

## PCM Pro

Portable Flow Measurement  
for Multiple Demands

# Undoubtedly the most accurate portable Flow Monitor

- ★ Suitable for M Certs testing
- ★ Versatile portable use, even in most difficult demanding Applications
- ★ Measurement of the real Flow Velocity Profile
- ★ Spatial Allocation of single Velocities
- ★ Cross Correlation with digital Pattern Recognition
- ★ Very high Accuracy
- ★ No Calibration required
- ★ Absolutely Zero Point Stable and Drift-free
- ★ Measurement in all partially and full filled Pipes and Channels
- ★ Simple Installation with flexible Sensor Mounting System
- ★ Measurements in highly contaminated and abrasive Media
- ★ Simple, multilingual and menu-driven Parameter Setting/Programming
- ★ Large graphical backlit Display
- ★ Long Battery Life through power-saving Processes
- ★ Ex-Zone 1 Approval
- ★ Complete Measurement Data Storage on Compact Flash
- ★ Modem and Radio Connection (in preparation)

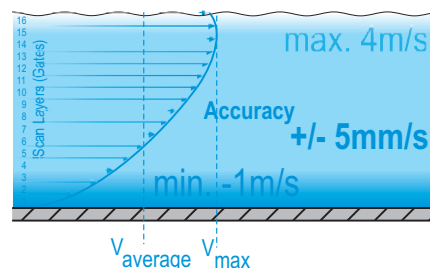


1000's of customers can't be wrong....

## Flow Velocity Measurement

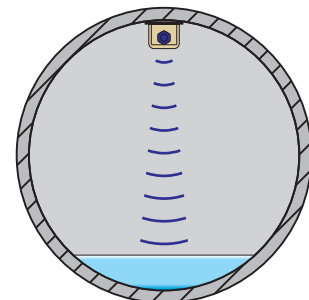
The measurement method which has been proven in the OCM Pro, is now used in the PCM Pro too.

The highly accurate flow velocity measurement based on the ultrasonic cross correlation principle allows you to spatially allocate the single velocities within the flow profile. This enables an accuracy which is unique in the world in the area of portable flow measurements.

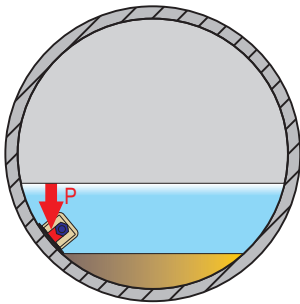


## Flow Level Measurement

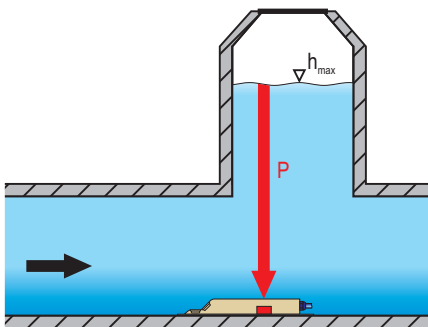
Precise flow measurement requires accurate and reliable flow level recording under all hydraulic conditions. Having gained experience for many years a level measurement system with multiple redundancy was developed. The combination of Hydrostatic measurement, Water-ultrasonic and Air-ultrasonic offers solutions for every measurement task.



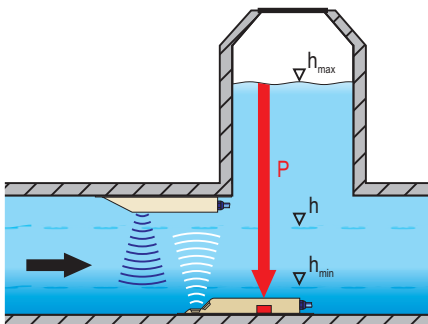
Air-Ultrasonic - Detection of low Flow Levels, e.g. for Investigation of Extraneous Flow Water



Hydrostatic Measurement - Detection of Flow Level, e.g. in Channels tending to Sedimentation



