



Stadt Zürich
Amt für Städtebau

**The sky
is the limit ...**



SUISS Hydra

SWISS MAINS

Measurement and
Instrumentation Solutions

www.swissmains.com

There is space to grow your ideas...



SUISS Hydra Underwater Surveying System

A development in collaboration with

- Stadt Zürich, Amt für Städtebau, Unterwasserarchäologie Zürich
- SMT Swiss Mains GmbH, Measurement and Instrumentation Solutions

SUISS Hydra - The Revolution in the domain of underwater archaeology



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SWISSMAINS

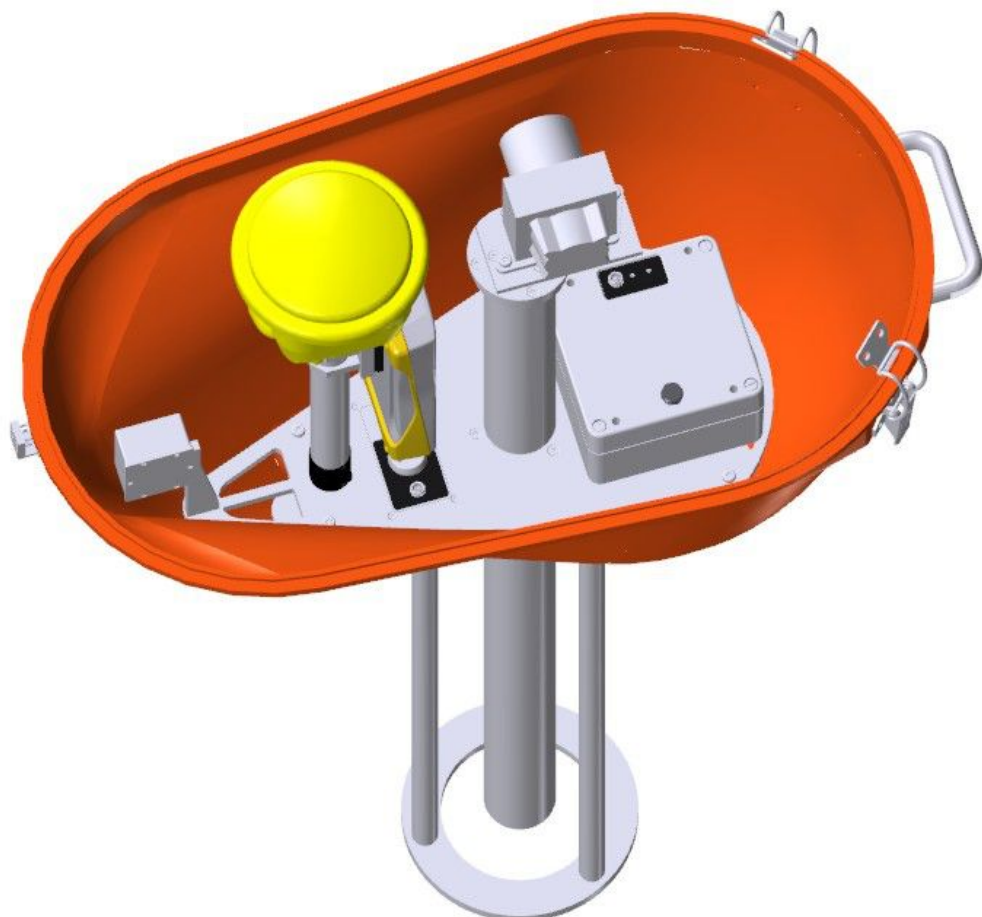
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The aim of the development of SUISS Hydra was the modernization of surveying in underwater archaeology. State-of-the-art technology and most sensitive sensors allow for very accurate measurements in great depth in fresh water. Thanks to highly integrated circuits the hand set is small and handy.

The System was developed with the following applications in mind:

- Setting up of a survey grid
- Recording of individual findings
- Attribution of each single measurement
- Recording of lines
- Recording of areas
- Delivery of digital elevation models
- Mapping and monitoring of changes
- Also for land-based surveying thanks to a modulare design

We are sure you will find additional applications in your specific area. Let the technology support your day-to-day operations.



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Here are the major benefits of SUISS Hydra:

As a result of the cooperation between the section underwater archaeology of Zurich and SMT Swiss Mains GmbH the system is optimally tailored to the practical needs.

