



SEBA Hydrometrie in Profile

Serving our customers worldwide – in more than 140 countries – for over 45 years

Groundwater

Surface Water

Flow measurement

Water Quality

Meteorology

Waste Water



Groundwater

Surface Water

Flow measurement

Water Quality

Meteorology

Waste Water



The SEBA Hydrometrie success story began in 1967 when a bright engineer and a talented businessman decided to set up a company for hydrometrical measuring instruments. With robust analog recording instruments for groundwater and surface-water monitoring, a world-leading medium-sized business was established in the field of hydrometrical measurement technology from a small mechanical workshop and a handful of specialists. Without doubt, this success is thanks to our committed employees and loyal customers, who have accompanied us from the beginning and have constantly provided us with new challenges.

“We simply have to listen to our customers and understand the problems that they face in the field,” is the advice that we always give our engineers and hydrologists when it comes to sales! Throughout our time in business, it has always been clear in our minds that our customers’ success leads not only to a lasting business relationship but also to a genuine partnership! To this day, SEBA Hydrometrie has proven its independence. Short-term profit and growth at any cost are alien concepts to us!

Our company philosophy is oriented solely towards our customers and their needs. For this reason, individual, customer-specific developments and adaptations are the rule, rather than the exception! Where other market operators struggle, we feel spurred on to always find the best possible solution for our customers. In the field of hydrology, SEBA Hydrometrie’s product solutions cover practically all monitoring requirements. From sensor technology, data storage and data transmission to data analysis and archiving, SEBA Hydrometrie can, on request, deliver turn-key solutions in all corners of the globe!

Quality “Made in Germany” has always been the standard we work to. As one of the first environmental companies, we received the coveted certificate for our quality-management system according to ISO 9001:2008 from an independent accreditation body in 1994. High-quality and user-friendly products at fair prices, the best advisory service and reliable after-sales service – these are the things we stand for!

To put it simply: completely satisfied SEBA customers!

Total area of premises: 3,300 m²

SEBA currently employs some 90 people in the following departments:

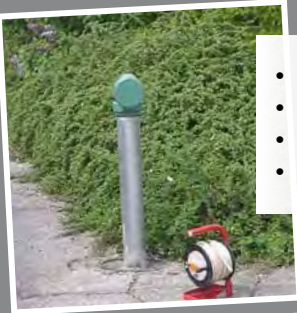
Production:	45
Electronics R&D:	15 engineers
Software R&D:	5 engineers
Sales:	14
Sales Support	4
Purchasing:	3
Project Assistance/Administration:	2
Managing Director:	Rudolf Düster



SEBA production building

... and what we Measure!

SEBA systems are used in a wide range of fields:



Groundwater

- Groundwater monitoring
- Pump tests
- Landfill sites
- Resource protection



Water Quality

- Control of environmental permits
- Discharge monitoring
- Effects of water management use
- Monitoring of aquatic ecosystems
- Drinking-water resources



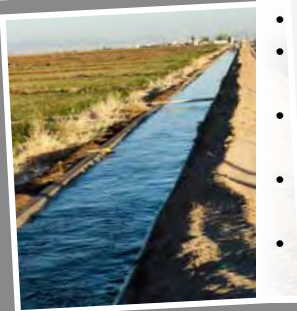
Surface Water

- Water-level measurement
- Flow measurements
- Inflow/outflow control
- Irrigation
- Artificial lakes & reservoirs
- Flood forecasting/warning



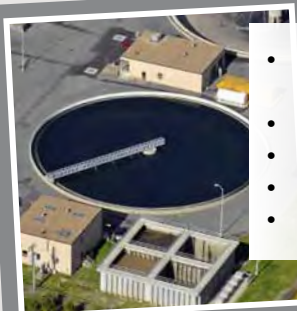
Meteorology

- Fully-automatic weather stations
- Nationwide hydro-meteorological networks
- Estimation of water resources in desert areas
- Sensors meet WMO standards



Flow measurement

- Inflow/outflow control
- Basis for water-management measures
- Deployment in reservoirs and tidal areas
- Recording of extreme flood events
- Dimensioning of civil water structures



Waste Water

- Measurement of external discharge
- Monitoring of storm overflows
- Rainwater tanks
- Preservation of evidence
- Flow measurements

Quality- and safety-management system

Since 1994, SEBA Hydrometrie has been operating in accordance with strict international quality guidelines.



We are certified
ISO 9001:2008
Certificate No. 01150509
Quality is our standard

In December 2003, an independent audit team awarded SEBA Hydrometrie the prestigious DIN/ISO 9001:2008 certification. Successful re-certification again in November 2012 demonstrates that SEBA has maintained its high level of quality.



Complete Stations for Flood Forecasting & Flood Warning/control



Recording, collecting and data transfer

Issuing alerts when measurements exceeded or fail to reach specific limits

The ideal solution for every measuring site:

- Water-level sensors
- Data loggers
- Transmission systems



Level-measuring site with optical water-level measurement



Flood warning installation with pressure sensor and GSM/GPRS transmission



Flood warning installation with radar sensors, rain gauges and GSM/GPRS transmission



Flood warning installation with radar sensor and satellite transmission



Flood measuring station with bubbler water gauge and data logger with GSM/GPRS transmission



Flood warning installation with self-sufficient solar power supply



Sensors for Water-Level and Water-Quality Measurements

Pressure sensors

Encoders

Radar sensors

Bubbler devices

Multi-parameter sensors

Optical water-level measurement



DS-22 pressure sensor

DST-22 pressure and temperature sensor

The **DS-22** pressure sensor (Ø 22 mm) is used for water-level measurements in groundwater, surface water, water tanks or water reservoirs. In addition to the water level, the **DST-22** also measures the water temperature.

Outputs: 0–1 V, 4–20 mA, RS 485, SDI 12, Modbus

Accuracy: < 0.05%



Float-operated sensors – encoders

Levelsense with LC display

Float-operated shaft encoder with non-slip beaded chain or 0.8 mm-diameter float cable

Outputs:

- 4–20 mA
- RS 485
- SDI12



SEBAPuls 15/35/70 radar sensors

- For contact-free water-level measurement
- Unaffected by sedimentation, drifting materials, weed growth and aggressive media (sewage, brackish water, etc.)
- Little construction work required (e.g., installation on bridge jibs)
- Measuring accuracy is not influenced by humidity, fog or temperature
- Low power consumption
- Short mounting distance (approx. 20–30 cm)
- Measuring ranges 0–15/35/70 m
- Accuracy: 2–3 mm



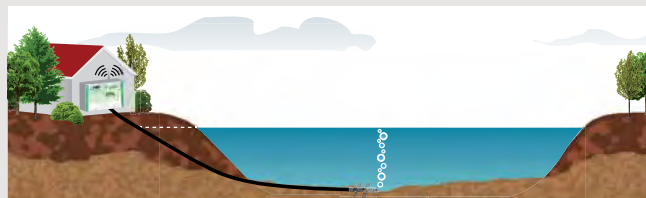
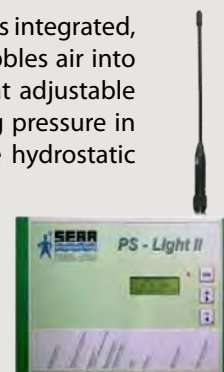
Bubbler devices

PS-Light-2 sensor

Robust, reliable and cost-effective, this integrated, highly efficient mini-compressor bubbles air into the water through a pressure tube at adjustable measurement intervals. The resulting pressure in the tube corresponds exactly to the hydrostatic pressure above the outlet nozzle.

Measuring range: 0–10, 20, 40, 70 m

Accuracy: 0.05% of the measuring range



MPS multi-parameter sensors

For measuring:

- | | | |
|--|--|--|
| <ul style="list-style-type: none"> • Water level • Temperature • Conductivity <ul style="list-style-type: none"> - Total Dissolved Solids (TDS) - Salinity | <ul style="list-style-type: none"> • Dissolved oxygen/oxygen saturation* • pH value • Redox potential (ORP) • Ammonia • Nitrate • Ammonium | <ul style="list-style-type: none"> • Chloride • Sodium • Calcium • Fluoride • Potassium • etc. |
|--|--|--|



MPS-PTEC

MPS-D8

MPS-K16

Data loggers



- Up to 32 input channels
- High storage capacity and data security
- Up to 480,000 measured values
- Easy installation and operation
- IP-capability

Multi-channel data loggers

Particular advantages include the high storage capacity and data security, yet very low power consumption.

The SEBA data logger's design is very compact and offers functions such as:

- Choice of the registration modes: time-, dynamic- or event-controlled acquisition
- Individual activation of the connected sensors
- Comprehensive alarm management in conjunction with a GSM/GPRS modem, SMS notifications

Technical data:

- 4 MB memory
- 32 channels
- LC display
- 32-bit controller with integrated watchdog function
- Stand-by power consumption < 80 μ A
- Interfaces: RS 232, RS 485, SDI12, LAN, USB

Gauge Keeper

with fixed IP address



Up to 32 channels

UnilogLight



Up to 32 channels

Unilog



Up to 32 channels

Data logger with integrated GSM/GPRS modem

In addition to the Unilog data logger's full range of functions, the [UnilogCom](#) has an integrated GSM/GPRS modem for data transmission.

