Dipper-APT and Baro-Dipper

Reliable measurement of water level and temperature (with absolute pressure sensor)

Key Features

- Cost-effective measurement of water level and temperature
- Precise and long-term stability
- Slim design, easy operation
- Individually programmable
- Practically maintenance-free
- IP68 – ideal for applications in flood risk areas
- Absolute pressure measurement
- Baro-Dipper for barometric compensation


Water level registration


Groundwater monitoring


Long-term monitoring


Flood-proof


Well control

ISO 9001:2015 QZV We are certified Quality is our standard

Dipper-APT and Baro-Dipper

The **Dipper-APT** from SEBA provides automatic groundwater measurements and collection of level and temperature. The groundwater data logger is only 300 mm long and has a diameter of 22 mm – therefore the Dipper-APT is suitable for applications in wells from as little as 1".

The installation of a **Dipper-APT** groundwater data logger is exceptionally simple and cost effective: In order to monitor and record the level and temperature variation in a well with its flash-memory, the logger is simply attached to the casing with either a thin Kevlar- or steel cable and then lowered down. As the Dipper-APT is not barometrically compensated, an entire monitoring system requires just one additional Baro-Dipper.

This Baro-Dipper is utilised to record the barometric pressure. The variations in barometric pressure are compensated subsequently fast and simple with the aid of the DEMASdb software.

For a monitoring network in a geographically defined area, the installation of a single Baro-Dipper may suffice. We are happy to advise and offer solutions to your personal requirements.

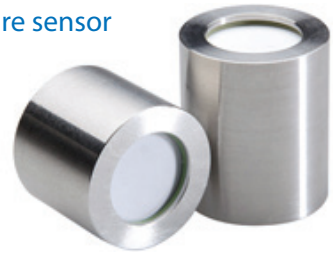
With our operation terminals and software applications we offer our clients all the essentials for the set up and operations of an up-to-date groundwater monitoring system from a single source.

Dipper-APT

- Ruggedised stainless-steel housing for use in extreme conditions (e.g. monitoring of landfill sites, contaminated land, etc.).
- Slim 22 mm Ø for installation in well casings starting at 1"
- Large 16 MB loop memory for 1.120.000 measurement values. More than enough to be able to turn your attention away from the calendar, even with short measuring intervals.
- Minimal maintenance required due to low power consumption. Two lithium batteries ensure high operational reliability and have an approximate lifespan of up to 10 years. This reduced maintenance regime saves operational costs and is environment-friendly.

Sensor Technology

capacitive, ceramic pressure sensor



In order to supplement the excellent range of SEBA data loggers and to ensure complete reliability of the measurements, SEBA uses oil-free, ceramic pressure sensors with a measurement range of 0-200 m.

They provide precise and reliable measurements, impress with their excellent long-term stability, and are robust and easy to clean. Air-pressure variations are compensated automatically in the software using the **Baro-Dipper's** measurements.

The high-precision temperature sensor integrated into the **Dipper-APT** leaves nothing to be desired.

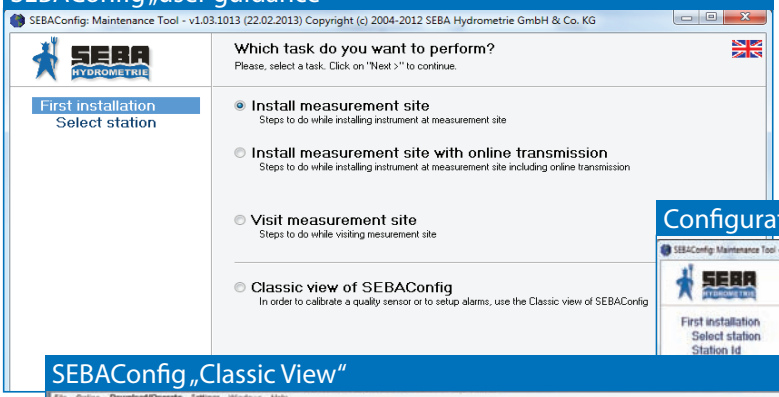
Software

SEBAConfig (Operation Software)

The new "SEBAConfig" software for Windows offers the user a comprehensive, easy to use tool for initial installation and subsequent operation. Programming a logger has never been easier: Install the **Dipper-APT**, launch SEBAConfig and off you go!