Most modern GNSS technology and the use of correction services ensure precise coordinates in real-time.

Thanks to a special developed underwater data link there are no cables necessary. Hence there is more freedom for the diver and at the same time this enhances security under water.

Measurement accuracy and battery status are displayed continuously on the hand set and allows a complete control of the system by the diver.

Following the measurements all data can be easily imported in a GIS where they can be combined and displayed with other information.

Surveying for underwater archaeology can be done in water or land-based with the same system. Simply put the main unit with the GNSS on a rover rod and continue to work as you are used to under water.

Additional informations about SUISS Hydra can be found at the internet-address: www.suiss-underwater.ch

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SUISS Hydra - Technical Datasheet

General

Buoy

Material fibreglass compound
Form hydro- and winddynamic optimized
Color luminous painting for increased visibility*
Dimensions (L X W X H) 0.73 x 0.42 x 1.22 m
Weight (incl. batteries) 1.9 kg
Telescope-arm extendible, rigid fibreglass tubes
Power supply 10.4 Ah @ 14.8 V
Operating time under water at least 6 h
main unit land-based 3 h
Operating conditions -10 °C to +40 °C
Water tightness IP65, short submersion
Interfaces USB, Bluetooth, underwater communication
Maximum water depth 3.5 m
with pole extensions up to 5.5 m
Maximum tilt ±30 °
SIM card slot for microSIM card

Hand set

Display transreflective, backlit LCD
for optimal readability under sunlight
Resolution 240 x 160 pixels
Display black on white
Handling magnetic pen
connected with a cable to the hand set
Dimensions (L x W x H) 12.8 x 12.0 x 7.2 cm
Weight (incl. batteries) 0.89 kg
Power supply 2.6 Ah @ 7.4 V
Operating time at least 6 h
Operating conditions -10 °C to +40 °C
Water tightness watertight up to 30 m
Interfaces USB, Bluetooth, underwater communication
Mount Velcro strip

Technology involved

Position RTK-GNSS
Orientation and tilt inertial unit
Length of the telescope bowden sensor
Correction service RTK-GNSS GSM-Module (ntrip with RTCM3)
or local base station with radio
Data connection buoy - hand set underwater radio at 27 MHz
or other technologies depending on application and water depth
Data transmission Bluetooth-wireless-technology at 2.4 GHz

Resolution

at 1 Sigma, RTK-reception and 3.5 m depth
Position < 5 cm
Height < 5 cm

RTK-GNSS

Instrument Trimble SPS985
Channels L1, L2C/A, L5
Systems GPS, GLONASS, Galileo and Compass
RTK-resolution horizontal 8 mm + 1 ppm RMS
vertical 15 mm + 1 ppm RMS

Poseidon Software

- Loading of raw data
- Editing the classification of individual points
- Editing of attributes
- Administration and definition of attributes
- Local adjustment for correction of residual errors
- Coordinate transformation to local grid**
- Export of measurements as ASCII-file
- Export of shape-files (for import in GIS-systems)
- Update of the operating system of the buoy and the hand set

Shipment

- Buoy
- RTK-GNSS-Modul (including Trimble SPS985)
- Hand set
(L x W x H) 1.41 x 0.54 x 0.89 m + Handles
- 1 Lithium-Ion battery pack including charger
- 3 internal Lithium-Ion batteries
- Special USB-cable
- Point
- Mount for hand set on rover rod
- Handling case
(L x W x H) 0.53 x 0.43 x 0.21 m
- removable box for electronics
- CD with Poseidon software
- Operating manual

Accessories

- Rover rod with tripod for surveying on land
- Pole extension 1 m or 2 m for greater depth

* There may be restrictions in the use of luminous colours in certain countries.

** Please ask about your specific local coordinate system. We support any projection.

Specifications subject to change without notice.
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Stadt Zürich
Amt für Städtebau

Die Unterwasserarchäologie Zürich ist ein
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Our business lines:

Educational Solutions

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Swiss Mains is your specialist for individual electronics and software development. We solve complex problems in the area of simulation and measurement technology. Moreover we provide products for surveillance of high voltage installations as well as geophysical prospection. Our flexible school administration software is in use in many places for many years. We will be happy to advise you based on years of years of experience. **The sky is the limit ...**

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