

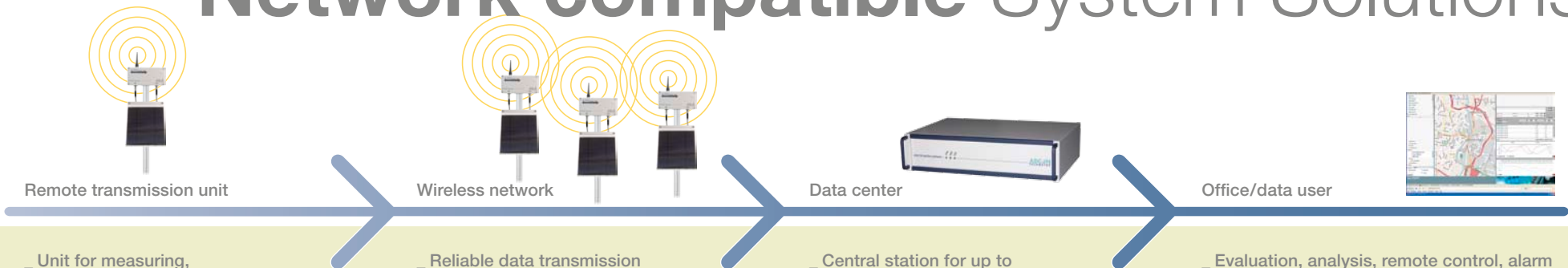
## OTT Systems

- Comprehensive solutions
- Network compatible
- Low power
- GSM/GPRS & UHF

# OTT System Solutions Smart Wireless Communication



# Network compatible System Solutions



- \_ Unit for measuring, storing and transmitting hydro-meteorological data.
- \_ Power supplied by solar panel.
- \_ Easy to install and to put into operation.

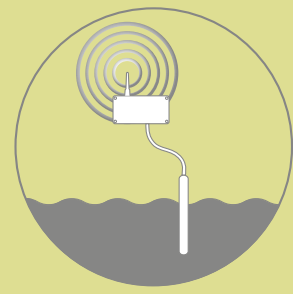
- \_ Reliable data transmission via GPRS/UHF.
- \_ Each station provides UHF relay capabilities for increasing the coverage.
- \_ Little maintenance.

- \_ Central station for up to 1,000 RTUs.
- \_ Central station may be accessed through Internet, LAN, modem, GSM.
- \_ Remote control and remote diagnostic capabilities.

- \_ Evaluation, analysis, remote control, alarm management.
- \_ addVANTAGE Pro web-based measurement network software solution.
- \_ Connection to the OTT Hydras 3 measurement network and time series analysis software.
- \_ Connection to the OTT netView web-based data hosting and presentation solution.

## Smart Wireless – Compact systems for remote data transfer

In the right place at the right time – measurement networks in environmental monitoring are to provide reliable data. For remote data transmission, there are various approaches. When the focus is set on fast and easy installation and entire data management is to be done from a data center, then network compatible wireless systems using Adcon RTUs (Radio Transmission Units) are the proper choice. These systems have their strong points in supporting various wireless technologies. Whether it be UHF short-range, UHF long-range, GSM, or GPRS transmissions – all of



these may be handled on the same network and are managed from the same control center. Together with the proven OTT sensors, wireless systems are turn-key solutions featuring high measuring accuracy, easy handling, extremely low current consumption, and easy data access – at any time and from any place.

Data communication

### Station/measurement network

Centrally controlled compact stations for building and operating monitoring networks in hydrology, meteorology, and environmental applications.

### Smart wireless

Network compatible system solution for using different wireless technologies (UHF/GPRS): Whether it be short-range, long-range, GSM, or GPRS transmissions – all of these may be handled on the same network and are managed from the same control center.

### Radio Transmisson Unit

Both datalogger and wireless transmission module are accommodated in an extremely compact, small, and robust system enclosure.

### Power supply

Independently powered by a solar system – thanks to extremely low current consumption.

### Handling

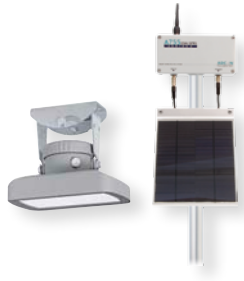
Components are easily put into operation – only minor installation effort required.