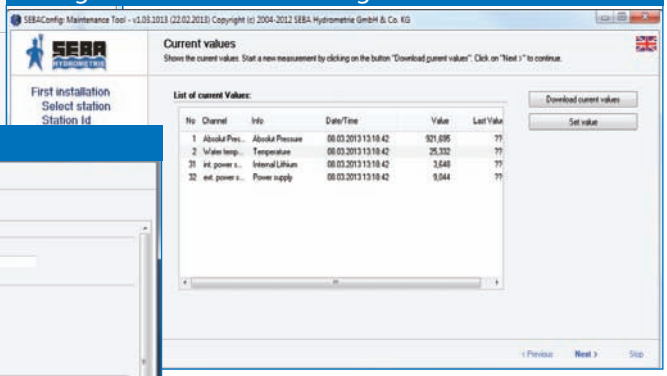
Of course, the **Dipper-APT** does more than just collect data. In the corresponding mode, it also provides you with exactly the measured data that you actually need: Quicklog mode for pumping tests, results mode for recording incidents of excess levels or shortfalls, determination of average values in the monitoring of surface-water levels, or simply taking measurements at fixed intervals. Voilà!

SEBAConfig „user guidance"

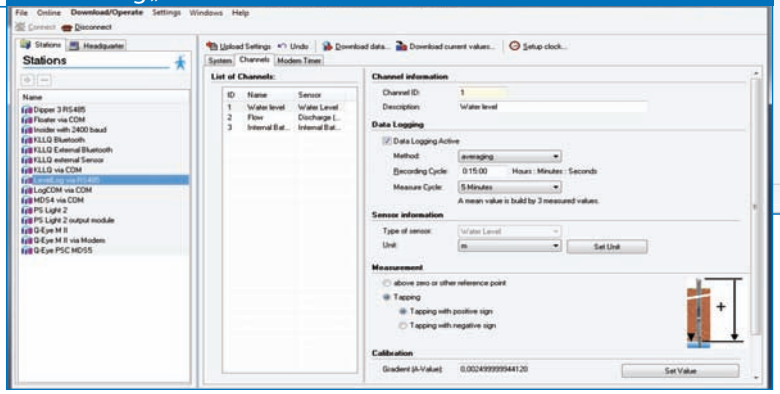


Additionally, with the SEBAConfig software it is possible to insert check values recorded during site visits, so that later back in the office a detailed quality assurance (QA) on the PC is possible.

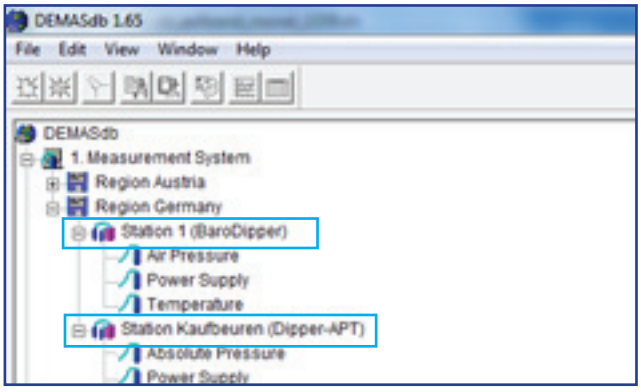
Configuration with SEBAConfig



SEBAConfig „Classic View"



DEMASdb (Data Base and Correction Software)



DEMASdb software fully automates the correction of the water level data with the barometric data.

