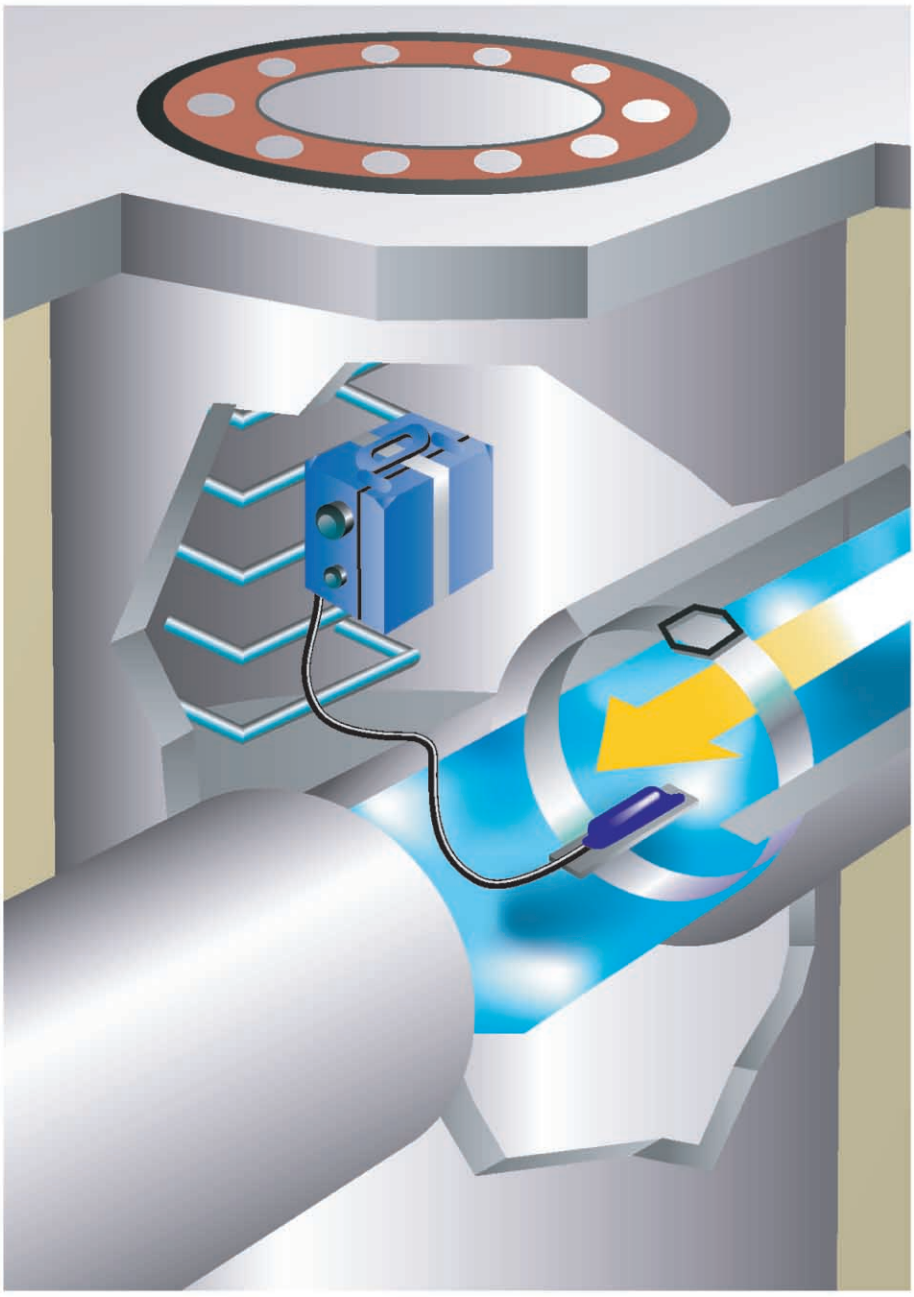

PCM3

The Complete Open Channel/Sewer Flow Monitoring System

The complete state-of-the-art system for portable flow monitoring

PCM3 is a battery-powered (rechargeable or alkaline disposable) flow measurement and data-logging system designed for the safe operations in both, sanitary and storm sewers and open channels.
PCM3 has been designed for reliable operation in harsh field conditions of sewers and wastewater treatment plants and is contained in a robust, submersible, waterproof and corrosion-resistant housing.

PCM3 flow monitoring system consists of a fully bi-directional velocity and depth sensor, a data-logger and support software for data retrieval and analysis. Additionally, temperature and pH can be measured and logged. Further ananalog inputs for logging a second level and conductivity are available. The PCM3 allows a connection of a rain gauge input to correlate flow data to rainfall and also offers flow proportional triggering of wastewater samplers with the sampler trigger output. This makes the PCM3 the complete flow monitoring system.