Hydrostatic Measurement - Submergence Detection

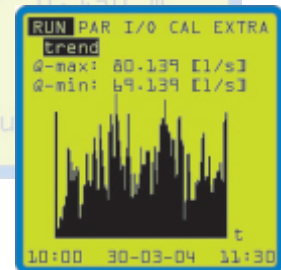
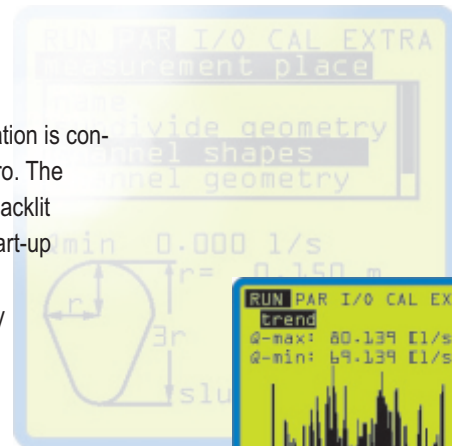


Air-Ultrasonic, Water-Ultrasonic and Hydrostatic Measurement - Investigation of Channel Capacity Utilization

## Programming

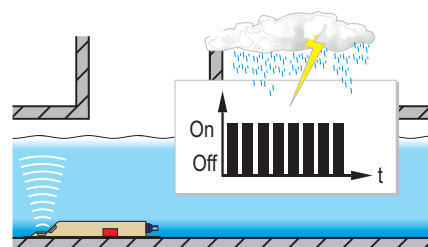
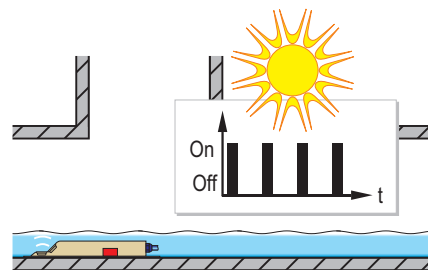
The intelligent menu-driven operation is consistently integrated in the PCM Pro. The clear layout of the large graphic backlit display enables a simple initial start-up in dialog with the user.

The program structure is specially set for the requirements of a portable measurement system.

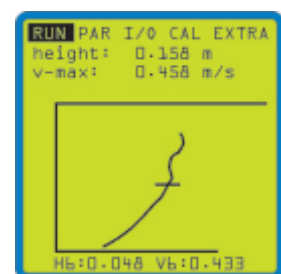


Internal Protocol Functions to assess the Measurement Progress without any aid on-site

### Event-based Measurement Cycle Changeover



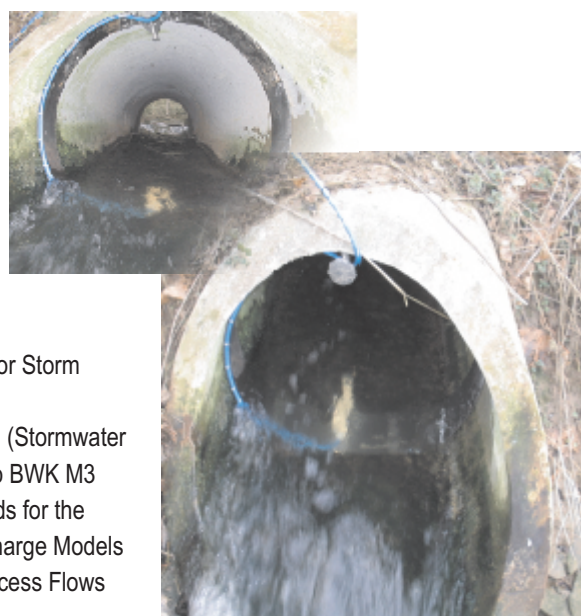
Diagnostic Tools to assess the Measurement Quality e.g. Flow Level



Profile Display

## Applications

- Verification of existing Sewer Systems
- Investigation for Infiltration/Inflow Analysis
- Indirect Influent Supervision
- Throttle Calibration
- Billing Networks
- Recording of Planning Data for Storm Water Basins (CSO Studies)
- Recording of Rainwater Feed (Stormwater Flow Monitoring) according to BWK M3
- Determination of Data Records for the Hydraulic Calibration of Discharge Models
- Temporary Verification of Process Flows
- ...



## Advantages

The highly accurate spatially allocated flow velocity detection in combination with the redundant level measurement system enables reliable measurement compared to other similar measurement systems. An Ex version in addition extends the range of use and completes the measurement system.

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## Specifications

**Measurement Principle v (Velocity)**

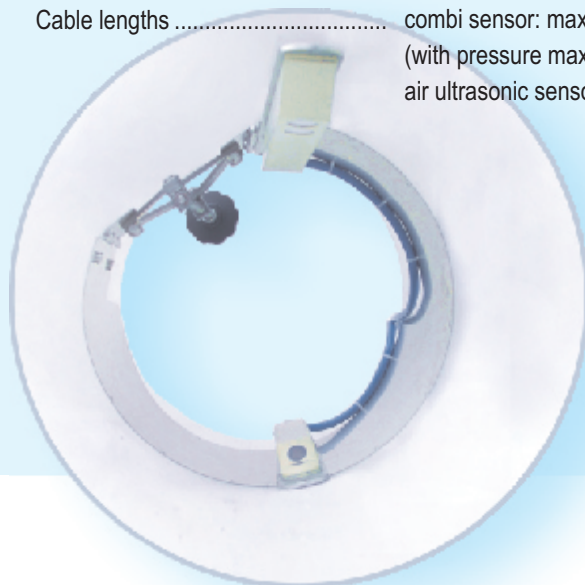
Ultrasonic Cross Correlation  
 with digital Pattern Recognition..... -100 cm/s ... 600 cm/s (-3.28 fps ... 19.68 fps)  
 Error limits (per scan layer) ..... ≤1 % of measurement value (v >1 m/s (3.28 fps))  
 ≤0.5 % of measurement value +5 mm/s (0.2in/s)  
 (v <1 m/s (3.28 fps))

**Measurement Principle h (Height / Level)**

Water ultrasonic ..... 0 - 200 cm, ±2 mm (0 - 78.7 in, ±0.08 in)  
 Air ultrasonic ..... 0 - 150 cm, ±2 mm (0 - 78.7 in, ±0.08 in)  
 (dead zone 10 cm (3.9 in))  
 Piezoresistive pressure probe..... 0 - 350 cm (0 - 137.8 in), ±0,35 % FSO  
 External level/height measurement.. 4 - 20 mA-input, user configurable (2 wire)

**General Specifications**

Temperature Measurement..... -20 °C to 60 °C (-4 °F - 140 °F)  
 Battery Lifetime ..... approx. 40.000 measurement cycles / battery charge  
 Rechargeable battery capacity..... 25 Ah or higher  
 Data storage capacity ..... up to 64 MB (with plug-in Flash Card)  
 Data transmission ..... Flash Card, additional box in preparation (for analog inputs and outputs, digital inputs and outputs, radio transmission)  
 Storage cycles..... 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60 minutes  
 Measurement modes ..... cyclic, event mode, selectable measurement cycles  
 Dimensions ..... 292 x 176\* x 249 mm (11.5 x 6.9\* x 9.8 in) (w x h x d)  
 \*with closed lid  
 Weight ..... approx. 6.5 kg (14.3 lb)  
 Ex-approval ..... II2 EEx e ib IIB T4, TÜV 03 ATEX 2268  
 Protection ..... sensors: IP68  
 transmitter: IP67  
 filter cartridge: IP65  
 Operation ..... dialog-mode, alpha-numeric keypad  
 with 18 membrane keys  
 Display ..... LCD, full graphic mode, back-lit, 128 x 128 pixels  
 Cable lengths ..... combi sensor: max. 250 m (820 ft)  
 (with pressure max. 50 m (164 ft))  
 air ultrasonic sensor: max. 250 m (820 ft)



Pipe Mounting System for  
 Combi Sensor and  
 Air Ultrasonic Sensor