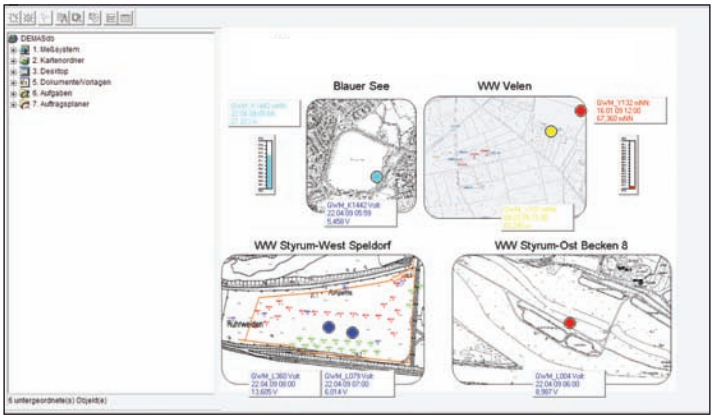
The recorded barometric pressure data from the Baro-Dipper are automatically subtracted from the data recorded by the Dipper-APT in order to compensate for barometric pressure variation.

Visualisation and Management Software

DEMASdb and DEMASvis

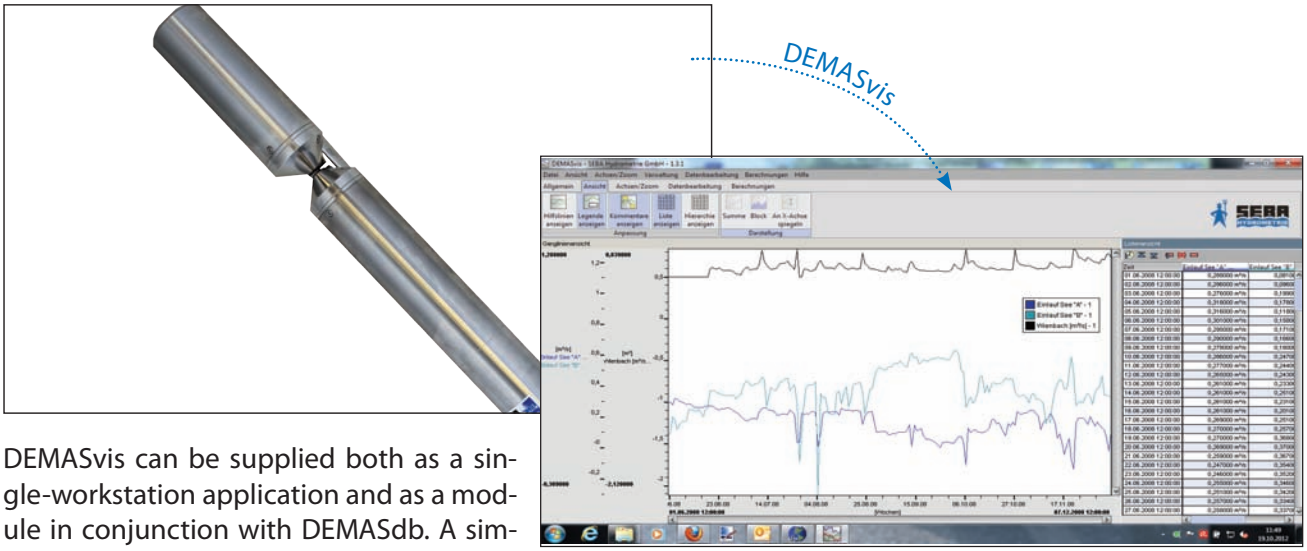
Ultimately, you want to be able to work effectively with the collected data on your own PC. Right? Experience shows that this can be a rather tedious process with the usual spreadsheet programs. With our **DEMASdb** datamanagement software and **DEMASvis** for visualizing and processing time series, you have everything you need! Your data flows freely and without hindrance from your measuring site to your database archive, with no cumbersome conversion processes — this saves huge amounts of time, money and patience when it comes to data handling.

DEMASdb is a graphical database interface designed especially for the purpose of recording, archiving and managing measured data. DEMASdb is suitable for both large and small monitoring networks. Whether it is online or offline data, DEMASdb channelizes all incoming measured data, stores these in the built-in database, and therefore brings order to the system.



Alternatively, DEMASdb can also be linked to existing SQL databases (e.g. Oracle, Microsoft SQL Server, MySQL). DEMASdb is also multi-user capable: A large number of users can access the data set, and yet the system ensures that all data remains consistent. Configurable user rights can be used to impose restrictions on partially authorized or unauthorized users.

