

AUTOMATIC, INTELLIGENT AND FLEXIBLE SYSTEM  
1 –HIGH PRECISE MEASUREMENT LEVELMETER BUBBLE TO BUBBLE

2 –DATA ACQUISITION  
3 –AUTOMATON CONTROL



## PRESENTATION

APPLICATION: Rivers, dams, grounds water, tanks, industrials sites

## GENERAL FUNCTIONING

### 1-Levelmeter

HYDRO 2000 system create regulate air flow inside 4 submerged pressure tubes.

Air pressure Inside these tubes is the real image of the waterspout placed above pressure picks.

This pressure is applied on 2 high precision piezo resistive sensors which deliver 4 signals converted in water level.

These 2 high precision piezo resistive sensors give a controlled value. System is equipped with an auto checking process and with a good working control of the various components.

### 2-Data Acquisition Unit

HYDRO 2000 allow to get measurements of the greater part of the available sensors on the maket, and up to 8 analogic sensors + 6 intelligent sensors+ 4 inputs ToR (All or Nothing) + 1 BCD16 bits input, in the standard version.

The system is evolutionary and modular. Data transmission can be realised by USB connection, TCP/IP or RS232 and/or by modem connection (GSM, satellite,...).

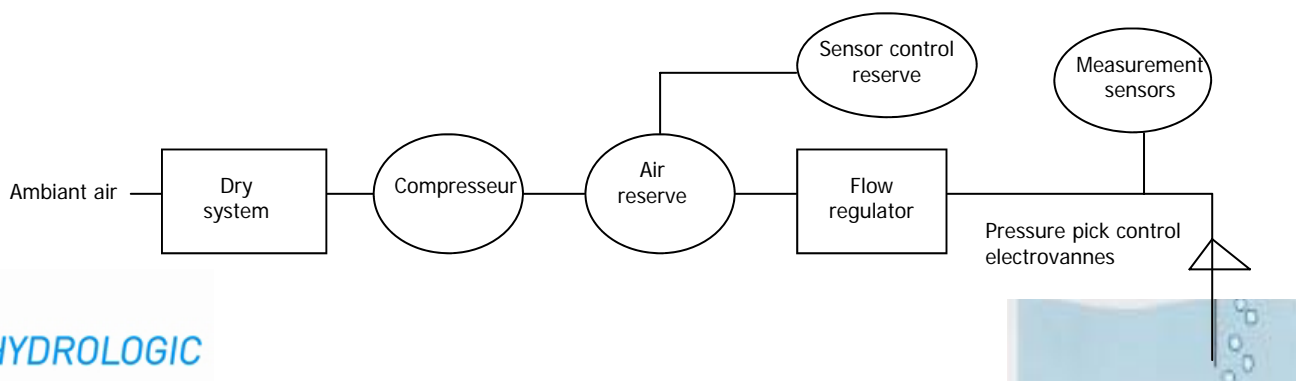
His operating is realised by the associated software.

### 3-Automaton system interface

HYDRO 2000 drive up to 16 relays outputs for automatism control and can be interfaced to several automatons through their analogic outputs and BCD 21 bits.

HYDRO 2000 is a complete system, secure, autonomous, precise as much as his measurement part as his acquisition part, Data transmission and automaton control.

## PRINCIPLE OF BUBBLE TO BUBBLE MEASUREMENT



# PARTICULARITY OF HYDRO 2000

## Modularity of the system which allow to adapt the material to the needs

- : High range of measurement
- : Rack system
- : Internal moduls are independant
- : Several communication interfaces
- : Several external sensor interfaces
- : Increase of the measurement points on different sites of a river/lake

### High precision

- : High precision sensors  $\pm 0.05\%$  on the full scale between  $- 40^{\circ}$  and  $+ 60^{\circ}\text{C}$
- : Rectification of the whole influence parameters
  - Air temperature
  - Water temperature
  - Instantaneous density
  - Local gravity - altitude and latitude
  - Pneumatic head losses
  - Atmospheric pressure at the water surface and on the sensors
- : Waves or currents instability location

### Reduction of maintenance cost

- : Checking the failing material
- : Auto diagnostic system by internal redundancy material
  - Double sensor
  - 4 pressure picks
- : Additional bottle of nitrogen
- : Auto cleaning system
- : Internal pneumatic rate leakage checking

### Measurement checking

- : Global error measurement
- : Sensors failing measurement cheking and correcting
- : Measurement checking rate confidence
- : Measurement validation



20m and morer version

# TECHNICAL DATA

## PRINCIPAL DATA

<b>: Measurement ranges</b>	
Compressor 1.7 Bars	0 to 1 meter ; 0 to 5 meters ; 0 to 10 meters
Compressor 12/15 Bars	0 to 20 meters; 0 to 30 meters; 0 to 50 meters; 0 to 60 meters; 0 to 100 meters
<b>: Level measurement precision</b>	
Standard version:	± 0.2 % FS sensor between - 40° à + 60°C
High precision version:	± 0.05 % FS sensor between - 40° à + 60°C
<b>: Resolution</b>	1 millimeter
<b>: Draining</b>	
Manual (for each pressure pick)	On site or remote control
Automatic (for all pressure picks)	Programmable : 0 to 255 hours (in step of 1h)
Average draining time per pressure pick	1 minute
<b>: Pneumatic system leakage location</b>	
<b>: Pressure tube maximal length between the device and the pressure pick</b>	500 meters
<b>: Level variation follow-up capacity</b>	2 meters / min
<b>: Number of pressure picks</b>	1 to 4
<b>: Integrated air dry system</b>	Capacity: 400 cm <sup>3</sup> dry system for an autonomous about 4 months.
<b>: Sizes</b>	Diameter 65 mm, Height 295 mm, weight 1kg