Technical data:

- 4 MB memory
- 32 channels
- LC display
- 32-bit controller with integrated watchdog function
- Stand-by power consumption < 80 μ A
- Interfaces: RS 232, RS 485



UnilogCom

with integrated GSM/GPRS modem



Data transmission

Mobile network (GSM/GPRS)

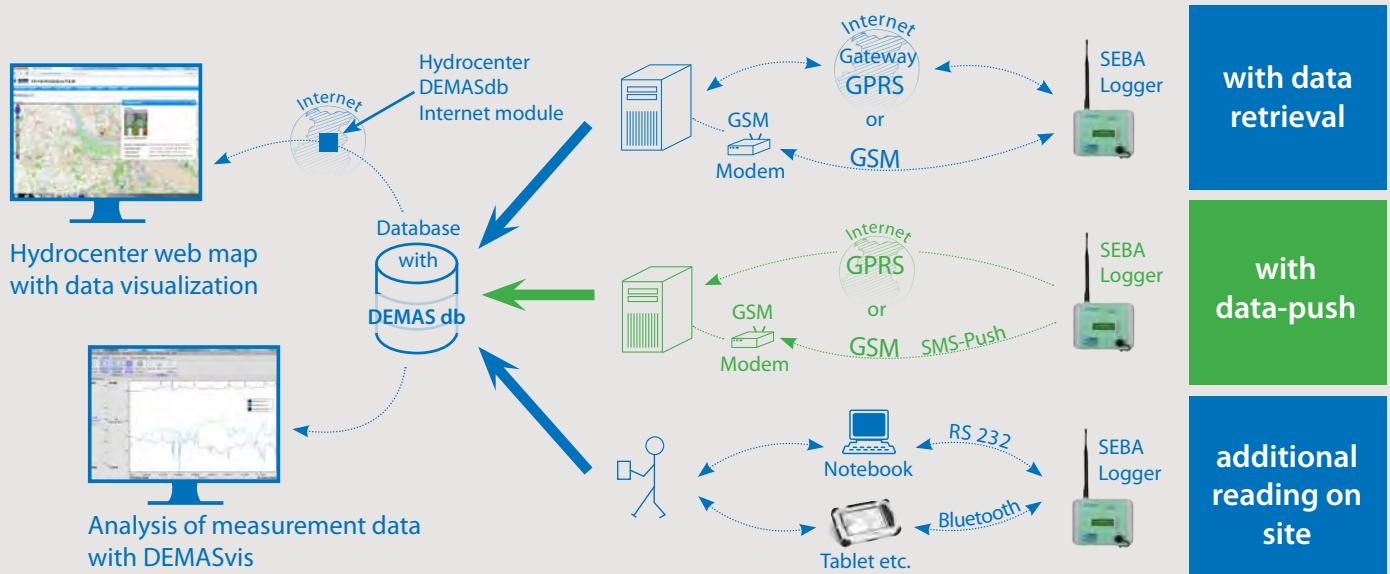
Telephone modem

Radio (short- and long-range)

Satellite (V-Sat, Iridium, GOES, Meteosat, Inmarsat, Argos, Globalstar)

WLAN

GSM/GPRS transmission



GSM/GPRS modem, Type 742

Wireless data transmission over GSM or GPRS network:

- Frequency: 850/900 MHz / 1800/1900 MHz (quad-band)
- Various antennas and high gain antennas available
Antenna impedance: 50 ohms
- SIM card: 1.8 V/5 V
- Power consumption:
50 mA (receive), 0.5 A (transmit), 0.5 mA (stand-by)
- Operating temperature: -30°C to 85°C
- Robust, watertight aluminum housing

Functions:

- Automatic data retrieval
- Data push to FTP servers
- SMS/email data transmission
- SMS alarm function

GSM/GPRS Modem



GSM 742



Radio transmission

Short-range

Transmitting power:
100 mW

Outdoor/RF range
with a clear line of sight:
1.6 km

Frequency: 2.4 GHz
IEEE 802.15.4 standard

Long-range

Max. 25 watts

Range:
up to 100 kilometers

Frequency: UHF, VHF



Data transmission

Surface water



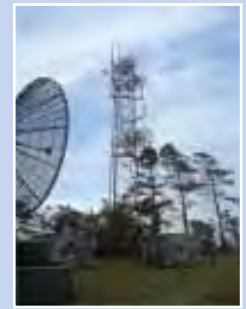
Wadi Station



Rain station
(incl. iridium modem)



Flood forecasting/
warning



Flood control

Satellite transmission systems

Iridium

- Worldwide data-transmission coverage (incl. polar regions)
- The iridium modem's robust design allows data transmission in all climatic conditions
- Permanent data transmission is possible, no time slots
- Current data is available at all times
- Communication with all SEBA data loggers
- Time- and cost-effective modem and data transmission
- Low power consumption
- Remote accessibility:
 - Maintenance
 - Servicing
 - Re-configurations
 - etc.

Iridium TRANS Modem



Iridium Antenna

GOES | Meteosat | Inmarsat | Argos | Globalstar

SEBA's product range includes robust, reliable transmitters for the above satellite systems. Users can therefore choose freely between GOES, Meteosat, Inmarsat, Argos and Globalstar for transmission.

All systems are GPS-synchronized and have an RS232 interface for connecting to the Unilog family of data loggers.



GOES/ Meteosat
DCP Transmitter

VSAT

Our mobile stations with a VSAT transmitter are suitable for all applications and allow high-speed access regardless of where your measuring stations are located.

The robust construction and pre-configuration of our stations deliver highly reliable performance and convenience.

SEBA's VSAT stations offer a completely independent broadband backup via satellite, keeping your data flowing even when other data-transmission solutions fail due to the geographical location of your stations.

Worldwide data-transmission coverage.
(Depending on service provider and excl. polar regions)



Turkey

Groundwater

Meteorology

Flow Measurement

Mobile systems

Propeller-type current meters

Exact flow-velocity measurements

Suitable for all applications on rods, mobile bridge jibs or cableway installations

Measurement technology tried and tested for decades



F1 and M1 hydrometric current meters

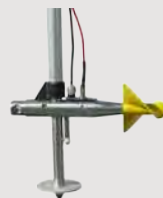
The **F1** SEBA universal current meter can be used to measure current velocity in streams, rivers, canals and lakes.

When fitted as a rod-mounted or suspended current meter, the device allows measurements from 0.025 m/s to 10 m/s.

In smaller streams with lower levels of water and velocities, the SEBA **F1** universal current meter is often used as a rod-mounted current meter.

The SEBA **M1** mini current meter is used to determine flow rates in laboratories, river models and streams with a low water level, as well as in small diameter pipelines.

Universal Current meter F1



HDA



Mini Current meter M1

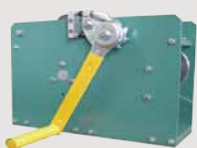


Signal counter Z6



SEWII single drum winch & mobile bridge jib

SEWII



The **SEW II** single drum winch (25–100 kg) with bridge jib is used for measurements from bridges and boats in conjunction with suspended current meter equipment.

The winch is portable and is designed for numerous applications.



Mobile bridge crane with SEWII

Measurement vehicles and cableway installations

SEBA would be delighted to install our current-meter equipment in a custom-designed measurement vehicle – with an integrated crane and further accessories – to allow mobile flow measurement wherever and whenever you choose.

Types of cableway installations

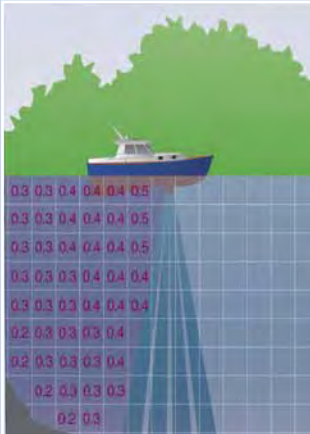
- Mobile/stationary
- Mechanical/electrical
- Robust and reliable, even in extreme environmental conditions
- Hydraulic and load tensioning available



Cableway installation

Flow measurement

Mobile systems



ADCP technology

Fast, accurate and repeatable discharge measurement in realtime

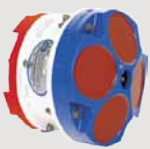
Low flow or weak current measurement capability

Suitable for a wide range of river conditions

Easy handling

Workhorse Rio Grande ADCP

Workhorse Rio Grande/RiverRay



The **Workhorse Rio Grande** ADCP (Acoustic Doppler Current Profiler) is an accurate flow measurement system that allows to measure rivers quickly. It is predominantly installed in a fixed position on a boat or used with a trimaran.

The device can be used in a wide range of flow velocities and water levels: in low water (75 cm; low flow velocities), in tidal areas and in floods (high flow velocities).

External devices such as GPS equipment, a depth sounder and a compass can be integrated via Windows software. Can be used in depths of 0.75 to 100 meters.



Discharge measurement from a boat



Discharge measurement with a trimaran



The **RiverRay** is suitable for use both in a 0.4 m deep stream and in a 40 m deep river. Automatic adaptive sampling continuously optimizes your discharge measurement from bank to bank, this ensuring the highest quality data without your intervention. RiverRay can be used in low water and during floods to make accurate discharge measurements.

StreamPro ADCP

The **StreamPro ADCP** delivers revolutionary advantages in velocity and flow measurement compared to traditional measurement with a current meter. Exact measurements can now be taken in shallow waters (depth range of 0.2 to max. 6 m) in just a few minutes.

The data is recorded in real time and transmitted to the **HDA** (Hydrological Digital Assistant) via a Bluetooth interface.

Operating range: 0.2 to 6 m depth.



Flow measurement

Mobile systems

Rod-mounted ADCP technology

Just one measurement for a complete vertical velocity profile!

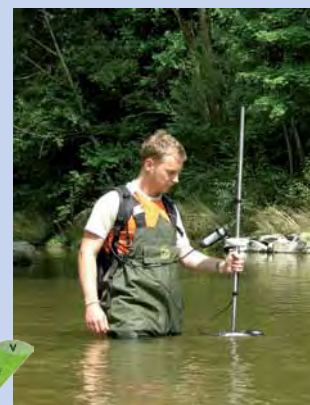
2D velocity sensor

Direct measurement in up to 128 cells – no point measurements!

No calibration required

ASCII and XML data export

Runoff calculation according to EN ISO 748



Aqua Profiler™ M-Pro
for rod measurements



Aqua Profiler™ CW can be used with a
weight for measuring from bridges and
on cableway installations

The Aqua Profiler™ simplifies the process of measuring flow rates in natural streams, artificial channels and pipes. It allows flow measurements to be taken in rough, difficult hydraulic conditions. The light and compact AquaProfiler™ system uses HydroVision's tried-and-tested acoustic technology to measure the discharge, flow velocity and water level. The system is designed to measure both the direction and the flow velocity in up to 128 individual cells using two beams.

Velocity changes in the flow are taken into account and a velocity profile is therefore determined. A third, vertical acoustic beam is used to determine the water level, so that, together with the velocity profile, the discharge can be calculated to a high degree of accuracy.



Aqua Profiler™ M-Pro

For mobile 2D discharge measurements, especially for use in difficult hydraulic conditions. In each measurement process, the entire velocity profile is recorded automatically in high resolution for each vertical. Direct measurement in up to 128 cells.



