

Open Channel Flowmeter 713

3.10

INTEGRATED LEVEL TRANSMISSION

General

The Flow Converter 713 is designed for measuring and recording water flow in open ducts and channels. The Flow Converter 713 is a complete instrument for the measuring of instantaneous flow and recording of totalised water flow.

Features

- Supplied with either ultrasonic or hydrostatic sensor.
- Maximum accuracy with measuring ranges down to 0-10 cm.
- Flow Converter 713 is calibrated from the front panel.
- Setup information in ENGLISH or other user-specified language.
- Security access code can be programmed.
- Adaption to any kind of weir or flume.
- Built-in control of Sampler e.g. MJK 780.
- Built-in totalizer with counter.
- Indication of average flow ($m^3/hour$) actual, the last hour, today, the last 24-hours.
- Indication of accumulated flow (m^3) actual, the last hour, today, the last day.
- If 713 is set as an emergency stormflow meter, the number of stormflows, stormflow time and volume and start and stop time for the last stormflow are counted.
- Alarm can be set for high and low flow, and excess of 1- and 24-hour volumes.
- Outputs for transmission of measuring and counting values to eg. to printer or data transmitter.

Applications

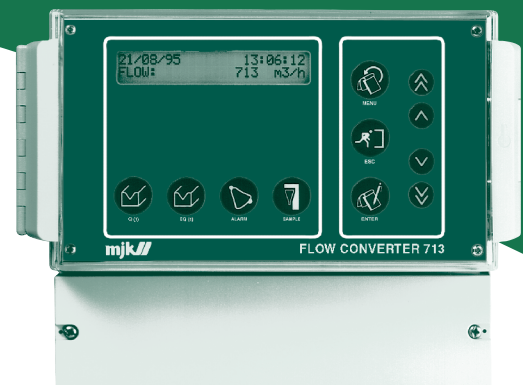
The Flow Converter 713 is especially used for measurement and recording of flow in public and industrial sewage plants. It is also installed in pumping stations for recording of emergency stormflow and for measuring in fish farming, in channels for irrigation system and for measurement in streams and rivers.

Function

The sensor of the Flow Converter provides a signal proportional to the level. The amplifier linearizes the signal from the sensor so it is proportional with the flow rate.

The Flow Converter 713 can calculate flow on the basis of one of the three following principles:

- Preprogrammed formulas for different dimensions of the most common flumes and weirs such as Parshall flumes and V-notch weirs based on ISO 1438.
- When using non-standard flumes or weirs the calculation formula can be programmed.
- For flumes where no calculation formula exists, a number of known flow-values can be entered, on the basis of these a point-linearization is made. This is used for flumes which do not follow the ISO 1438 standard.



DATASHEET

EN 3.10 OPEN CHANNEL FLOWMETER 713 DATASHEET 1801

mjk
a xylem brand

Open Channel Flow Meter 713

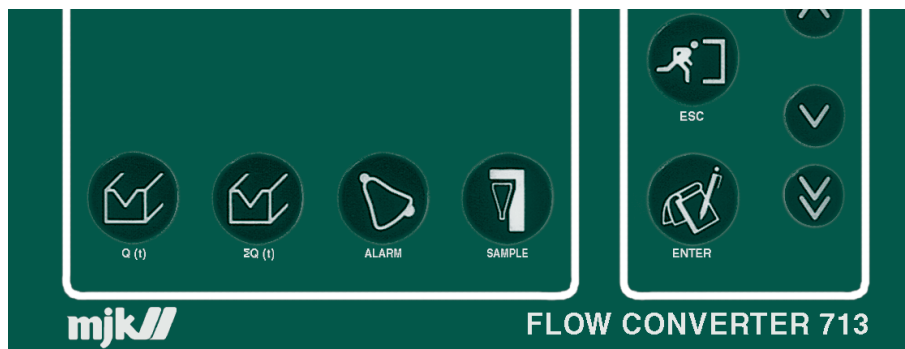
Functions

The Flow converter 713 is used for measuring the flow in open flumes and weirs. The determination of the flow rate is based on the following basic mathematical function:

$$\text{FLOW } Q = f(\text{level}^x \cdot \text{constant})$$

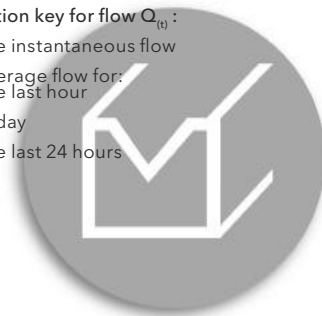
The exponent x and the constant depends on the dimensions of the weir or the flume. The method of measurement and linearization complies with the norm ISO 1438. The norm indicates how the head over the weir and flumes are constructed and gives the calculations for the linearization.