## MAIN SUPPLY

Nominal voltage	12 VDC
Variation	9 to 18 VDC

## RECORDING

Flash memory	
-Size of storage:	12 Mo (from 6 month to 2 years depending of the using)
-Recording period	1 min to 1 day

## PRESENTATION

Case 20m and more	Stainless steel
Case size (mm) 20m and more	600x 400 x 300 (contact us for other sizes and forms)
Weight	30kg
Protection	IP55
Fixing	Wall installation/on post in option
Connecting	Measurement and main supply : by screw
LCD Display* (integrated or deported)	Pneumatic: plug 1/8 for tube of 4/6 mm Fluorescent : 4 lines with 40 characters
Keyboard	6 keys
Using temperature	2 versions : - 20°C to 55°C and - 40°C to + 60°C
(*) it's possible to work without LCD display	

## STANDARDS

Actual standards	CE standards
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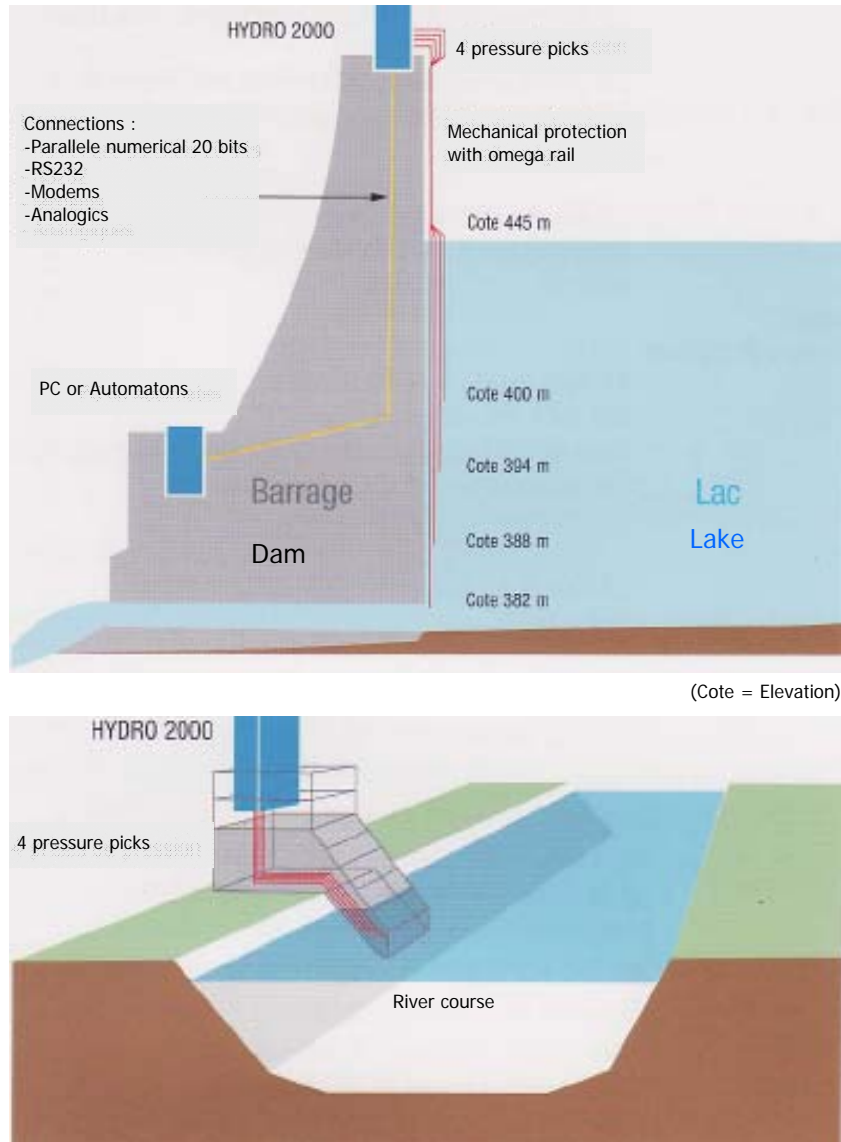
## INTERFACE

Serial communication	RS 232, RS485, USB
Sensors	Analogic inputs and outputs (4-20mA, 0-20 mA, 0-5V, 0-10V, PT100), logical inputs TOR and outputs TOR, numerical inputs and outputs, counting inputs
Inputs and outputs TOR	Intrusion location, to drive sampler, treshold, alarm,....
Intelligent sensors	Up to 5 RS232 connections and up to 3 RS485
Modem	Local, RTC, RADIO, SATELLITE..etc... .
Specific protocols	SDI12, TCP/IP MODBUS (others contact us)

## SOFTWARE

Configuration, operating software	HYDRO2000: PC working under Windows XP - Local terminal
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## FOR EXAMPLE : INSTALLATION SCHEMA



## OTHER HYDROLOGIC MATERIAL

### LEVEL

Levelmeters LPN8/2 and LPN8/1  
Differential levelmeter CPN1/2  
Levelmeter Alphée 4100  
Level scales  
Floats levelmeter CAE 7/2  
Electronical and mechanical coders  
Code digitalizerCDC9

### FLOW

Flowmeters DPN7/1 and DPN7/2  
Flowmeters Alphée 4400 and DPN7/4  
Venturi flumes  
Roll flowmeter

### SAMPLERS

Samplers

### SPEED

Hydrologie winches

Characteristics and specifications pledge only our company after writing confirmation.



H2O : THE RIGHT MEASUREMENT

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