2D Doppler with integrated water-level and temperature sensor
Max. profiling range: 0.15 to 3 m
Min. cell size: 0.001 m
Min. blanking above sensor: 0.02 m
Max. number of cells: 128
Measuring range: +/- 5 m/s
Accuracy: 1% of the measured value +/- 0.25 cm/s
Operating temperature: 0°C to 40°C
Dimensions: 210x160x61 mm (L*W*H)

Aqua Profiler™ CW

The new Aqua Profiler™ CW sets standards with its two-dimensional velocity sensor and a resolution of max. 128 measuring cells. It scans the velocity profile and calculates the discharge together with the measured water level.



2D Doppler for sinker weights and cableway installations
Measuring principle: profiling 2D sensor for vertical applications
Cell size: min. 0.25 m
Min. blanking: 0.25 m
Range: 0.25 m to max. 15 m (for particle concentrations from 50 to 1500 ppm)
Acoustic frequency: 2 MHz
Max. number of cells: 64
Measuring range: ± 5 m/s
Accuracy: 0.5% of the measured value ± 0.25 cm/s
Operating temperature: 0°C to 50°C
Dimensions: 26.5x144x11.5 cm (L*W*H)

Aqua Profiler™ M

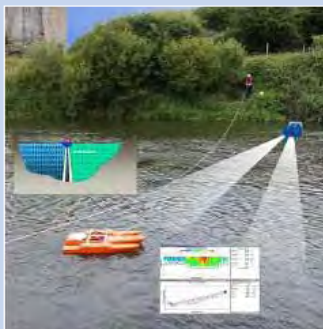
Mobile acoustic flow meter for measuring point velocities according to the classical section-by-section method. The modern software program allows discharge to be calculated directly at the measuring site.



1D Doppler velocity meter with integrated water-level and temperature sensor
Acoustic frequency: 6 MHz
Max. number of cells: 128
Measuring range: 3 cm/s to 3 m/s
Accuracy: 1% of the measured value +/- 0.25 cm/s
Operating temperature: 0°C to 50°C
Dimensions: Diameter 45 mm, Length: 290 mm

Flow measurement

Stationary systems



Ultrasonic Doppler and transit-time technology

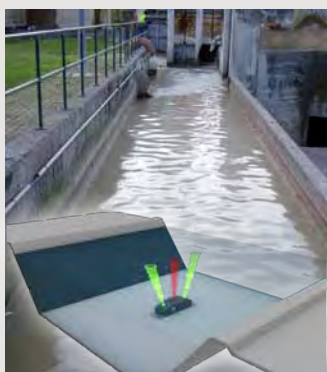
High measurement accuracy

For bodies of water from 1 to 700 m

Measurement of profiles from 1 to 300 m

1–4 measuring planes

Aqua Profiler™ ECM-IE



The new Aqua Profiler™ sets standards with its two-dimensional velocity sensor and a resolution of **max. 128 measuring cells**. It scans the velocity profile and calculates the discharge together with the measured water level.

Even in difficult **hydraulic conditions** with secondary flows, it delivers highly accurate measurement results, since the measured velocity vector allows the transverse flow to be detected and eliminated.

Aqua Profiler™ ECM-IE

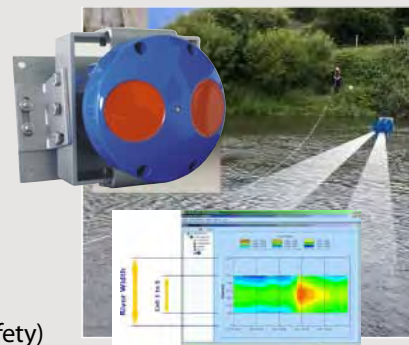


ChannelMaster H-ADCP with Q-Eye

The **ChannelMaster** is a compact and versatile horizontal Doppler sensor (H-ADCP) that can be used to measure velocity and flow rate continuously in a wide range of rivers. With 1–128 measuring cells that can be activated independently. For measurement of profiles from 1 to 300 m.

ChannelMaster applications:

- Rivers, streams and waterways: measurement of velocity, water level and discharge
- Estuaries: measurement of complex currents for monitoring or calibration of numerical models
- Ports and harbors: Recording of currents as information for shipping (operational safety)



Ultrasonic transit-time difference method

Ultrasonic flow measurements involve sending and receiving ultrasound impulses against and with the direction of flow using piezoelectric transducers. The signals' **transit-time difference** is therefore a direct measure of the flow velocity and is thus, if the cross-section is known, proportional to the discharge. Our measurement system combines the latest technologies in the field of digital signal detection with a high level of efficiency. Digital signal processors are used for signal detection. The Intelligent Signal Processing (**ISP™** technology) can take into account the interference caused by reflections or the attenuation of the signals due to suspended matter and represents an innovation in flow measurement systems. Applying these modern methods extends the system's field of application from narrow water courses to large bodies of water containing a high level of suspended matter.



Transducers ▾



Kanalys TT / FluviusTT ▲

Flow measurement

Stationary systems

Q-Eye MII



The Q-Eye MII is the perfect solution for the reliable measurement of continuous or temporary discharge in small pipes, canals and water courses.

By utilising the [Pulse-Doppler-Principle](#), the Q-Eye MII uses ultrasonic technology to measure both the flow velocity and water level.

[Expandable Sleeve](#)



The discharge is calculated by using internal algorithms and stored cross-sectional profiles.

[Q-Eye MII \(mobile\)](#)



Q-Eye M



Measuring range v: -3 m/s to + 5.3 m/s (bidirectional)

Measuring range h: 0.04 to 1.3 m above integrated ultrasonic water-level sensor

or with external pressure sensor 0 to 5 m

Data logger: 2 MB (Q-Eye M)
500 MB (Q-Eye PSC)

Programming: with a notebook and the software Q-Vision Setup
or via Hydrological Digital Assistant "HDA"

Data transmission: GSM module (optional)



[Q-Eye M](#)

like model Q-Eye II
but
ATEX-approved

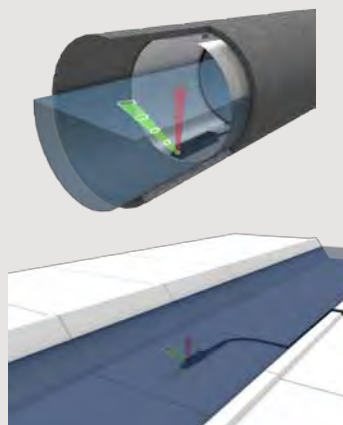


Q-Eye PSC

The Q-Eye PSC data logger and sensor was designed to monitor continuously discharge in channels or pipes with predefined cross-sectional profiles (e.g., part-filled pipes, trapezoidal or rectangular channels, etc).

In order to facilitate a fast and straightforward installation, standardized mounting plates and expandable sleeves are available. It is also possible to mount the sensor on the channel bed or at the side (on the river bank) in natural water courses.

SEBA would be delighted to advise regarding finding a feasible and economical solution.



[Q-Eye PSC \(stationary\)](#)



Flow measurement

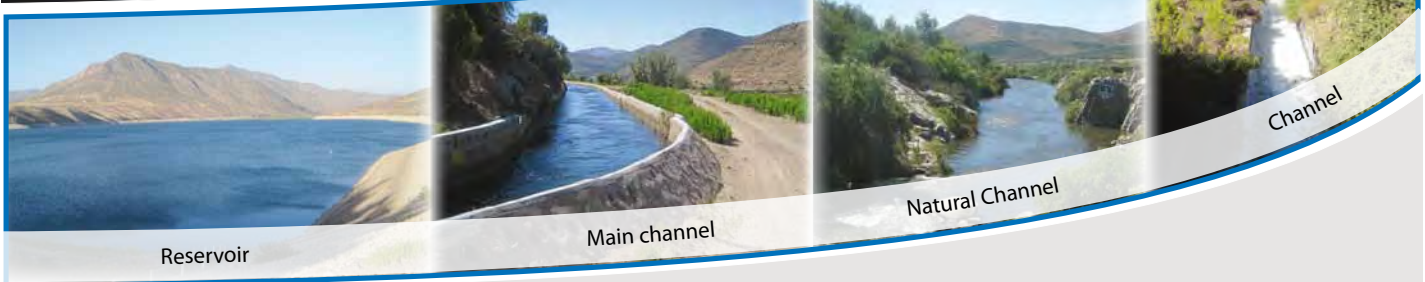
Stationary systems | Monitoring of irrigation channels

Surface water

Complete solution for the efficient use of water

- Monitoring of information on the quantity and quality of the water
- Environmental information
- Analysis of data
- Alarm messages
- And much more

Water level
Discharge
Total runoff
Water quality
Runoff



The newly developed [SEBA FlashCom-V/LogCom-V](#) with GSM/GPRS data transmission provides a highly reliable and accurate **application** for the continuous discharge monitoring of irrigation channels.

The frequently recorded flow data are transmitted to the central control unit, from where these can be re-viewed against threshold levels. In case deviations of these target levels are identified, sluice gates and locks can be adjusted accordingly to guarantee a successful operation.

For additional control the [FlashCom-V/LogCom-V](#) system can also be programmed with numerous alarm levels, if these predetermined alarm conditions are not reached or breached, alarm sms will be transmitted to up to eight mobile phones instantaneously.

The SEBA WEB portal ([Hydrocenter Pro](#)), a secure password protected web-site, which can be accessed via smart-phone, tablet PC and PC, provides registered users with the flexibility to view, download, edit and analyse important hydrometric and water quality data even when on the move.