Smart wireless RTU sensor bundle

## Packages tied for you: System Bundles

A bundle includes everything required for gathering, storing, and transmitting measured data. The local compact station basically consists of the sensor, the RTU, and one or two compact solar panels. Requiring a minimum of space, the RTU accommodates both datalogger and batteries, wireless modem as well as the antenna. The cables for solar panel and measuring sensorics are fitted with Binder connectors that are simply plugged into the respective RTU socket. This is all that is required on site. Both configuration and management are done from the central station.



# Innovative Water Level Measurement

## & Smart Wireless Systems

### Characteristics / Benefits

- \_ Station is completely and independently powered by a solar system
- \_ No complex cable routing from the bridge to the datalogger
- \_ Ultra compact design
- \_ Contactless measurement



### Water level: Radar bundle OTT RLS + A755 RTU

Compact and independent measuring station for contactless measuring, storing, and transmitting the water level; mounted to bridges, measuring pontoons, or beams.

The OTT RLS unit was specifically designed to be used with independently powered field stations. The contactless pulse radar sensor is used for water level measurement in surface waters. Its maximum measuring range is 35 meters.

The extremely low current consumption of the radar sensor allows for perfect interaction with the A755 RTU unit. Both units can be installed to bridges on the same beam without attracting attention of unauthorized persons.

The OTT RLS & A755 bundle solution is the cost-efficient, convenient, and reliable alternative to conventional level measuring systems.

### Characteristics / Benefits

- \_ Station is completely and independently powered by a solar system
- \_ Durable ceramic measuring cell
- \_ For pipes/holes from 1" on
- \_ Reliable and precise
- \_ Compensating capillary for barometric pressure variations
- \_ Temperature compensated



### Water level: Pressure bundle OTT PLS + A755 RTU

Complete measuring station including pressure probe appropriate for measuring and transmitting water level and temperature.

The OTT PLS pressure probe measures hydrostatic pressure and water temperature. From these values, it calculates the water level while compensating effects caused by temperature or barometric pressure variations. Thus it is able to provide highly precise and repeatable data at any time.

The pressure probe is installed in gauge wells, protective piping at the bank slope, or in groundwater gauge pipes. The RTU may be attached to the inside or outside of a measuring station wall (e.g. of a gauge station). Alternatively, the unit may be mounted to a mast located directly at the measuring site, e.g. for groundwater measurements.

The measuring setup is ideally suited to be fitted to temporary construction site monitoring equipment.



Complete station inconspicuously mounted to a bridge/beam.

### Technical data

#### OTT RLS

Measuring range	0.8 ... 35 m
Accuracy	±3 mm
Dimensions (L x W x H)	222 x 152 x 190 mm
Weight (incl. mounting)	Approx. 2.1 kg
Operating temperature	-40 ... +60 °C
Relative humidity	0 ... 100 % (non-condensing)

#### A755 RTU

GSM/GPRS RTU with SDI-12 input.  
Solar power supply for RTU and sensor from one 4.3 W panel.  
Depending on the particular location, a second panel may be connected as an option.



Sensor installation in gauge well or in protective piping at the bank and in the water.

RTU with solar panel attached to a mast.

### Technical data

#### OTT PLS

Measuring range	0 ... 4 m, 0 ... 10 m, 0 ... 20 m, 0 ... 40, 0 ... 100 m
Accuracy	±0,05% of full scale
Dimensions (L x Ø)	195 mm x 22 mm
Weight	Approx. 0.3 kg
Operating temperature	-25 ... +70 °C

#### A755 RTU

GSM/GPRS RTU with SDI-12 input.  
Solar power supply for RTU and sensor from one 4.3 W panel.  
Depending on the particular location, a second panel may be connected as an option.

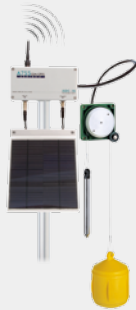


# Water Quality Monitoring

## & Smart Wireless Systems

### Characteristics / Benefits

- \_ Reliable measurement without drift
- \_ For float shafts and observation wells
- \_ Upgrade for mechanical level recorders



### Water level:

#### Float bundle OTT SE 200 + A755 RTU

Bundle solution incorporating the OTT SE 200 shaft encoder for measuring, storing, and transmitting the water level.