The Flow converter is operated by means of 4 function keys: the flow key, the summation key, the alarm key and the sample key. See the description of the function keys below.



Function key for flow $Q_{(t)}$:

- The instantaneous flow
- Average flow for:
The last hour
Today
The last 24 hours



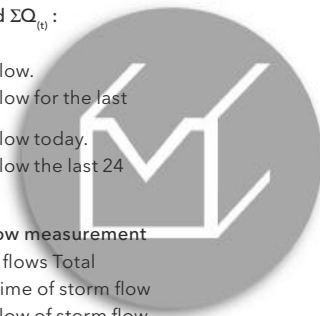
Totalized $\Sigma Q_{(t)}$:

Flow

- Total flow.
- Total flow for the last hour.
- Total flow today.
- Total flow the last 24 hours.

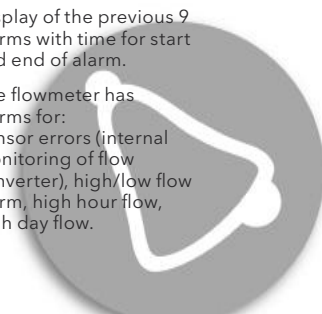
Storm flow measurement

- Storm flows Total
- Total time of storm flow
- Total flow of storm flow.
- Amount at last storm flow.
- Storm flow start/end



Function key for alarms:

- Display of the previous 9 alarms with time for start and end of alarm.
- The flowmeter has alarms for:
Sensor errors (internal monitoring of flow converter), high/low flow alarm, high hour flow, high day flow.



Function key for sampler:

- Total number of samples
- Total number of samples today
- Total number of samples for the last 24 hours.



Open Channel Flow Meter 713

Specifications

Converter 713	
Measuring ranges	0-0,3 m, 0-1 m, 0-3 m
Dimensions	185 × 240 × 115 mm (h × w × d)
Supply	20-240V AC, 110-120V AC or 24V DC appr. 10 VA
Temperature	-20...+60 °C
Materials	House and cover: Polystyrol
Housing	IP 65
Input signal	From ultrasonic sensor, pressure transmitter or other 4-20 mA
Digital outputs	Terminals 6-17: relay 1-4, max. 250 V, 4 A resistive load, max. 100 VA inductive load. Can be chosen as alarm, counter, flow>0 or sampler outputs. Terminals 18-20: relay 5 pulse (optocoupler) max 36 V, 50 mA one shot, 100 msec - 10 sec programmable.
Analogue output	Terminals 21-22: 0-20 / 4-20 mA, max. 500 Ω, galvanic isolation.
Serial output	RS 232 prepared N/A
Calculation	Standard formulas according to ISO 1438 Optional formula $Q = C \times h^*$ or point-linearization
Indication	2×24 characters LCD display for readout and programming
Accuracy	≤ ±1 %
Resolution	Min. ±1 mm
CE	EN50081-1, EN50082-1

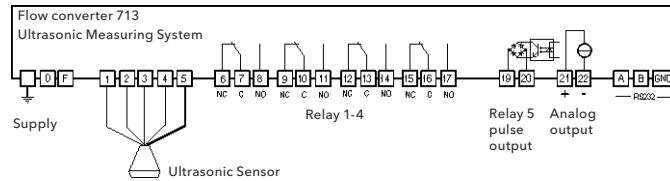
Ultrasonic Sensor		
Measuring range	0-1 m	0-3 m
Frequency	125 kHz	30 kHz
Spreading	6 °	3 °
Blocking distance	40 cm	75 cm
Temperature	-20...+60 °C	
Dimension	Ø 103 × 94 mm	
Materials	PP Green/Glass filled polyester Black/Glass reinforced epoxy White / Black POM	
Cable	Screened oil resistant PVC, lenght 12 m Can be extended to: Max. 50 m with 690010 cable (125kHz) Max. 100 m with 690010 cable (30 kHz)	
Housing	IP 68, water proof, withstands immersion, max. 1 bar	
CE	EN50081-1, EN50082-1	