Flow measurement

Stationary systems | Monitoring of irrigation channels

LogCom-V/FlashCom-V – the measurement and transmission system

Monitoring water level, flow velocity, water quality and runoff

Data loggers

Electronics:

- Consumption (in power down mode): $< 80\mu\text{A}$
- Peak current (modem transmitting): max. 500mA
- Flash storage with 4 MB (for approx. 280,000 measured values)
- Flash controller, 16-bit, with integrated watch-dog
- Clock IC (battery-backed)
- Logical channels: up to 32 channels
- A/D converter, 16-bit

Handling and display:

- 3 lines, each 16 characters, 3.65 mm (for displaying current measured values, clock, date, status indicator)
- Keyboard with three function keys

Inputs:

- RS485 interface (SHWP) for MPS-D sensor and velocity sensor
- 2 x analog (bi/unipolar) for water-level sensors
- Up/down counter input, phase counter, impulse (rain)
- 2 contact inputs (monitoring, logging)
- 1 SDI-12

Interfaces:

RS 232
Option: Bluetooth
(via external add-on module)

SMS alarm:

8 x SMS alarms to cell phone
SMS alarm to FAX device
freely programmable

Time slot:

freely programmable

GSM/GPRS modem (integrated):

- Frequency: 850/900 MHz / 1800/1900 MHz (EGSM, quad-band), GPRS
- HF output max.: 2 W (850/900 MHz); 1 W (1800/1900 MHz)
- SIM card: 1.8 V/3 V
- Power consumption: 50 mA/9 VDC (receive)
0.5 A (transmit)
- FTP-push operation: in ZRXP or D-channel format
- SMS data transmission: in binary format

Power supply:

LogCom-V: 6 x 1.5 V alkaline-manganese batteries
Operating time: > 1 year based on 1 data transfer/day (depending on the quality of the GSM connection)

FlashCom-V:

Operating time: solar operation
sufficient for 1 data transfer/day (other query cycles on request)

Housing:

aluminum, IP67

Dimensions:

diameter 168 mm, height 220 mm

Antenna:

integrated in the top of the housing
robust, impact-resistant and weather-resistant

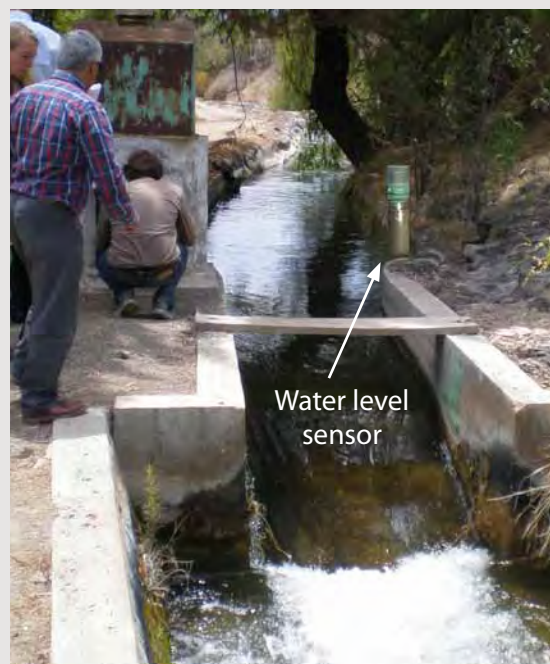
Operating temperature: -20° to $+70^{\circ}\text{C}$



Examples

This **FlashCom-V/LogCom-V** model calculates the runoff from the water level and a programmed calibration curve for the respective station and can be used when a clear Q/h relationship can be established.

In addition, the SEBA MPS multi-parameter water-quality sensor can be connected.



Flow measurement

Stationary systems | Monitoring of irrigation channels

Examples

This [FlashCom-V/LogCom-V](#) model calculates the runoff by computing two measured water levels (one in front and one behind the gate) and must be used when no clear Q/h relationship can be determined.

In addition, the SEBA MPS multi-parameter water-quality sensor can be connected.



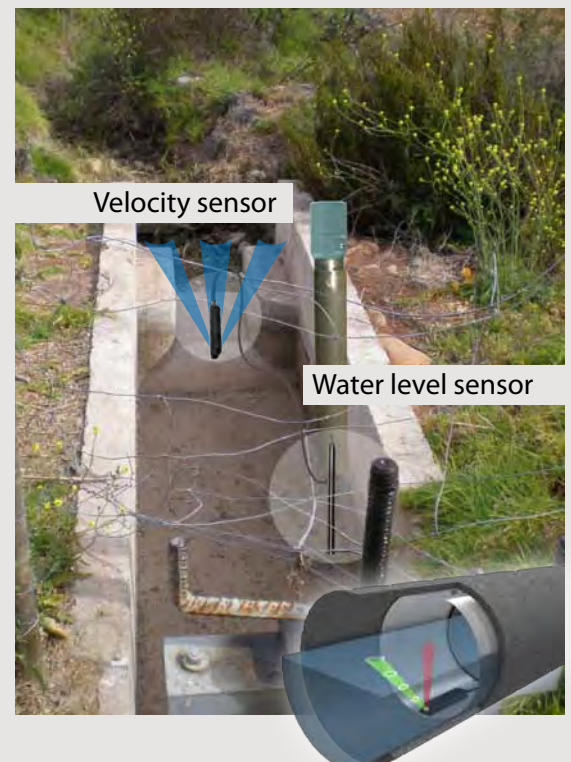
This [FlashCom-V/LogCom-V](#) model equipped with a water-level and velocity sensor calculates the runoff by using the measured water level and the current velocity and must be used when no clear Q/h relationship can be determined.

The ultrasound Doppler velocity sensor which is bed mounted measures the vertical velocity profile at this control structure. The SEBA MPS multi-parameter water-quality sensor can be connected to this installation.

Based on the [PULSE-DOPPLER PRINCIPLE](#), the sensor uses ultrasound to measure both the flow velocity and the water level.

Measuring range v: -3 m/s to + 5.3 m/s (bidirectional)

Measuring range h: 0.04 to 1.3 m above integrated ultrasound water-level sensor
or 0 to 5 m with external pressure sensor



The sensor's installation depends on the individual site conditions. However, predefined cross-sectional profiles are ideal (e.g., part-filled pipes, trapezoid or rectangular channels, etc.).

Standardized mounting plates facilitate fast and straightforward installation for typical applications.

Water Quality

- Water level
- Temperature
- Conductivity
 - Total Dissolved Solids (TDS) - salinity
- Dissolved oxygen/oxygen saturation*
- pH value
- Redox potential (ORP)
- Ammonia
- Nitrate
- Ammonium
- Chloride
- Sodium
- Calcium
- Fluoride
- Potassium
- Chlorophyll a*
- Cyanobacteria*
- Rhodamine WT*
- Turbidity
 - Total Suspended Solids (TSS) *

* optical sensors



MPS-D multi-parameter sensor and Qualilog

Equipped with up to 12 different sensors/electrodes, our **multi-parameter sensors** provide reliable information on the water quality conditions at the measurement location.

Designed for optimum field use, the sensors will operate in the toughest conditions, e.g., in tropical, arid and arctic areas. Robust and suitable for all applications in the field, they deliver the utmost accuracy. Our sensors stand out with their excellent long-term stability (optical sensors), combined with low maintenance requirements. Suitable for use as stationary or mobile sensors.

On request, the systems are also available with an [integrated logger](#).

Technical data:

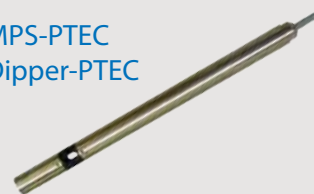
	MPS-PTEC	MPS-D8	MPS-K16	Dipper-PTEC	Qualilog-8	Qualilog-16
Diameter (mm):	22	48	89	22	48	89
Basic length (mm):	350	493	572	350	493	572
Basic weight (kg):	1.4	2.1	2.5	1.4	2.1	2.5
Sensor body:	V4A steel	V4A steel	PVC-U	V4A steel	V4A steel	PVC-U

MPS multi-parameter sensors

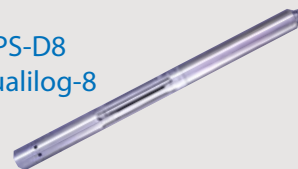
Designed for depths of up to 500 m (depending on the electrodes fitted)

- MPS-PTEC:** Digital multi-parameter sensor with RS485 output and up to three or four electrodes in the stainless-steel housing
- Dipper-PTEC:** Digital multi-parameter sensor with integrated data logger and electrodes for water-level, temperature and conductivity measurements
- MPS-D8:** Digital multi-parameter sensor with RS485 output and up to eight electrodes in the stainless-steel housing
- Qualilog-8:** as MPS-D8 but also with integrated data logger
- MPS-K16:** Digital multi-parameter sensor with RS485 output and up to 12 electrodes in the robust plastic housing
- Qualilog-16:** as MPS-K16 but also with integrated data logger

MPS-PTEC
Dipper-PTEC



MPS-D8
Qualilog-8



MPS-K16
Qualilog-16



with antifouling coating

Water Quality

Surface water

Mobile measuring instruments

For water-quality measurements in rivers Checker-2



The SEBA **Checker-2** multi-parameter system was developed as a mobile field laboratory especially for determining the parameters significant for water quality in lakes, rivers, canals and seas.

- Compact design
- Easy to use
- Fast and precise recording of various parameters
- Integrated data logger (optional)



Groundwater

For water-quality measurement in groundwater and lakes KLL-Q-2



Unique for a device in this form, the SEBA type **KLL-Q-2** water-quality dipper is a mobile field laboratory for measuring water quality in groundwater measurement wells with a pipe diameter of 2" or more.