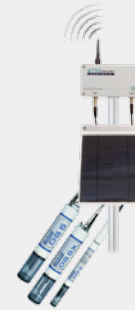
The OTT SE 200 has been developed for measuring the level in float shafts or observation wells. Existing level recorders can be easily upgraded using the SE 200 – an easy and cost-efficient way to obtain digital data.

The RTU may be attached to the inside or outside of a measuring station wall (e.g. of a gauge station). Alternatively, the unit may be mounted to a mast.

The bundle solution incorporating the A755 RTU is an optimum solution for retrofitting existing water gauge systems which include float shafts and for which data transmission is to be taken into account.

### Characteristics / Benefits

- \_ Reliable measurement of chemical/physical quality parameters
- \_ Little maintenance by using the latest sensor technology (e.g. LDO for dissolved oxygen analysis)



### Water quality:

#### Bundle incorporating Hydrolab sonde + A755 RTU

Monitoring station using a multi-parameter Hydrolab Series 5 sonde including transmission of water quality parameters for ground and surface waters.

Using the multi-parameter Hydrolab MS 5/DS 5, and DS 5X sondes, up to 16 parameters can be measured simultaneously.

The sonde is installed in measuring buoys, gauge wells, protective piping at the bank slope, or in groundwater gauge pipes. Depending on the measurement setup, there are various options for installing the RTU: within the measuring buoy, at the inside or outside of a measuring station wall (e.g. of a gauge station), or at a mast directly on site.

The high-quality multi-parameter sonde in combination with the easy-to-install RTU is ideally suited to be fitted to equipment that is used for temporary monitoring operations in water protection.

### Technical data

#### OTT SE 200

Measuring range	±30 m
Accuracy	±0.003% of full scale
Dimensions (L x W x H)	82 x 82 x 34 mm
Weight	Approx. 0.25 kg
Operating temperature	-20 ... +70 °C
Relative humidity	0 ... 95 % (non-condensing)

#### A755 RTU

GSM/GPRS RTU with SDI-12 input. Solar power supply for RTU and sensor from one 4.3 W panel. Depending on the particular location, a second panel may be connected as an option.

### Technical data

#### Multi-parameter Hydrolab sondes – measurement parameters

Dissolved oxygen	Ammonia	Rhodamin WT
pH	Nitrate	Cyanobacteria
Conductivity	Chloride	Ambient light
Turbidity	ORP	Depth
Water temperature	TDG	
Water level	Chlorophyll a	

#### A755 RTU

GSM/GPRS RTU with SDI-12 input. Solar power supply for RTU and sensor from one 4.3 W panel. Depending on the particular location, a second panel may be connected as an option.



Sensor installation in gauge station or in observation wells in the water. RTU with solar panel attached to a mast.



Sonde installation in measuring buoys, gauge wells, protective piping or groundwater gauge pipes.



# Innovative Precipitation Measurement

## & Smart Wireless Systems

### Characteristics / Benefits

- \_ Precise and reliable measurement results in all weather conditions
- \_ Meets all requirements as per WMO Guidelines 306, No. 8
- \_ Long-term stability and ruggedness



### Precipitation: Bundle incorporating OTT Pluvio² + A755 RTU

Complete measuring station including the OTT Pluvio² weighing rain gauge for measuring, storing, and transmitting precipitation data.

The OTT Pluvio² senses each weather event reliably and exactly, both with regard to quantity and intensity of liquid, solid, and mixed precipitation. The measuring process is based on the balance principle, taking into account accompanying factors such as temperature and wind that could distort the measurement results.

For mounting the RTU and the solar panels to the Pluvio² mast base, special pipe brackets are available.

The compact and solar panel powered precipitation measuring station is excellently suitable to be used in cities.

### Characteristics / Benefits

- \_ Flexible solutions
- \_ Reliable and independent wireless transmission
- \_ Compact, easy to handle and to maintain
- \_ Minimum current consumption



### Additional system options

As versatile as the requirements and challenges are in data collection, as versatile and individual are the system configuration options that are obtained from the interaction between sensors and RTU. Whether it be water management, meteorological service or environmental measuring technology – the appropriate solution is crucial!

