



Groundwater Monitoring - Online FlashCom - LogCom

The "intelligent" SEBA Top Piece for automatic transmission of measuring data

Special Features

- automatic data transmission
- data transmission via GSM/GPRS
- SMS-Alarm
- suitable for 2" casing
- battery operation / solar operation
- reduction of expenses due to longer control intervals
- option: Bluetooth-Interface



LogCom



FlashCom



Internet-Hydrocenter



groundwater

LogCom with DS22



groundwater

LogCom with Floatsensors



groundwater

Data Retrieval with SEBA-HDA



System Description

The **intelligent SEBA Top Piece** is a sophisticated, compact remote transmission system for an economic control of groundwater monitoring stations. Following characteristics distinguish the SEBA top piece:

1. Compact Construction

Logger, GSM/GPRS modem, antenna and LC-display are located in the upper hinged housing cover: in comparison to conventional remote transmission systems, the well-casing is freely accessible for possible control measurements (e.g. water level indicator) or sampling procedures etc. The intelligent top piece can easily be mounted onto 4" threaded casings. An installation on 2", 3", 4.5", 5" and 6" well casings is also possible by means of additional supplied adapters.

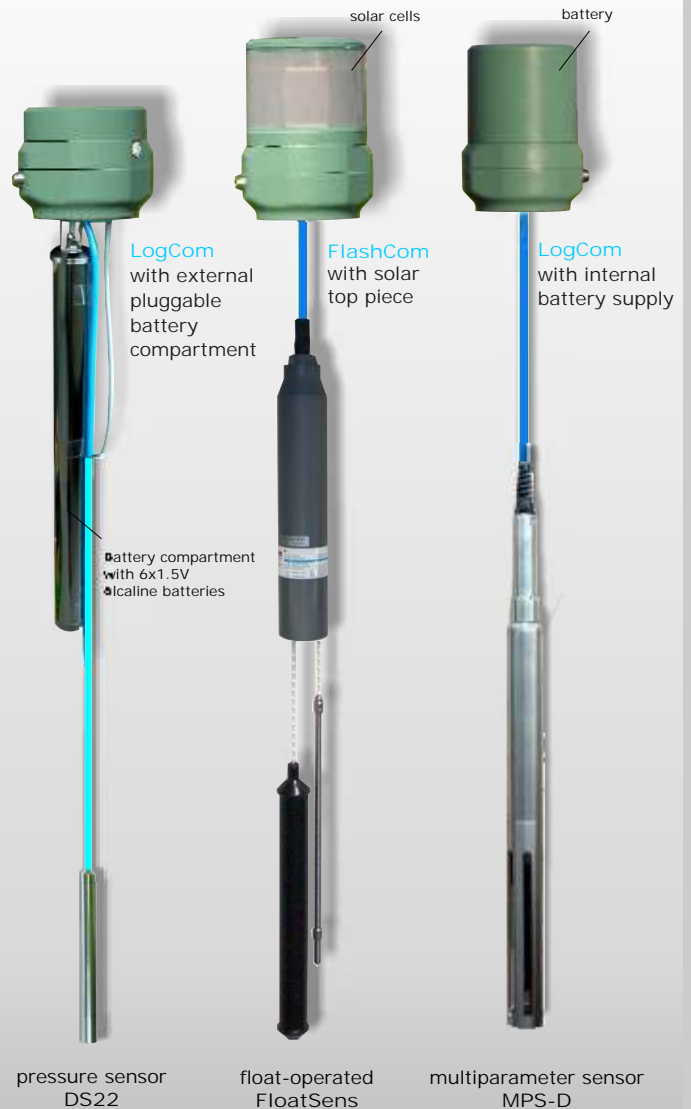
2. Energy Management

A sophisticated energy management (time-slot procedure) allows a long battery life time which leads also to low maintenance costs. The pluggable battery compartment is installed inside the well casing and can easily be removed without any tools due to the pluggable connections. Therefore a battery change is blindingly easy...! An optional additional solar cap prevents any battery changes.

3. Automatic call of the measuring sites and SMS alarm

With the comfortable Data Management Software DEMASdb, the intelligent SEBA top piece can be called up to 8 times per day in individually programmable time slots. Independently, alarm limits can be defined (i.e. waterlevel, battery capacity). SMS alarms can be sent to up to 8 different mobile phone numbers, as well as to a facsimile instrument.

The "intelligent" SEBA top piece



Measuring sensors directly connectable to GSM-LogCom/FlashCom

Water Level:

- with float-operated sensor Floatsens
- with pressure sensor DS 22 robust, high precise differential pressure sensors with extreme long-term stability; stainless steel encapsulation ; special cable with pressure compensation tube.