With the DEMASdb's export function, you can convert your time series into various formats and pass them on to third parties.



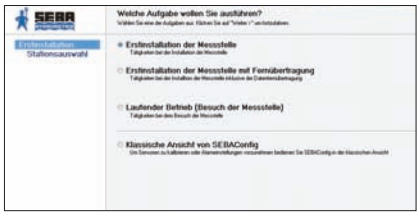
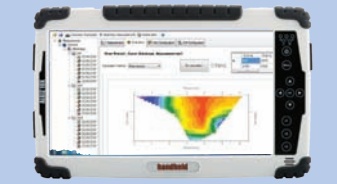
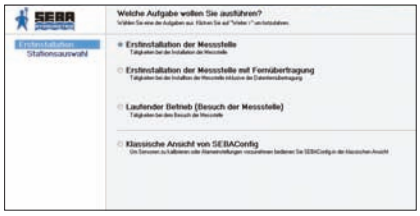
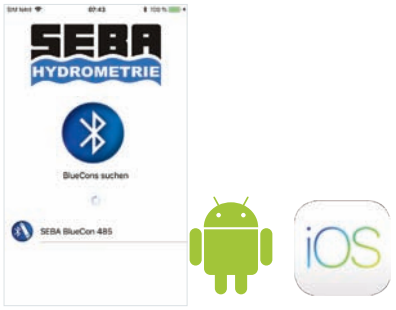
DEMASvis can be supplied both as a single-workstation application and as a module in conjunction with DEMASdb. A simple click on the desired measuring site in the Stations Explorer opens DEMASvis in order to display the collected data in a clear form as a graph or list. Furthermore, a multitude of editing and calculation functions are available to you, along with extensive correction options (reference correction, drift correction, and more).

Interested?
Download both tools from our download archive at www.seba-hydrometrie.com and give them a try!

Windows | SQL | Multiuser-capability | user administration

Operation Terminals

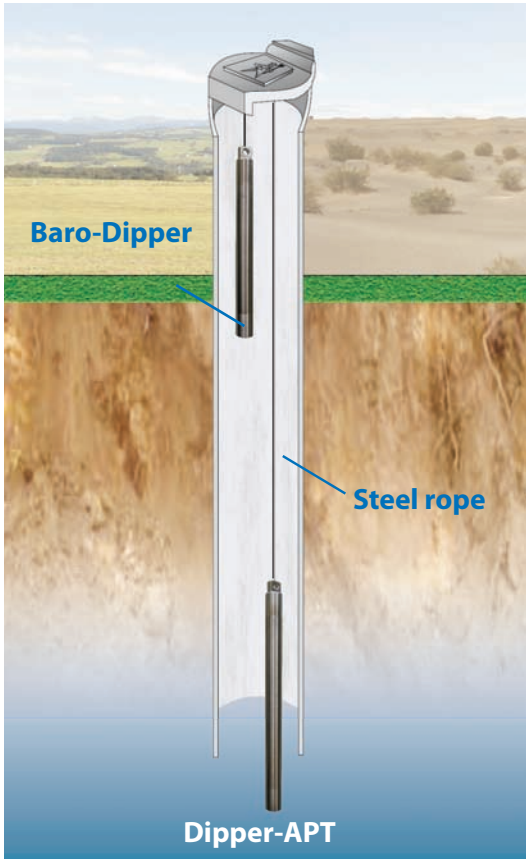
Regardless of which operation terminal is most suitable for you, you have the free choice to programme or download the data: If you have chosen a notebook or HDA-Pro, you have the option to correct the monitored level data with the barometric data, in order to quality assure the system - already at the monitoring site. When using a smart phone, the correction takes place in the Office PC with DEMASdb.