- \_ Complete metrological stations, e.g. with sensors for precipitation, wind, temperature, and relative humidity
- \_ Agricultural metrological stations, e.g. with sensors for precipitation, temperature, and soil moisture content
- \_ Groundwater measuring stations
- \_ Air quality measuring stations
- \_ Remote access to water meters
- \_ Elevated tank monitoring
- \_ Soil moisture measurement

### Technical data

#### OTT Pluvio²

Types of precipitation	Liquid, solid, and mixed
Collecting area	200 cm² and 400 cm²
Collection volume	1,500 mm and 750 mm
Measuring ranges	
Precipitation	0 ... 50 mm/min or 0 ... 3000.00 mm/h
Weight	(empty bucket) 15 kg
Temperature, operating	-40 ... +60 °C
Relative humidity	0 ... 100 % (non-condensing)

#### A755 RTU

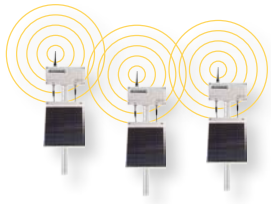
GSM/GPRS RTU with SDI-12 input. Solar power supply for RTU and precipitation sensor from two 4.3 W panels.

### Sensor overview

- \_ Precipitation
- \_ Wind direction, wind speed
- \_ Solar radiation
- \_ Air temperature, air humidity
- \_ Air quality
- \_ Soil moisture content
- \_ Leaf moisture
- \_ Water level
- \_ Water quality
- \_ Water meter
- \_ Interfaces: Analog, pulse, digital binary, SDI-12

RTU with solar panels attached to the mast base of the precipitation sensor.

**Various sensors may be connected to an RTU using SDI-12 or analog interfaces.**



# Network Compatible System Solutions

## Smart Wireless Systems

### Characteristics / Benefits

- \_ Remote control, data retrieval, evaluation, analysis
- \_ Alarm management
- \_ Easy to operate using the web-based measurement network software addVANTAGE Pro
- \_ Connection to OTT Hydras 3, software for professional measurement network management and time series analysis



A850 center

### Data center: A850 Telemetry Gateway

The A850 Telemetry Gateway is the heart of the measurement network. From here, each RTU is controlled, data is stored, prepared, and forwarded, if necessary.

Whether it be a network operating in the UHF frequency band, a pure GSM or GPRS network, or a combination of all three technologies – the A850 unit exactly knows from which station and when data is to be retrieved.

The A850 unit is available in several versions which are able to manage networks from 5 up to 1,000 wireless stations. Start establishing a small network and simply upgrade the gateway step by step!

### Characteristics / Benefits

- \_ Compact design
- \_ Easy to install
- \_ Application specific optimized RTU versions
- \_ UHF & GPRS RTUs may be operated in the same measurement network



GSM/GPRS RTU

### GSM/GPRS RTUs – miracle of performance in miniature form factor

#### A753 addWAVE GPRS RTU

Data collection is hardly limited when using the A753 GPRS: high-resolution, large memory, up to 60 channels, and much more. The A753 unit supports WMO-compliant measurement methods and can be used for a large variety of applications ranging from complex meteorological measurements to the remote access to water meters.

#### A755 addSDI GPRS RTU

The A755 GPRS is the most cost-efficient solution for all sensors equipped with an SDI-12 interface. In addition to SDI-12, the RTU provides two ports for encoders and two digital TTL level ports that may optionally configured as input or output.

Similar to the A753 unit, the A755 unit has 2 MB of data memory. So even a temporary failure of the GPRS link does not result in data loss.

### UHF RTUs

#### A733 addWAVE UHF wireless station

The A733 is a rugged and versatile RTU for mains independent, solar panel powered operation. It is the "workhorse" among the wireless stations and ideal for transmitting a lot of sensor values over large distances.

#### A731 addRELAY UHF

The A731 acts as a relay station and is used particularly in extremely poor terrain conditions.

The A731 unit is a cost-efficient alternative for extending the coverage of other RTUs as well as for optimizing wireless links.