Water Level/Temperature:

- Combined sensor DS/T with special cable and pressure compensation tube For measuring water level and water temperature with extreme long-term stability.

Water Quality:

- Multiparameter Sensor MPS-D for measurement of:
 - water level
 - water temperature
 - conductivity
 - salinity
 - pH-value
 - Redox potential
 - dissolved oxygen
 - turbidity
 - etc.

Operation with SEBA-HDA or Notebook

The adjustment and programming of the **intelligent SEBA Top Piece** can be conducted with a notebook, an interface cable and the userfriendly configuration software SEBA Config. Alternatively to the notebook, SEBA recommends the trailworthy, handy SEBA HDA (Hydrological Digital Assistant).

SEBA HDA - a tough and robust hand-held!

Robust PDA for tough field operations and an alternative to the notebook. Vibration, impact, dust and water resistant magnesium housing according to IP 67 for the operation between -30°C and +60°C. Operation time up to 30 hours on one charge.

Simple operation resp. input of parameters (i.e. of control values) via TFT colour LC-touchscreen or stylus.

Included in the delivery:

- operation software **SEBA-WBedienCE** for simple programming, adjustment and operation of SEBA water level observer, as well as for transmission of the stored values to PC.
- evaluation software **MGMDS/MLMDS CE** for plausibility check of stored measuring data in form of curves and lists.

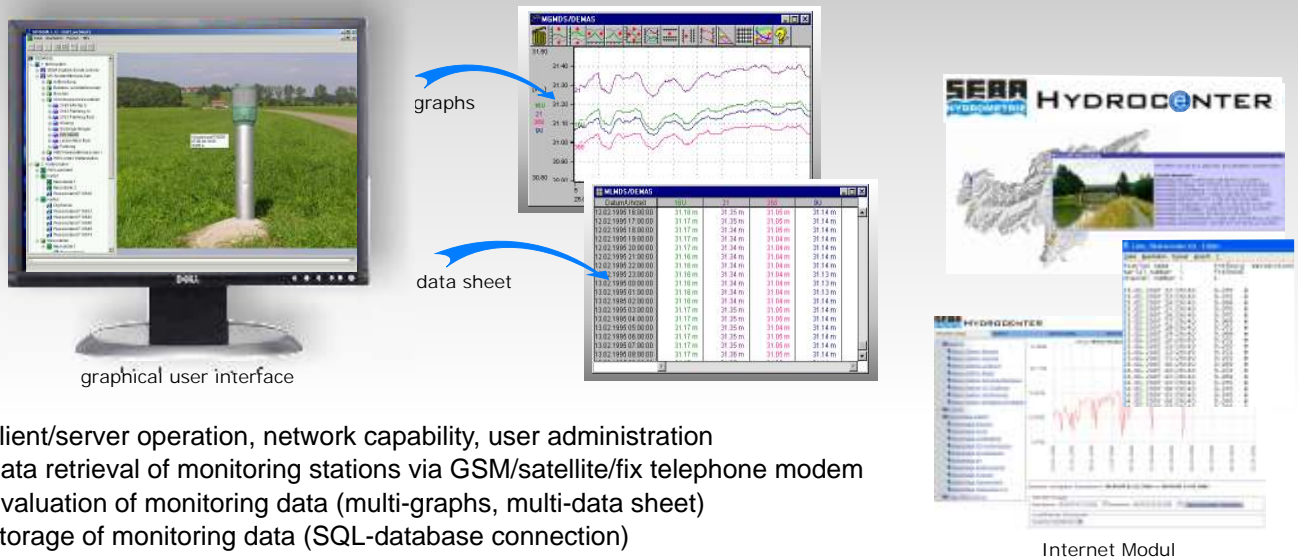


Automatic monitoring data retrieval with DEMASole or with Hydrocenter via Internet

Storage of data (SQL-database) with DEMASdb and Visualisation of measuring values (graphs/lists)

In order to conduct an automatic monitoring data retrieval from the **intelligent SEBA Top Piece**, the comfortable DEMASole software is implemented and the data can automatically be stored in DEMASdb. Alternatively the standardized call protocol DDP (descriptive data protocol) also allows the retrieval of recorded data with non-proprietary software, i.e. WISKI/SODA (Kisters), MAWIN etc.

DEMASdb offers a comfortable graphical user interface, an automatic data retrieval software (DEMASole) as well as an evaluation module (MGMDS/MLMDS) which includes various calculation functions. Depending on the size of the network, DEMASdb is provided with a paradox-, MySQL-, Oracle- or MS SQL-database. Optional DEMASdb can also be integrated with an already existing SQL database (i.e. Oracle, SQL-Server). DEMASdb enables a simple data management of monitoring networks of various extents: small (10 sensors), middle (50 sensors) and large (> 100 sensors).