- Compact construction
- Easy to use
- Fast, precise determination of the water quality in the groundwater
- Integrated data logger (optional)
- Improved, graduated round cable



MPS PTEC MPS-D8 MPS-K16

Stationary systems | Comparative measurement in lakes, rivers and groundwater measurement wells



Water quality

Groundwater Monitoring - Stationary Systems



Offline - Online

- Water level
- Water temperature
- Water quality



Offline systems

Data loggers

Water level/temperature
(atmospheric-pressure compensated)



Dipper PT

Water level/temperature
(not atmospheric-pressure compensated)
Atmospheric pressure



Dipper AP/APT, Baro-Dipper

Water level/temperature
and conductivity



Dipper PTEC

Water level



MDS-Floater 3

Online systems

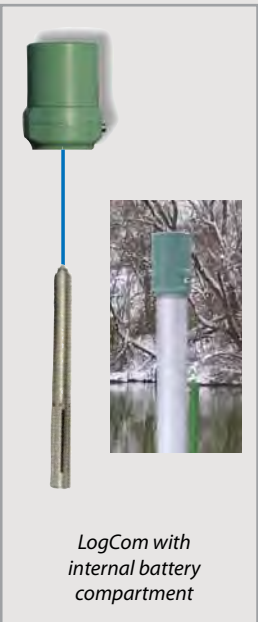
Data logger with transmission capabilities (GSM/GPRS)



LogCom with suspended, pluggable battery compartment



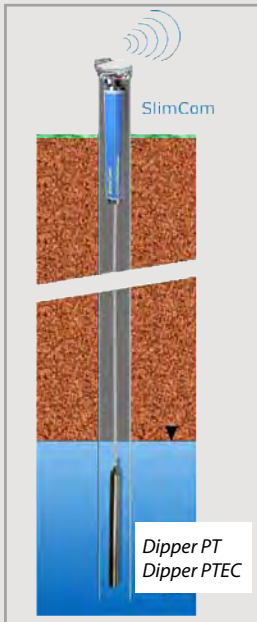
FlashCom with solar cap



LogCom with internal battery compartment



SlimLogCom
Sensor for water level, temperature, water quality



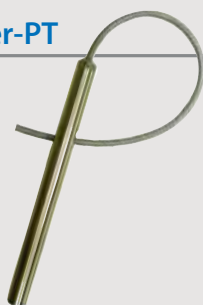
SlimCom
Dipper PT
Dipper PTEC

Groundwater Monitoring

Offline systems with data logger

Online systems

Dipper-PT



Water level & temperature

Data logger for water-level and temperature measurement. Special cable with integrated pressure-compensation tube for direct compensation of atmospheric-pressure variations.

Technical data: 4 MB Flash storage
(= 280,000 measured values)
Measurement interval: 1 second to 45 days

Dipper-APT



Water level & temperature (without atmospheric-pressure compensation)

Data logger for water-level and temperature measurement with absolute pressure sensor

Technical data: 4 MB Flash storage
(= 280,000 measured values)
Measurement interval: 1 second to 45 days

Baro-Dipper



Atmospheric pressure

The Baro-Dipper is used to determine the atmospheric pressure. It is sufficient to use one single Baro-Dipper per monitoring network – if geographically contiguous; this serves as a reference value for the other installed Dipper-APT systems.

Dipper-PTEC



Water level, conductivity & temperature (incl. salinity)

The Dipper PTEC was developed for measuring and recording the water level, conductivity and temperature.

It can be used in well casings with a diameter of as little as 1".

Qualilog



Water quality

Two different multi-parameter sensors with an integrated data logger are available for recording and monitoring the water quality in the groundwater. The Qualilog-K16 measures up to 12 parameters.

Parameters: conductivity, pH, redox, O₂, nitrate, etc.

SlimCom



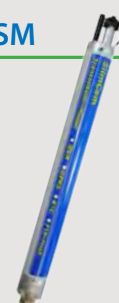
SlimLogCom



SlimLogCom AP



SlimCom ISM



Groundwater Monitoring

with transmission

The SlimCom is equipped as standard with a built-in GSM/GPS modem and antenna.

This system allows easy retrofitting of existing Dipper GW measurement points. No extra memory, since this is already present in the Dipper.

As SlimCom but with additional integrated data logger.

Additional, more-powerful antennas are available depending on requirements and the quality of the data transmission.

Suitable for use with absolute pressure sensors. With automatic calculation of the atmospheric-pressure compensated water levels.

Can be used in floodplains due to its watertight design

As SlimCom but with integrated telephone modem.

For subsurface monitoring sites, all online systems can be combined with a special subsurface antenna.

Sensors

Floatsense
Float-operated system



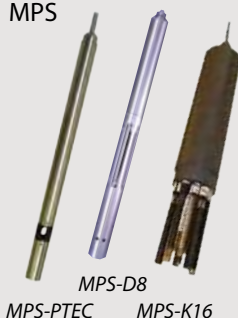
DS-22/DST-22
Differential pressure sensor



DS-22 AP/ DST-22 AP
Absolute pressure sensor



MPS



Floater 3
With integrated data logger



Online systems with transmission

LogCom 2 with internal power supply

The intelligent SEBA top piece with GSM/GPRS data transmission for hydrological stations. Suitable for use in measuring points from 2". SMS-alarm capable.

Battery



LogCom 2 with suspended battery compartment

The intelligent SEBA top piece with GSM/GPRS data transmission for hydrological stations. Suitable for use in measuring points from 2". SMS-alarm capable.

Battery



FlashCom 2 with self-sufficient solar power

The intelligent SEBA top piece with GSM/GPRS data transmission for hydrological stations. Suitable for use in measuring points from 2". SMS-alarm capable.

Solar cells



Mobile Systems



Water level
Water temperature
Water quality
Sampling
Oil layer

Water level (contact meter)

The SEBA **KLL-type** contact meter is a robust and reliable measuring instrument. It is used to determine the water level and the total depth in groundwater observation pipes and wells.

With the **KLL-Mini**, we have developed a pocket-sized yet fully functional contact meter. In terms of quality, it is on a par with its larger relatives. Equipped with an optical and acoustic signal as standard, it allows accurate measurement of the water level. The two 1.5 V batteries power the device for approx. 250 measurements. Diameter: 10–14 mm

KLL with hand-drum



50-500m

KLL-Mini



10/15m

KLL with supporting frame



15-500m

Water quality (KLL-T, KLL-Q-2)

Unique for a device in this form, the SEBA **KLL-Q-2**-type water-quality dipper is a mobile field laboratory for measuring water quality in groundwater measurement wells with a pipe diameter of 2" or more. The KLL-Q-2 is also excellently suited for use in surface water (e.g. to prevent an ecological collapse of the water body).



KLL-Q-2 measurement parameters

- Water level
- Temperature
- Conductivity
 - Total Dissolved Solids (TDS)
 - Salinity
- pH
- Redox (ORP)
- Dissolved oxygen
 - Oxygen saturation
- Nitrate
- Turbidity
 - Total Suspended Solids (TSS)
- and more...

KLL-Q-2 for water quality



KLL-TT incl. temperature recording



Sampling (KLL-S): 2" and 4"



Groundwater **sampling system** for depth-specific, unmixed water samples in groundwater and surface water:

- For 2" and 4" pipes
- Robust, mobile measuring instrument with tape-measure scale, cable drum and supporting frame
- Can be adapted to existing SEBA contact meter with 14 mm bob
- Easy to use due to a well-designed operating principle



KLL-O oil-layer measuring instrument

For measuring the water level and the oil layer in groundwater measurement wells.

Measuring range: 15 to 500 m



Accessories

For contact meters

Carrying bags for KLL



Sensor cap for highly conductive or non-conductive liquid media



Ø 22 mm

Ground sensor with steel cable for muddy ground



Ø 25 mm

Ground sensor



Ø 14 mm

Sensor cap for saltwater



Ø 14 mm

Additional weight 450 g/800 g



450/800 g
Ø 14 mm

For data loggers & sensors

Combi interface cable



Bluetooth- Stick

for RS 232
and RS 485



Installation plates for dipper



Calibration sets for MPS & Qualilog



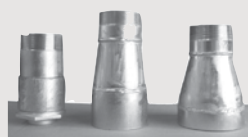
Antifouling Corrosion protection

Protection against salty water
and aggressive media



For groundwater measurement wells

Adapter for LogCom, FlashCom



2" 5" 6"

Top pieces



1,5" to 6"

Seal for artesian



available from 2" to 6"

Weather Stations



Continuous recording of:

- Precipitation
- Wind direction
- Wind speed
- Air temperature
- Humidity
- Ground temperature
- Soil moisture
- Evaporation
- Atmospheric pressure
- Solar radiation
- Snow depth
- Snow temperature
- Snow Water Equivalent



Data logger with integrated GSM/GPRS modem
Type UnilogCom



Data logger
Type UnilogLight
with or without display



Data logger
Type Unilog

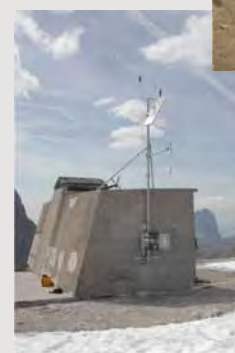
Meteorological sensors and stations



Africa



Middle East



Europe

Rain gauge Measurement Systems

With tipping bucket

RG 50



High-accuracy rain gauge with impulse output as gauge for data-logger systems (e.g., UnilogLight) and transmission systems (GSM/GPRS, satellite, etc.); plastic tipping bucket, ball-bearing mounted on one side, with level and adjusting screw.

In colder regions with the risk of frost, the rain gauge can be fitted with a heating system (optionally).

Housing:	aluminum, coated
Collecting area:	200 cm ² , optionally 400 cm ²
Resolution:	1 impulse = 0.1 mm precipitation or 1 impulse = 0.2 mm precipitation
Heating system:	15 W, 24 V, switching point +4 °C, switching hysteresis +3 °C
Switching capacity	3 W
Direct current voltage:	150 V
Circuit DC:	0.25 A
Output:	Reed contact impulse (potential free contact)
Tipping bucket:	plastic
Dimensions:	height 346 mm, diameter 205 mm
Weight:	3.9 kg

RG 100



SEBA rain gauge with a built-in tipping-bucket system. Especially designed cast-aluminum housing which offers maximum compactness and security. The tried-and-tested SEBA security lock prevents unauthorized access.

SEBA data loggers can be installed easily within the housing (e.g., UnilogLight, Unilog).

Collecting area:	200 cm ² , 400 cm ² or 500 cm ²
Recording time:	depends on selected data logger type (e.g., UnilogLight, Unilog)
Output:	Impulse, potential-free
Resolution:	1 impulse = 0.1 mm or 1 impulse = 0.2 mm
Collecting bottle:	5 liters, plastic
Funnel:	(DIN 58667) plastic, 200 cm ³ = 10 mm precipitation
Dimensions:	(height, width, depth) 620 x 225 x 285 mm
Weight:	13 kg

With weighing system

TRW



The total rain weighing sensor type is suitable for all types of precipitation: liquid, solid or mixed.