Operation Terminal	Mode of Transmission		Operation software
Notebook	Interface cable (USB/RS232)		SEBA-Config
			
HDA-Pro	Interface cable (USB/RS232)		SEBA-Config
			
Tablet (Android, iOS)	Bluetooth®	BlueCon 2	SEBA-ConfigApp
			
Smartphone (Android, iOS)	Bluetooth®	BlueCon 2	SEBA-ConfigApp
			

Further technical details please refer to separate leaflet on SEBA HDA-Tablet/SEBA HDA-Pro

The System in Operation

Interaction of Dipper-APT and Baro-Dipper

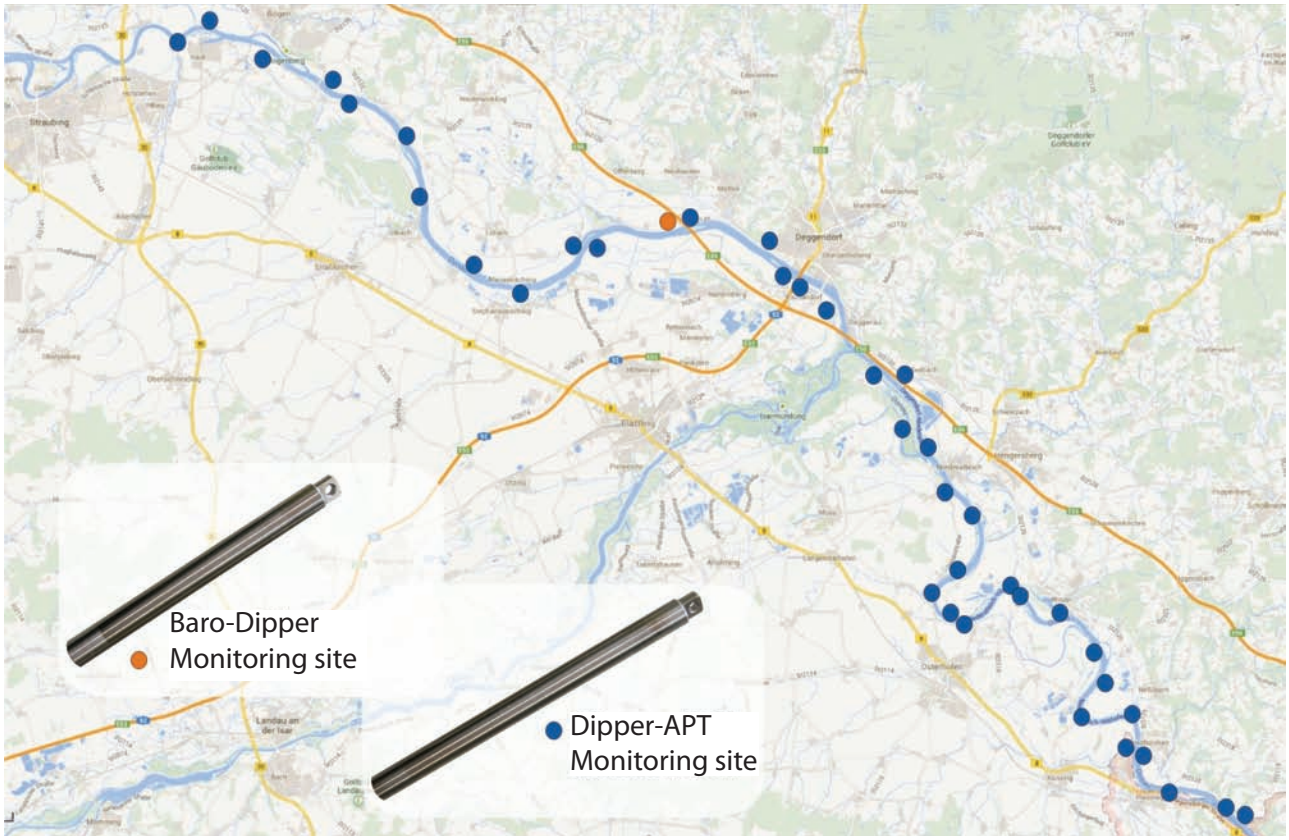


The water level variations are recorded with the Dipper-APT. In order to monitor the barometric pressure variations, one Baro-Dipper is installed in each monitoring network.