- client/server operation, network capability, user administration
- data retrieval of monitoring stations via GSM/satellite/fix telephone modem
- evaluation of monitoring data (multi-graphs, multi-data sheet)
- storage of monitoring data (SQL-database connection)
- alarm in case of exceeding adjusted limits (i.e. SMS, Fax)
- export of monitoring data to foreign programmes (automatically)

Technical Data of SEBA-Top Piece (LogCom/FlashCom)

for GSM/GPRS 850/900/1800/1900MHz-Networks

Housing:	Aluminium, watertight IP67 dimensions: LogCom: Ø168mm, height 133mm FlashCom: Ø168mm, height 220mm	Display:	1 x 8 digits LC-display for indication actual measuring value clock, date, status
Data logger:	integrated with MDS or DDP protocol Memory: 512K for 240,000 values option: 1MB for 480,000 values option: 2MB for 960,000 values	SMS-Alarm:	8 x SMS-alarm to mobile phone SMS-alarm to FAX
Modem:	GSM standard 850/900/1800/1900MHz (EGSM, Quadband), GPRS	Time slots:	free programmable
Operation:	with 3V- SIM-cards	Power supply	6x1.5V Alkaline batteries
Antenna:	integrated in the top of the protection housing robust, impact resistant and weatherproof	LogCom:	(Mono, LR1, Am1, size D)
Interfaces:	RS232 option: Bluetooth	Operation time:	>2 years in case of 1 query/day (depending on the quality of the GSM connection and measuring interval)
		FlashCom:	solar operation
		Operation time:	sufficient for 1 query/day (other query intervals on request)

SEBA-Sensors

Pressure sensor DS22 for water level registration

- high accurate, robust and long-term stable pressure transducer with stainless steel housing
- accuracy: $\pm 0.1\%$ = $< 1\text{cm WS}$ at 10 m measuring range
- long-term stability: $< 0.1\%$ /year
- measuring ranges: 2.5; 5.0; 10.0 m water level etc.
- special cable for pressure transducer (food safe) with integrated pressure compensation tube (length up to 300m)



Combined sensor DS/T-22:
for water level and water temperature registration

Float-operated Floatsensors:
to measure the water level

- SMD-technique with automatic test routines
- 16 Bit microprocessor
- Watch-Dog to observe the microprocessor activities
- Serial communication interface RS 485
- Real-time clock
- Encoder
- Power supply with changeable Lithium battery sufficient for >5 years (with 60 min. interval)
- Operation temperature range: $-20\dots+70^\circ\text{C}$
- Watertight PVC housing
- Dimensions: Ø 40mm, length 280mm
- Installation device for top pieces of min. 2"



Multiparameter Sensor MPS-D
for measuring water quality:

- Water level: 0..10m, 0..20m, 0..50m etc.
- water temperature: 0..25°C, 0..50°C
- conductivity: 0..2mS, 0..10mS, 0..100mS etc.
- pH/Redox: 0..15pH / $\pm 2000\text{mV}$
- dissolved oxygen: 0..40mg/l; 0..400%
- turbidity: 0..1000NTU
- special cable (food safe!) with integrated pressure compensation tube (length up to 300m)



Further technical data please see
leaflet Water Quality Monitoring

SEBA-Terminal HDA

Dimensions: Length: 165 mm, Width: 95 mm, Height: 45 mm
Weight: 490 g including battery
Protection class: IP 67
Drop: 26 falls from 1.2m on concrete
Operating temperature: -30°C till $+60^\circ\text{C}$
Humidity resistance: MIL-STD 810F method 507.4
Processor/memory: Intel PXA 255 X-Scale CPU
RECON200 - 200 MHz,
64 MB SDRAM, 64 MB NAND Flash

Display: 1/4 VGA, 240 x 320 Pixel, colour TFT display with touchscreen and front light

Batterie: 3,800mAh NiMH-Batterie for 12 – 30 hours operating depending on operation mode

Operating system: Windows Mobile 2003

Connections: 1 x USB-B Slave (12 Mbps),
1 x RS232 (115 Kbps)
1 x charging, 2 x CF-slots type II

Keyboard: 10 keys, on screen query softkeyboard for input of alphanumeric signs

included in delivery:

- battery-charger
- connection cable PDA-PC
- software SEBAConfig CE
- software MGMSD/MLMSD CE for presentation of data sheet and graphs



SEBA-HDA

The right is reserved to change or amend the foregoing technical specification without prior notice.



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