PCM3 has a menu-driven membrane keypad and LC display for programming and status check and field replaceable memory card for datalogging, which greatly simplifies field data retrieval. Also available is a RS232 direct serial interface for a PC or a laptop/notebook computer.

In order to obtain maximum functionality the PCM3 offers 2 different operation modes: event based datalogging via sensor-integrated event detector or date based datalogging within a defined measurement period.
The event measurement is particulary useful for recording sudden surges (e.g. first flush storm) or battery conservation where operation involves long dry spells (stormwater monitoring). The date-based measurement offers delayed time dependent start and end of measurement programs and cyclical repetitions. PCM3 hydrodynamic flow optimised combination sensor measures the depth, average velocity and temperature.

Using the Doppler ultrasonic measurement principle and the membrane-free pressure depth transducer, the sensor is not effected by fouling due to oil, grease and algal/bacterial growth. Doppler signals are assessed for their frequencies by a special software that calculates the true average velocity.
Additional information available to the user include signal strength, quality and the velocity spectrum. The depth sensor automatically zeros itself before each reading. With the proprietary NIVUS system, the sensor has a guaranteed long time zero stability.
Alternatively, an ultrasonic level sensor can be used for depth measurement with the PCM3.

PCM3 sensor mounting system for pipes and egg-shaped channels permit for a fast assembly and deployment of sensors without any tools.

NivuLog for Windows software offers tremendous flexibility in the collecting and processing of data. Sophisticated reports and hydraulic modelling programs are possible because NivuLog will create ASCII files usable by other programs.

PCM 3 - the most important features

- For all channel shapes, sizes, weirs and flumes
- Battery operated, portable
- System operation by PC or on-board membrane keypad and display
- Plug-in memory card system, allowing datalogging for up to 2 MB
- Automatic temperature compensation for velocity
- Absolute zero stable depth sensor with automatic zero compensation during measurement
- Additional inputs for temperature, pH, conductivity and ultrasonic level sensor
- Rain gauge connection and sampler trigger
- Variable quick sensor mounting assembly system for pipes and egg-shaped channels
- Windows based NivuLog software for data analysis

PCM3 Applications

- Infiltration and Inflow Analysis
- Sewer System Evaluation Surveys
- Master Plan Studies
- Combined sewer Overflow Studies
- Stormwater Flow Monitoring
- Sewer system Capacities/Trending, Planning and Control
- User Discharge Billing Networks
- NPDES Monitoring
- Industrial Discharge Monitoring
- Pre-treatment Compliance
- WWTP Process Control

PCM3 Technical Data

Enclosure Material:	Reinforced synthetic fibre, waterproof
Protection Rating:	IP67 (NEMA 6) - watertight up to 10m (30ft)
Dimensions:	10.7 x 7 x 9.8in. / 272x176x249mm (wxhxd)
Weight:	Approx. 6kg (13lbs) with battery Approx. 3.7kg (8lbs) with rechargeable
Power Supply:	12V/12Ah for rechargeable, or 8 x 1.5V cells
Battery Life:	Up to 6 months
Operation:	4 x 20 characters LCD; membrane keypad or PC
Datalogger:	Up to 2 MB SRAM PC Card
Number of Channels:	Maximum 8
Interface:	RS232
Measurement Interval:	1, 3, 5, 10, 15, 30, 60min.
Measurement Duration:	User selectable
Measurement Mode:	Event based, Time based with start and end time periods and cyclical repetitions
Additional Inputs:	pH, Conductivity, Ultrasonic Level, Rain Gauge
Output:	Potential-free contact closure

Combination sensor	
Measurement Principle:	Ultrasonic Doppler for velocity, Hydrostatic pressure for depth and temperature
Sensor Material:	Polyurethane and stainless steel
Depth Range:	0 - 3m (0 - 10ft)
Depth Accuracy:	+/-0.5 % of reading or +/-3mm (0.1in.) absolute zero stable
Velocity Range:	-6 to +6m/s (-20 to +20fps)
Velocity Accuracy:	+/-1% of reading or +/-0.03m/s (0.09fps) absolute zero stable
Operating Temperature:	-20 to +50°C (-4 to 122°F)
Resolution:	0.3°C (32.5°F)
Cable Length:	7m (23ft) standard; optional 10m (33ft); oceanographic-grade polyurethane
Protection Rating:	IP68 (NEMA 6)
Ultrasonic Level sensor	
Level Range:	0 - 5m (0 - 16ft)
Dead Band:	0.25m (9.8in)
Accuracy:	0.25 % of the selected range
Protection Rating:	to IP67 (NEMA 6)