Collecting area:	200 cm ²	500 cm ²	200 cm ²
Range of precipitation:	750mm	250mm	1250mm
Dimensions:	Ø 360x540	Ø 360x380	Ø 385*650 mm
Weight:	8.0 kg	8.0 kg	9.5 kg
Accuracy:	0.1 %		
Max. rain intensity:	120 mm/min		
Resolution:	0.001 mm		
Serial interface(s):	RS485/SDI-12		
Impulse output:	1; 0.1; 0.01 mm		
Humidity:	0–100 %		
Power supply:	8–14 VDC		
Protection class:	IP65		
Power consumption:	typ. 35 mA; typ. 15 mA		
Heating:	optional		
Operating temperature:	-35°C to +70°C (+/- 0.5°C)		
Storage temperature:	-50°C to +70°C		

Rain logger

UnilogLight



For the digital recording of tipping bucket pulses together with a time and date stamp. The UnilogLight assures due to its simple handling, high operational reliability, a robust and compact housing and a water-proof membrane keyboard.

Technical data:
- 4 MB memory
- 32 channels
- LC display
- 32-bit controller with integrated watchdog function
- Stand-by power consumption < 80 µA
- Interfaces: RS 232, RS 485

Hydrological Digital Assistant– HDA



The “tough and robust” handheld

- Recording and storage of manual measurements
- Programming and read-out of data loggers
- On-site visualization of measuring data in the form of graphs and lists
- Recording of flow measurements with hydrological current meter, StreamPro, AquaProfiler™
- Route planning and finding of measuring sites with off-road and street navigation

The **SEBA-HDA** is a multi-functional handheld for the water-management industry. It is impact-resistant, easy to handle, light and water-tight. The SEBA-HDA is the ideal assistant for dealing with numerous tasks in the field.

Equipped with the **user-friendly SEBA software**, the HDA allows programming and calibration of all data loggers in the SEBA product range (e.g., SEBA data loggers Dipper-3, Dipper-T3, Floater, LogCom; hydrometric current meters F1 and M1, etc.).

HDA-Pro Tablet PC



Tablet PC Android



HDA



Software for the HDA



- **Config ce** – easy operation and read-out of SEBA data loggers. Allows input of control values. Convenient program linkage with MGMDScce for visualization of current data.
- **MGMDScce** – visualization of time series as a graph or list. The user has the option to check the quality of the collected data on-site.
- **Level observer** – the digital notebook for entering manual measurements. Manually measured values are entered conveniently using a barcode scanner or manually via the extra-large user interface.
- **Q ce** – discharge measurement made easy. Current-meter measurements are recorded and visualized with the HDA. Data are synchronized with the Software Q 3.0 onto your PC, ready to be analysed.
- **GPS module** – finding measuring sites, route planning and optimization



Read-out of measuring site with Level Observer

SEBA Software



- DEMASdb – database with ORACLE or MySQL
- DEMASvis – data analysis
- DEMASole – automatic online retrieval of data
- Hydrocenter Pro – the SEBA Internet module
- SEBAConfig – user application for configuration and read-out of data loggers and digital sensors
- Software Q 3.0 – recording, analysis and management of data from discharge measurements

DEMASdb

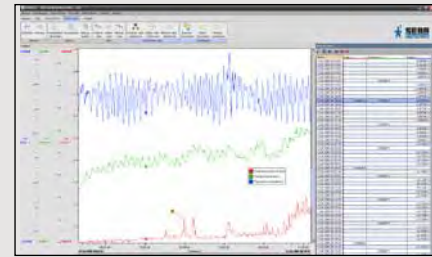
DEMASdb is a user-friendly, scalable and versatile data-management application. It records data from all sensors with analog and digital outputs. This allows management of all relevant parameters, such as water level, pH values, oxygen level and meteorological parameters. Regardless of the measuring site's mode of data transmission to the central station, DEMASdb detects the data source automatically and assigns it to the existing database.



DEMASvis

DEMASvis is a software solution for visualizing and editing your measuring data.

- Graph and list views at a glance.
- Option to enter comments
- Automatic graph/list correction via control values
- And much more



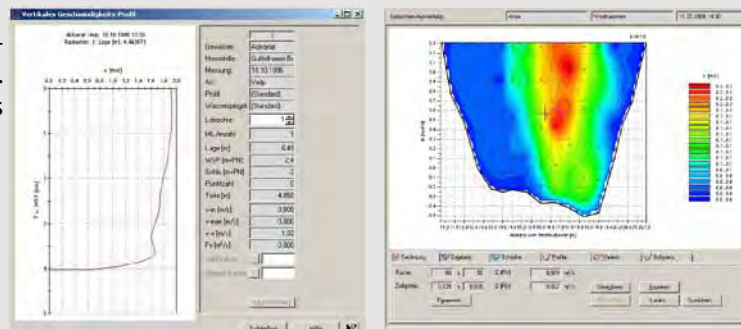
Hydrocenter Pro (Web module)

- Password-protection for provision of measuring data
- Web-based, accessible from anywhere
- Online data visualization and/or download
- Data download of any desired time series in ASCII format



Software Q

Software Q 3.0 for recording and analysis of discharge measurements with propeller-type current meters. Secure and clear management of databases. Features include: isotach display and cross-section comparison.



Reference Projects

We now have more than 45 years' experience at SEBA Hydrometrie and can look back proudly on countless fascinating projects carried out across the globe.

SEBA Hydrometrie offers customer-friendly, tailor-made system solutions (hardware and software) and, over the years, has specialized continuously in the planning, commissioning and maintenance of complete hydrological monitoring networks, as well as in training and after-sales service.

A collection of some projects carried out internationally



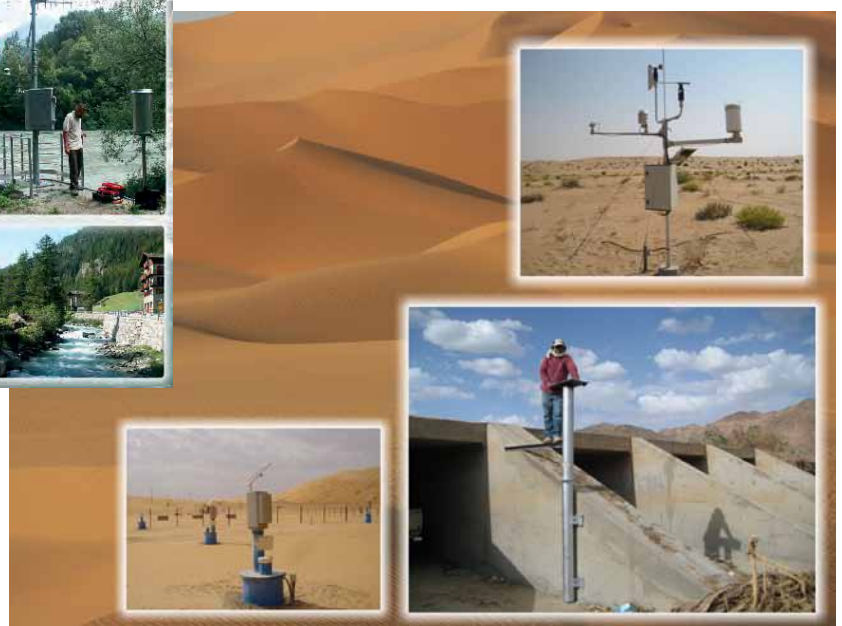
South America



Antarctica



Europe



Middle East and Asia

Reference Projects

Project: Projekt „GLACKMA“ Continuous registration of polar glacier melting as an indicator for global warming

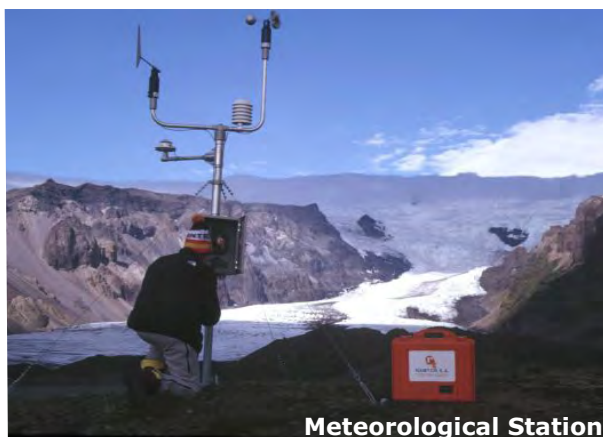
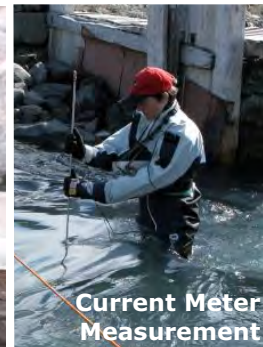
Customer: University of Salamanca, Spain

Country: Arctica & Antarctica



Delivery and Services:

- Supply of monitoring equipment for registration of glacier changes.
- Discharge measuring sytems:
Universal Current Meter F1
Mini Current Meter M1
- Various measuring systems for registration of:
water level, temperature, conductivity
e.g. MPS Multiparameter Sensors incl. data loggers
- Meteorological station
- The project was conducted in cooperation by a group of Spanish and Russian scientists.



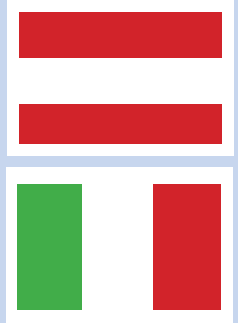
Reference Projects

Project: „Brenner Basistunnel Projekt“



Preserving evidence in areas important to water supply,
measurements in springs & discharge measurements

Country: Austria, Italy



Delivery & Service

- **Monitoring of depth drillings** up to 600 m
Insider with Multiparameter probe type MPS-D
- **Groundwater** data logger type Dipper-2, Dipper-T3
Application also in inclined holes
- **Water Spring Measurements**
Dipper-TEC (Waterlevel, Temperature, Conductivity)
Data logger type MDS-5 with
Multiparameter probe type MPS-D
- **Flow Measurements**
Data logger type MDS-5 with
with radar sensor type SEBAPuls



Flow Measurement



Monitoring of depth drilling



Water spring measurements



Artesian measurements



Reference Projects

Project: Early Warning System SAT
Transmission of Data via Fiberglass Network
State-of-the-Art Monitoring System
Sat Project (Sistema de Alerta Temprana) is a complete hydrogeological network and the only system of this kind in Bolivia

Customer: PNUD-Proyecto BOL/58537

Country: La Paz, Bolivia



Delivery:

- 37 x Hydro-Meteorological Stations comprising:
 - 33 x Data logger type Unilog
 - 28 x Radar sensors type SEBAPuls
 - 8 x Rain Gauges type RG50
- 1x Hydrological Digital Assistant SEBA-HDA
- SEBA Software
 - DEMASole (data transmission)
 - DEMASdb (Database-Management-Software) for evaluation of measuring data & alarm management.
 - Graphical Interface for the users, easy to handle and well structured.

SEBA-Service:

- **Installation and Training**
has been effected by our Bolivian representation CORIMEX and a SEBA engineer.

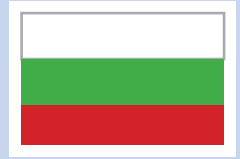


Reference Projects

Project: „Capacity improvement for flood forecasting across the border region between Bulgaria and Turkey“
Cross-border Cooperation Program (PHARE)

Customer: National Institute of Meteorology & Hydrology

Country: Bulgaria



Delivery and Services:

- The project aims at developing an operational information system for **flood analysis**, flood mapping and **flood forecasting** which will help mitigate in the future the flood consequences along the Maritza and Tundja.
- It provides on time information to authorities from Bulgaria and Turkey in charge of alerting the population and of managing the operations during the flood events.
- **12 x Hydrological** and **17 x Meteorological** Temperature/Rainfall stations were installed to monitor the water levels and precipitations over an area of about 20.000 km².
- **16 x Mobile Discharge Measurement** Equipment Universal Current Meter equipment (F1)
- **Remote Data Transmission**
Software:
 - DEMASole Server and Configuration Software
 - Software WBedien for remote control of the stations

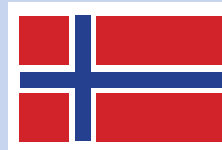


Reference Projects

Project: Supply of telemetric hydro-meteorological stations to monitor the „Treatment of polluted flow from military shooting ranges“

Customer: Bioforsk, Forsvarsbygg

Country: Norway



Delivery & Service

- **4 x Multiparameter Probe MPS-D8** for registration of water level, temperature, electrical conductivity, oxygen, pH, turbidity
- **4 x Data logger** incl. **Data Transmission** Type MDS-5 COM
- 1 x Automatic **Rain Gauge Station** Type RG-100 incl. additional air temperature sensor
- **SEBA Software** Config, DEMASole and DEMASdb for set-up, programming, calibration of sensors and data loggers; data-read out, -import, -validation, -evaluation

Project description

Leachate from military shooting ranges contain high concentration of Pb, Cu and Sb, and can be detrimental for freshwater organisms in downstream recipients. In order to investigate how to reduce the leaching of environmentally problematic metals from shooting ranges, the Norwegian Defence Estate management and Bioforsk has established a field laboratory at a shooting range in Terningmoen. Terningmoen is a training field for the Norwegian armed forces. Sampling and monitoring are done along a gradient downstream the shooting range.



Data Evaluation online webbased via "SEBA-Hydrocenter"

Hydrocenter:

- Evaluation of water quality and meteorological parameters
- Data collection 1/day
- password-protected access
- worldwide accessible from any PC using a standard webbrowser
- Data hosting on SEBA webserver
- Individual configuration (e.g. implementation of maps)

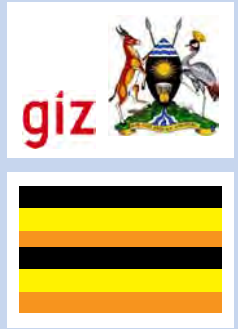


Reference Projects

Project: „Climate Protection Measures in Uganda“

Customer: Ministry of Water & Environment Uganda (MWE)
Directorate of Water Resources Management
Gesellschaft für Internationale Zusammenarbeit (GIZ)

Country: Uganda



Delivery:

- **4 x Stationary Telemetric Surface Water Level Stations with three different sensor systems:** Pneumatic gauge bubbling system (**PS-Light-2 Sensor**), Radar (**SEBA-Puls 30**)- and Pressure (**DS22**)- Sensor; incl. datalogger with integrated GSM/GPRS-modem **UnilogCom**, solar-panel and battery.
- **10 x Stationary Telemetric Surface Water Level Stations with float-operating system:** Float operated shaft encoder with integrated data logger (**Levellog**), GSM/GPRS-modem, solar panel and battery.
- Fieldsoftware **SEBAConfig**, Data Management Software **DEMASdb** and online module **DEMASole** for automatic data retrieval, **monitoring data base server**.

SEBA-Service:

- **Knowledge Transfer to MWE and GIZ specialists** for delivered equipment and DEMAS software at MWE headquarter in Entebbe, Uganda.
- **Inauguration** of all stations incl. full functionality tests, server-and software-installation, data transfer via GSM-network.
- **Installation** of telemetric surface monitoring stations at different locations.

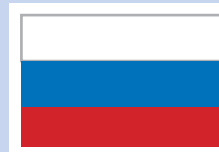


Reference Projects

Project: National Hydromet Modernization Project 2009/2010
Modernisation of hydrological network of Kuban, Ussuri
and Oka river basins and equipping of hydrological posts

Customer: RosHydromet

Country: Russia



Delivery & Service:

- **317 x Surface Water Monitoring stations**
connected to multichannel data logger
type Unilog with the following sensors:
 - 70 x pressure / temperatures sonde DST-22
 - 132 x pneumatic gauge type PS-Light-2 Sensor
 - 11 x radar sensor type SebaPuls
 - 12 x shaft encoder type Surfloat-Sensor-2
 - 87 x rain gauge RG50
 - 2 x ultrasonic flowmeter type RQ24
 - 6 x snow depth sensor + snow pillow
 - 4 x Q-Eye H-ADCP with Channelmaster
- **Data transmission**
via GSM/GPRS network
- **Installation and Training** in handling, operation and
maintenance of the installed equipment as well as training in
visualizing, read-out and evaluation of the measured data.



Measuring site



Measuring site



Measuring site



Measuring site



Measuring site



Installation



Meteorological Station



Measuring site

Reference Projects

Project: „Wajid an Overlying Aquifers“
Fully Telemetric Monitoring Network - 57 Stations

Customer: Ministry of Water and Electricity Riyadh
GTZ/Dornier Consulting

Country: Kingdom of Saudi Arabia



Delivery and Services:

- 17 x Groundwater Monitoring Stations with GSM/satellite modem: water level, electrical conductivity and groundwater temperature
- 11 x Combined Groundwater and Precipitation Stations with GSM/satellite modem: water level, electrical conductivity, groundwater temperature and precipitation
- 11 x Rain Gauge Stations with GSM/satellite modem
- 4 x Meteorological Stations: meteorological parameters (air temperature, air pressure, air humidity, solar radiation, precipitation, wind direction, wind speed)
- 3 x Wadi Gauge Stations with GSM/satellite modem: surface water level, total discharge Q (Doppler sensor)
- Implemented "Early Warning System" via Alarm SMS-messaging for sensitive parameters (e.g. precipitation, water level etc.) to 8 different mobile numbers
- Installation of Central Monitoring Server and Software (DEMASdb, DEMASole)
- Training modules in monitoring software: data retrieval off/on-line, data-import, data-validation, data-evaluation with mathematical functions, data export etc.



Reference Projects

Project: Groundwater Monitoring Network Makkah
30 Groundwater Monitoring Stations

مكة المكرمة

Customer: Saudi Geological Survey (SGS)
Saudi BinLadin Group



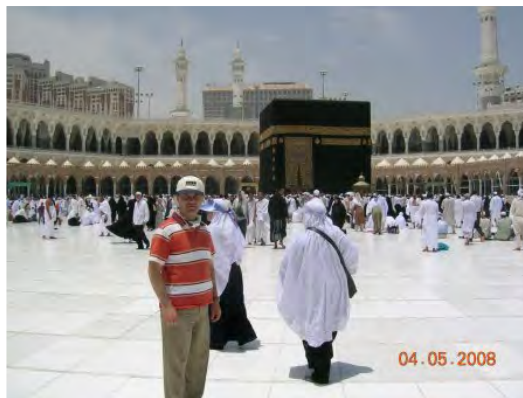
Country: Makkah, Kingdom of Saudi Arabia

Delivery :

- **30 x Groundwater Monitoring Stations:**
water level, electrical conductivity and groundwater temperature

Service:

- **Installation of standard SEBASoftware**
(SEBA config, WinBedien, MGMDs, MLMDS)
- **Training modules in monitoring software:**
data retrieval off/on-line, data import, data-validation, data-evaluation with mathematical functions, data export etc.
- **Training modules in monitoring hardware:**
preventive maintenance of monitoring stations in the field, standard calibration procedure of sensors, tutorial in standard repair



Reference Projects

Projects: „Groundwater Assessment Project Abu Dhabi“ Telemetric Monitoring Network - 280 Stations & „Combined Artificial Recharge and Utilisation of the Groundwater Ressource in the Liwa Area, Abu Dhabi, UAE“ - 50 Groundwater Monitoring Stations

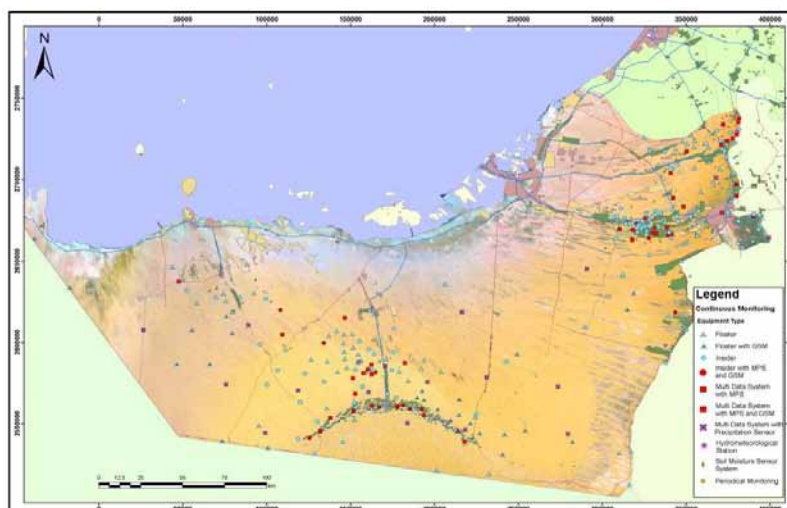
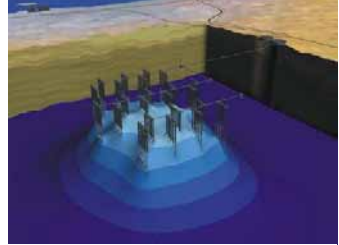
Customer: GTZ/Dornier Consulting GmbH
ADNOC (Abu Dhabi National Oil Company)