The compensation of the barometric variations takes place within the DEMASdb software package. For this purpose we recommend utilising the Baro-Dipper which was specially designed for the measurement of barometric pressure.

At the monitoring site, ideally the Baro-Dipper is downloaded first followed by the Dipper-APT. It is then possible to correct the groundwater values with the aid of DEMASdb, and subsequently to inspect the barometrically compensated values. This allows the optimal on-site inspection of the monitoring site.

Generally, one Baro-Dipper can be sufficient for a monitoring area if no significant variation in barometric pressure takes place within this area (largely depends on the topography).



Technical Data

Dipper-APT

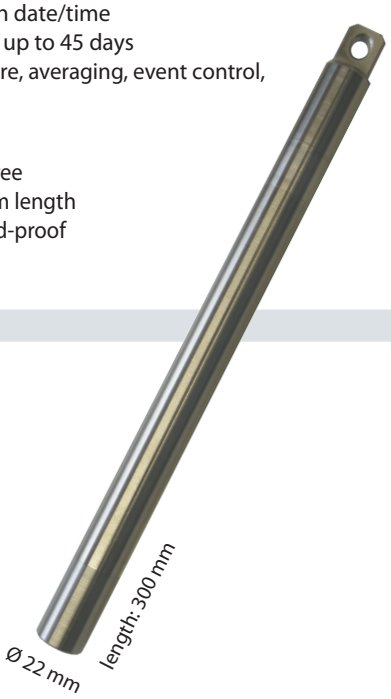
- 32 bit micro processor
- 16 MB Flash storage (= 1.120.000 measured values)
- Watchdog for monitoring of microprocessor activities
- RS485 serial communication interface with protective cap
- Optional connection via Bluetooth interface
- Real-time clock
- Analog input (water level and temperature)
- Power supply with replaceable Lithium batteries sufficient for approx. 8-10 years (at 60 min. intervals)
- Operation temperature range: -20 ... +70 °C

Storage of measured values:

- Storage in realtime
- 16 bit resolution
- Storage of control values with date/time
- Measuring interval: 1 second up to 45 days
- Programming: normal measure, averaging, event control, delta mode

Housing:

- Material: Stainless steel, rust-free
- Dimensions: 22 mm Ø, 300 mm length
- IP68, hermetically sealed, flood-proof



Pressure sensor for water level measurements

Robust ceramic pressure sensor providing long-term stability

- Measuring principle: capacitive
- Accuracy: ±0,05 % = 1 cm for 20 m measuring range
- Long term stability: ±0,1 % / year
- Temperature stability: ±0,01 % / K
- Measuring ranges: 2/10/20/40/100/200 m (more upon request)

TTemperature sensor

- NTC30 with polynomical linearisation
- Measuring range: -5 ... +50 °C ± 0,1 °C
- Accuracy: 0,3 °C (standard), 0,1 °C (optional)

Cable : Steel or Kevlar®

Baro-Dipper

Power Supply internal:	2100 mAh, AA Lithium battery (3,6 V) *Energy Consumption in Standby: max. 30 µA* *Energy Consumption in operation: max. 15 mA* *Measuring intervall: 30 seconds ... 1day*
Memory:	16 MB Flash memory (approx. 1.120.000 values)
Microprocessor:	32 bit
Interface(s):	RS485 (Readout and Operation)
Pressure Sensor:	piezoresistive, Silizium
Measuring Range:	10 ... 1100 mbar
Resolution:	15 bit (approx. 0,03 mbar)
Long term stability:	-1 mbar / year
Temperatur dependency:	± 1mbar (0 ... +50 °C)
Operation Temperature:	-40 ... 85 °C
Housing Material:	Stainless steel, rust-free
Weight::	approx. 0,3 kg
Dimensions:	Ø 22 mm, lenght: 240 mm

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

SEBA Hydrometrie GmbH & Co. KG

Gewerbestr. 61a
D-87600 Kaufbeuren

Tel.: +49 (0)8341 / 9648-0
Fax: +49 (0)8341 / 9648-48
E-Mail: info@seba.de
Internet: www.seba.de

represented by: