decimal point depends on output pulse value

## Mounting



## Connection



## Available Version

Frequency Converter FM-1 D/K,  
top hat rail housing

Order No. 18 20 21

Accessories

on request



Subject to change without notice  
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