Country: United Arab Emirates, Abu Dhabi Emirate



Delivery and Services:

- **202 x Groundwater** Monitoring Stations: water level
- **56 x Groundwater** Monitoring Stations and **47 x Groundwater** Monitoring Stations (ARP - Project): water level, electrical conductivity and groundwater temperature
- **18 x Combined Groundwater and Precipitation** Stations: water level, electrical conductivity, groundwater temperature and precipitation
- **3 x Multi Level Monitoring Stations** (ARP - Project): each station with 4 separate multi-parameter sensors (water level, conductivity, groundwater temperature) connected to one central data logger
- **4 x Hydro-Meteorological Stations:** water level, electrical conductivity and groundwater temperature and standard meteorological parameters (7 sensors)
- **Training modules in monitoring software:** data retrieval off- and online, data-import, data-validation, data evaluation with mathematical functions, data export etc.
- **Training modules in monitoring hardware:** preventive maintenance of monitoring stations in the field, standard calibration procedure of sensors, tutorial in standard repair



Reference Projects

Project: Hydrological Network for Groundwater (2007-2012)

Customer: ACA Agencia Catalana del Agua, Barcelona

Country: Spain



Delivery and Services:

Involved in this project for construction of wells, installation of instruments and setting into operation are:

ADASA Sistemas, Barcelona
TELVENT Environment, Barcelona
TYPSA TECNOMA - DIRECCIÓN TERRITORIAL , Barcelona

- **59 x Monitoring stations for groundwater** with
26 x FlashCom and 33 x LogCom
with pressure sensors DS22 and multiparameter sensors MPS-D3
- For monitoring of water level, temperature, conductivity and salinity
- **Data Transmission** via GSM/GPRS
- Integration into the SCADA system of ACA
- **Installation and training** in handling and maintenance of the equipment, visualization, read-out and evaluation of the received measured values.



Reference Projects

Project: Set-up of fully telemetric monitoring network (since 2005)

Customer: Munich International Airport, Munich

Country: Germany

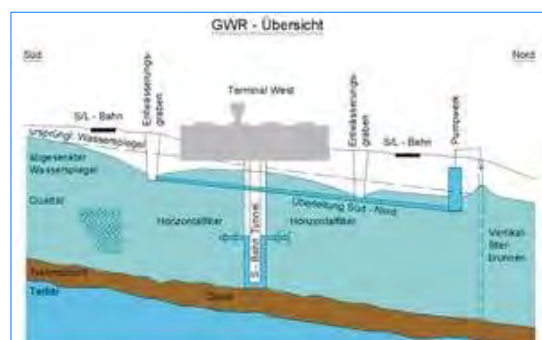


Delivery and Services:

- 300 x Groundwater Monitoring Stations: water level
- 15 x Groundwater Monitoring Stations: water level; GSM remote data transmission
- 10 x Water Quality Stations: water level, electrical conductivity, groundwater temperature, redox(ORP), oxygen (O₂)
- 1 x Ultrasonic Discharge Monitoring Station
- 2 x Raingauge Stations
- 1 x Installation of data management system DEMASdb (SAP data base): unique 2-way data exchange with Central SAP Airport Data Server
- Training modules in monitoring software: data retrieval off- and online, data import, data validation, data evaluation using mathematical functions, data export etc.
- Provision of internetplatform (SEBA-Hydrocenter): visualization, evaluation and download of acquired data



The project was delivered **“turnkey”** to Munich International Airport, i.e. installation, setting into operation and training was done by SEBA-Hydrometrie



picture: groundwater measuring
- source: Airport Munich

Reference Projects

Project: DB New Train Track Wendlingen-Ulm, „Albabstiegstunnel“
Online - Groundwater level Monitoring with SlimLogCom/
DS22 via GPRS in Push Operation

Customer: Bernd Gebauer Ingenieur GmbH

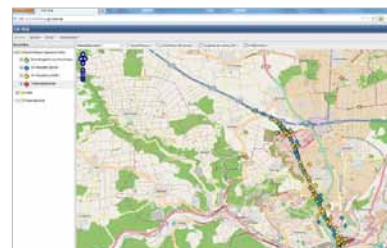
Country: Germany



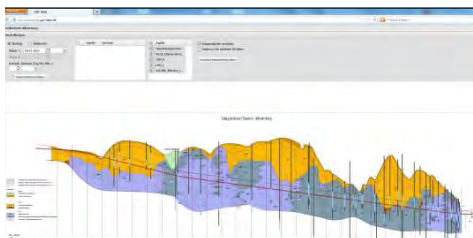
Delivery & Services:

- Field strength measurement (csq-value) with frequency analyser and best choice of mobile provider/s
- Delivery, Installation and Set-Up of **59 x SlimLogCom** with pressure transducer type **DS22** (partly sub-surface installations)
- Supply of daily-updated measuring values on SEBA-FTP-Server for acception in GW-Base/GW-Web, company RIBEKA, Bonn

*) GW-Web by Ribeka, Bonn



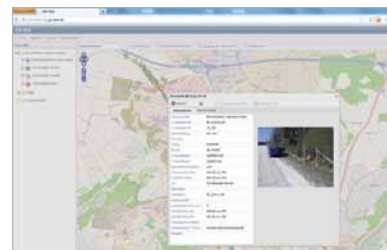
Overview of all GW monitoring sites in OpenStreetMap *)



Geological Cross section with display of current water levels *)



SEBA Service (Installation)



Master Data Administration *)



SlimLogCom Installation



Groundwater Monitoring Site



Configuration of site



Subsurface installation



Groundwater Monitoring Site

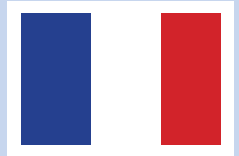
Reference Projects

Project: Framework contract for supply and installation
„de matériels de piézométrie“

Customer:



Country: France



Delivery & Service

The BRGM is in charge of project management for several national groundwater monitoring networks in France - based on a convention with the "L'office national de l'eau et des milieux aquatiques" (ONEMA).

Since the beginning of 2010, already more than 120 groundwater measuring sites have been equipped with our instruments for the BRGM in France.

Until the end of the framework contract in 2013 many more will follow.

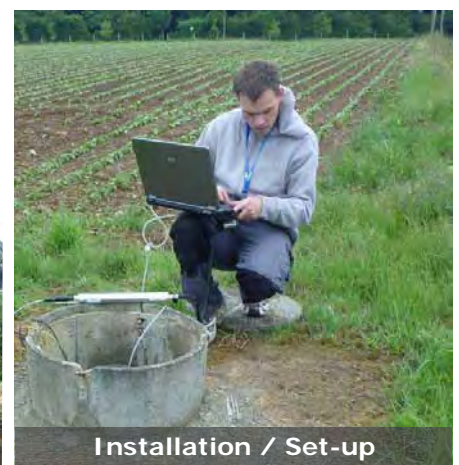
Measuring

- water level measurements with: Dipper-3, Floater-3
- data transmission via: SlimCom Version GSM and RTC
- data logger type MDS-5 Light
- multiparameter probe MPS-D3
- electric contact meter KLL
- software: SebaConfig, DEMASole, DEMASvis

Services

HydroServices

- Installation
- Maintenance
- Training



Installation / Set-up



Dipper-3 with SlimCom



SlimCom measuring site



SlimCom with Floater-3



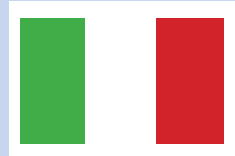
Measuring site

Reference Projects

Project: „FWFS“ Flood Warning and Forecasting System
Hydro-meteorological network with 14 Stations

Customer: Dipartimento Territorio, Ambiente e Risorse Idriche
Ufficio Centro Funzionale

Country: Italy, Valley of Aosta

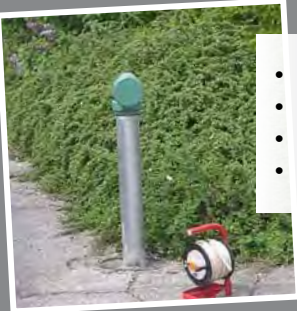


Delivery and Services:

- 14 x Hydro-Meteorological Stations:
surface water level, precipitation, air-temperature, snow level, soil temperature
- Automatic Data Transmission via GSM network
- Data Transmission and Alarm Management conducted and controlled by DEMAS software
- Annual Monitoring Equipment Maintenance Service
- Permanent immediate Software Maintenance Service



SEBA systems are used in a wide range of fields:



Groundwater

- Groundwater monitoring
- Pump tests
- Landfill sites
- Resource protection



Water Quality

- Control of environmental permits
- Discharge monitoring
- Effects of water management use
- Monitoring of aquatic ecosystems
- Drinking-water resources



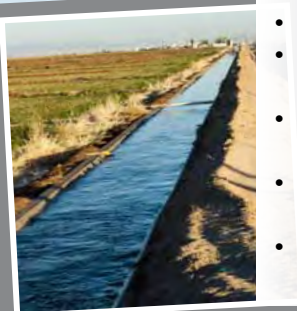
Surface Water

- Water-level measurement
- Flow measurements
- Inflow/outflow control
- Irrigation
- Artificial lakes & reservoirs
- Flood forecasting/warning



Meteorology

- Fully-automatic weather stations
- Nationwide hydro-meteorological networks
- Estimation of water resources in desert areas
- Sensors meet WMO standards



Flow measurement

- Inflow/outflow control
- Basis for water-management measures
- Deployment in reservoirs and tidal areas
- Recording of extreme flood events
- Dimensioning of civil water structures



Waste Water

- Measurement of external discharge
- Monitoring of storm overflows
- Rainwater tanks
- Preservation of evidence
- Flow measurements

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