UHF RTU

### Technical data

Dimensions	182 x 260 x 52 mm
Connections	1 x 100 Base-T Ethernet 1 x RS-232 (ext. modems) 1 x RS-232 (console) 1 x RS-485 (wireless modem) 2 x USB (ext. modems) 1 x power connector
Analog modem	External via USB or RS232
Memory	256 MB Flash, 32 MB RAM
Operating system	Linux OS 2.4 kernel
Power supply	90 ... 240 V AC, incl. backup battery for mains failure
Operating temperature	-10 °C to +55 °C



A850 center including UHF modem



# Network Compatible System Solutions

Software solutions

## Characteristics / Benefits

- \_ Platform independent since it is based on Java
- \_ Client server concept
- \_ Fully scalable
- \_ Access through Internet
- \_ Clearly structured visualization
- \_ Data export to third-party software
- \_ Multilingual

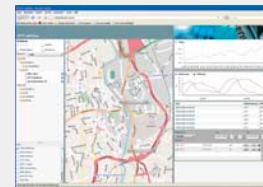


## addVANTAGE Pro web-based software

addVANTAGE Pro is a web-based software for accessing the A850 data center. It is used both as management software as well as a platform for data visualization and can be used for all types of environmental data.

The software is fully scalable from a single measuring site to a comprehensive network of stations that include numerous sensors. Optionally configurable trend graphs, charts, statistics, alarms, and event lists provide comprehensive information.

Moreover, addVANTAGE Pro allows the data to be made available for others who are interested in it. Using the built-in web server, the data can be viewed by virtually everyone in the world. Therefore addVANTAGE is the optimum platform for all who want to collect, store, and visualize the data not only for themselves but also for others. In other words, for all who want to act as a "service provider".



## Livedata – time series as a web page

Livedata provides you with the option of incorporating the data of your measuring stations into any web page without any programming.

Livedata neither requires login procedures nor comprehensive explanations. The interface is completely self-explaining, erroneous operation is excluded. The user simply navigates using tabs and specified timespans by clicking the items he/she wants to see in a particular moment: from an overview to individual sensor graphs and charts.

## OTT netView – data hosting & data access

From the station into the web. OTT netView is the module that makes a completely automatic and complete solution out of the combination of OTT sensor, RTU, and data center.

Whether it be the online representation or access to manage data through the World Wide Web – all this can be done using OTT netView. A standard browser is sufficient to use OTT netView: additional software is not required.

## Application options for data providing

The following list is only a small selection out of the versatile application options:

- \_ Water supply association that informs all member municipalities about the current water consumption;
- \_ Regional government authority that informs leisure swimmers about the current water quality of the swimming lake;
- \_ Tourist destination municipality that informs inhabitants and visitors about the weather situation;
- \_ Winegrowing cooperative that provides weather data for all members.



## OTT Hydras 3 – time series management and analysis

For data management and professional analysis, also OTT Hydras 3 is available.

Access to the powerful user software is absolutely easy. The data is directly forwarded from the A850 data center to Hydras 3.



Germany  
OTT Hydromet GmbH  
Tel. +49 831 5617-0  
Fax +49 831 5617-209  
info@ott.com  
www.ott.com

Austria  
OTT Hydromet GmbH  
Branch office Austria  
Tel. +43 7235 8899-8  
Fax +43 7235 8899-1  
m.schinnerl@ott.com  
www.ott-austria.at

UK & Ireland  
OTT Hydrometry Ltd.  
Tel. +44 1246 573 480  
Fax +44 1246 813 873  
sales@ott-hydrometry.co.uk  
www.ott-hydrometry.co.uk

Asia Pacific  
OTT Hydromet  
Tel. +65 6448 7626  
Fax +65 6448 7176  
c.aw@ott.com  
www.ott.com

India  
OTT Hydromet  
Tel. +91 11 7109 48 24  
Fax +91 11 7109 48 17  
someshkumar@hach.com  
www.ott.com/india

France  
OTT France  
Tél. +33 (0)4 42 90 05 90  
Fax +33 (0)4 42 90 05 95  
info@ottfrance.fr  
www.ottfrance.com

Switzerland  
OTT HYDROMETRIE AG  
Tel. +41 56 470 64 34  
Fax +41 56 491 21 06  
info@ott-schweiz.ch  
www.ott-schweiz.ch

Spain  
OTT MedioAmbiente  
Tel. +34 91 651 47 69  
Fax +34 91 659 02 09  
info@ott-medioambiente.com  
www.ott-medioambiente.com

Mexico & Central America  
HACH Mexico  
Tel. +52 55 5393 1514  
r.hijosa@hach.com  
www.ott.com

South America  
OTT Hydromet  
www.ott.com

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