Pressure Transmitter 3400	
Measuring ranges	203961 Expert™ 3400, range 0 - 0.3 m 1" RG top
	203962 Expert™ 3400, range 0 - 1 m 1" RG top
	203963 Expert™ 3400, range 0 - 3 m 1" RG top
For detailed specification, read datasheet 2.77 Expert 3400	

Open Channel Flow Meter 713

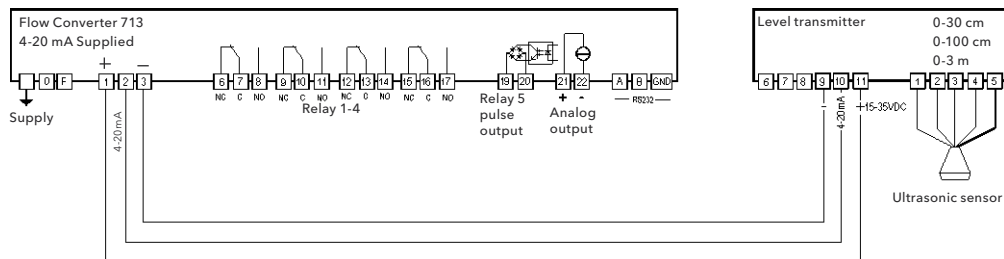
Electrical Connection
Ultrasonic measuring system

Standard connection

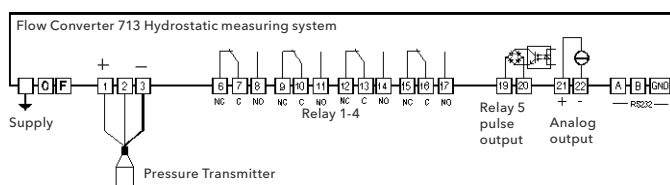


Electrical Connection
Ultrasonic Level Transmitter

A ultrasonic level transmitter is applied as preamplifier when the distance between the measuring location and the converter is greater than 50/100 m. It is the resistance (max. 600 Ω) which limit the length with a 3-wire, 4-20 mA supply.



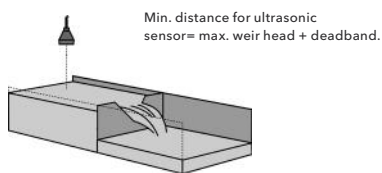
Electrical Connection
Hydrostatic measuring system



Mounting

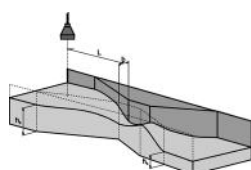
Ultrasonic sensor

The ultrasonic sensor is mounted behind the weir at a distance of 3-4 times the head. The ultrasonic sensor has a very narrow spreading of the sound signal and the distance to the highest level to be measured must not be less than the blocking distance and not more than the range + the blocking distance.

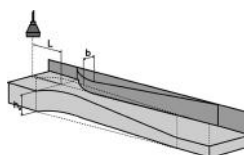


For measurement of water flow in open systems MJK supplies a range of prefabricated flumes. The flumes are manufactured in PVC, glass fibre and stainless steel.

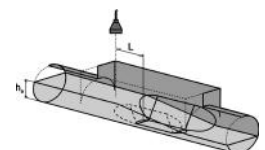
The flumes are ready for installation.



Parshall flume



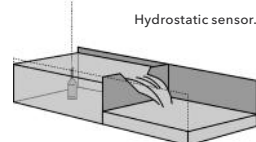
Venturi flume



Palmer & Bowls flume

Hydrostatic sensor

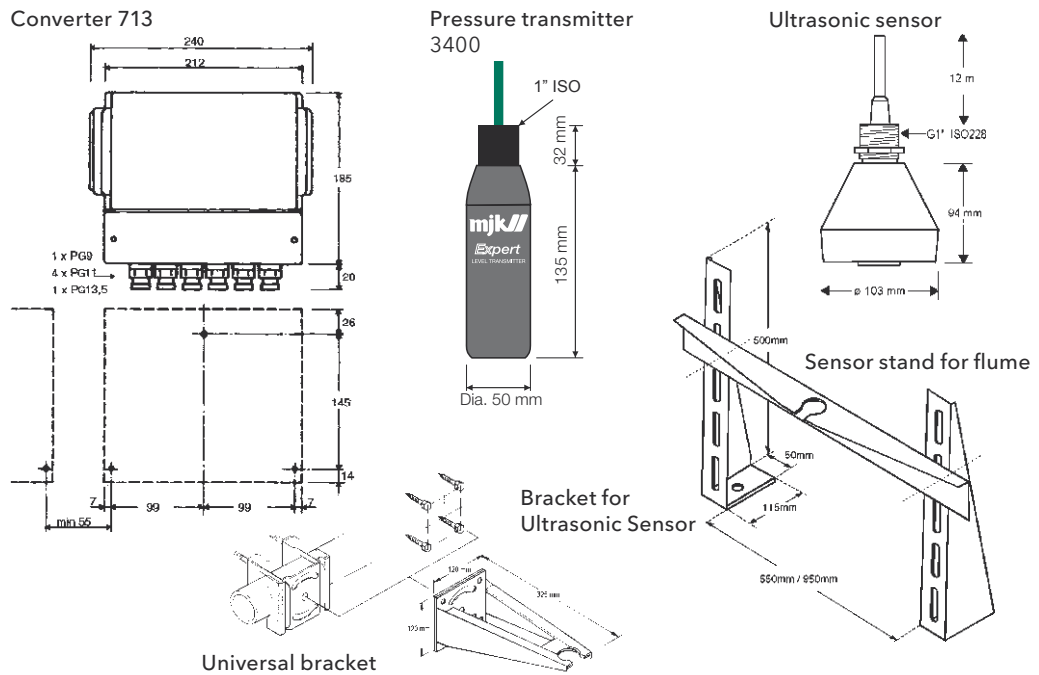
The pressure transmitter is mounted behind the weir at a distance of 3-4 times the head or in a stilling well, to the flume. The pressure transmitter has as standard a 1" thread for mounting on a pipe.



- Parshall, Venturi and Palmer & Bowls flumes are made according to standards.
- The flumes are delivered as complete channel sections ensuring the best possible measuring accuracy.
- Standard types which cover the range from 25 m³/h to 2000 m³/h.
- Easy fitting and mounting.

Open Channel Flow Meter 713

Dimensions



Order numbers

Open Channel Flowmeter 713	
201455	713U-1121, ultrasonic meas. system, incl. 7005-1023, meas. range 0-1 m
201460	713U-1131, ultrasonic meas. system, incl. 7005-1013, meas. range 0-3 m
202600	713P-1104, without sensor, 4-20 mA supplied
202655	713P-1124, hydrostatic meas. system, incl. 7062-1423, meas. range 0-1 m
202660	713P-1114, hydrostatic meas. system, incl. 7062-1433, meas. range 0-3 m
Accessories	
200105	Panel mounting kit
200115	Local mounting kit with rainproof roof
Accessories for Ultrasonic Sensor	
200590	Connection box for cable for Ultrasonic Sensor
200595	Cable lenght not standard (+ cable pr. meter above standard lenght)
690010	Cable for Ultrasonic Sensor (state meter)
200205	Universal bracket
200220	Bracket for Ultrasonic Sensor
200230	Sensorstand for flume for Ultrasonic Sensor, max. flume width 550 mm
200235	Sensorstand for flume for Ultrasonic Sensor, max. flume width 950 mm
Accessories for Level Transmitter Expert 3400	
202922	Connection box for cable for Pressure Transmitter
200126	Display insert 531 for connection box
202920	Cable lenght not standard (+ cable pr. meter above standard lenght)
691004	Cable for Expert 3400 and 7060 PUR (state length in metres)