

INSTRUMENTATION

Hydropower and Water Control Applications


INSTRUMENTATION *Controller*

for RISONIC modular, RIPRESS smart and RIPRESS premium

galvanically isolated digital outputs (relays)

galvanically isolated digital input (optocoupler)

galvanically isolated analog inputs/outputs
4 ... 20mA
accuracy @ 25°C ±0.1% FS



CE

UL LISTED


(OPEN-TYPE PROCESS CONTROL EQUIPMENT)
3VN3

5xDO

1xDI

2xAI

2xAO



USB

COM1 RS232; GSM/GPRS Modem

COM2 RS485; Modbus RTU Slave

COM3 RS485; Modbus RTU Master

LAN1 Ethernet 10/100 BaseT
HTTP, FTP, Modbus TCP Slave,
IEC 60870-5-104

LAN2 Ethernet 10/100 BaseT
(for communication to RIMOUSTT module)

Electronically switched 24 VDC output


STATUS OUT relay

RISONIC *modular*

Ultrasonic Transit Time Flow Measurement for Pipes and Channels

TYPICAL APPLICATIONS

- Penstock leakage detection
- Turbine and pump efficiency measurement
- Flow monitoring for irrigation and water supply




FEATURES AND BENEFITS

- Wide range of ultrasonic transducers for pipes and channels
- 1 ... 5 ultrasonic modules for up to 20 measurement paths (5 x 4)
- Up to four measurement sections (incl. multi-pipe, multi-channel)
- Flow measurement in both directions (pump storage power plant)
- SMS alarm notification via external GSM/GPRS modem
- Excellent long-term stability, no need for recalibration

Pipe Applications (filled, partially filled)	Open Channel Applications
diameter 0.3 ... 20 m	width 0.75 ... 100 m
water flow 0.5 ... 20 m/s	water flow 0.5 ... 20 m/s
1 ... 20 measuring paths*	1 ... 20 measuring paths
1 or 2 measuring planes	1 or 2 measuring planes
Accuracy of up to 0.5% of measured value displayed	Accuracy of up to 1.0% of measured value displayed

* 4 or 8 paths per IEC 60041 [ASME PTC 18]




RIPRESS *premium*

High Precision Level Measurement with superior quartz crystal technology

FEATURES AND BENEFITS

- Very accurate calculation of storage water volume
- Cost savings by optimization of the water balance
- Excellent long-term stability and 100% thermal compensation
- Freely programmable conversion tables (e.g. for lake volume)
- Trend function and limit value monitoring

	Hydrostatic measurement	Pneumatic measurement
Maximum pressure	275 m H ₂ O 400 psi	135 m H ₂ O 200 psi
Accuracy (typical)	< 0.01% FS	< 0.01% FS
Resolution	< 1 mm H ₂ O	< 1 mm H ₂ O




RIPRESS *smart*

Advanced Water Control Applications

FEATURES AND BENEFITS

- Piezoresistive transmitters for pressure and temperature
- Flow formulas for V-notch weir, rectangular weir and venturi flume
- Volume formulas for cylinders and spheres
- Mathematical functions: Add/Sub/Mul/Div/Pow/Abs/Int/Diff/Filter
- Volume counter with persistent data storage

Piezoresistive transmitters	
Types for submersion	up to 25 bar, IP68
Types for NPT ½" or G ½"	up to 160 bar, IP65
Accuracy	up to ±0.05% FS
Output	4 ... 20 mA
Output (option)	Modbus RTU



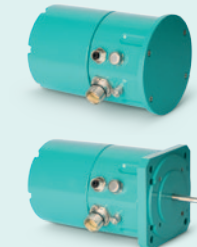
RIVERT *smart* & RIPOS *smart*

Absolute Angle & Rotation Measurement

FEATURES AND BENEFITS

- Very accurate gate and valve position measurement
- Maintenance-free and rugged design, IP67
- Wide operating temperature range of -40...+60°C (with heating option)
- Four internal relays for limit switches, direction indication and more
- 4 ... 20 mA output, Modbus RTU/TCP, IEC 60870-5-104

	RIVERT smart	RIPOS smart
Measurement range	-180° ... +180°	4096 turns
Accuracy, resolution	13 bit (0.044°)	12+12 bit (0.088°)
Nonlinearity, hysteresis, repeatability	1 LSB (0.044°)	1 LSB (0.088°)
Encoder activation	Gravity-based pendulum (no external linkage)	Shaft with starting drive torque of ≤ 0.01 Nm



High Precision Instruments for Hydropower and Water Control Applications

- Flow Measurement
- Level Measurement
- Position Measurement

RISONIC modular
Ultrasonic Transit Time Flow Measurement



RIVERT smart
Absolute Angle Transmitter



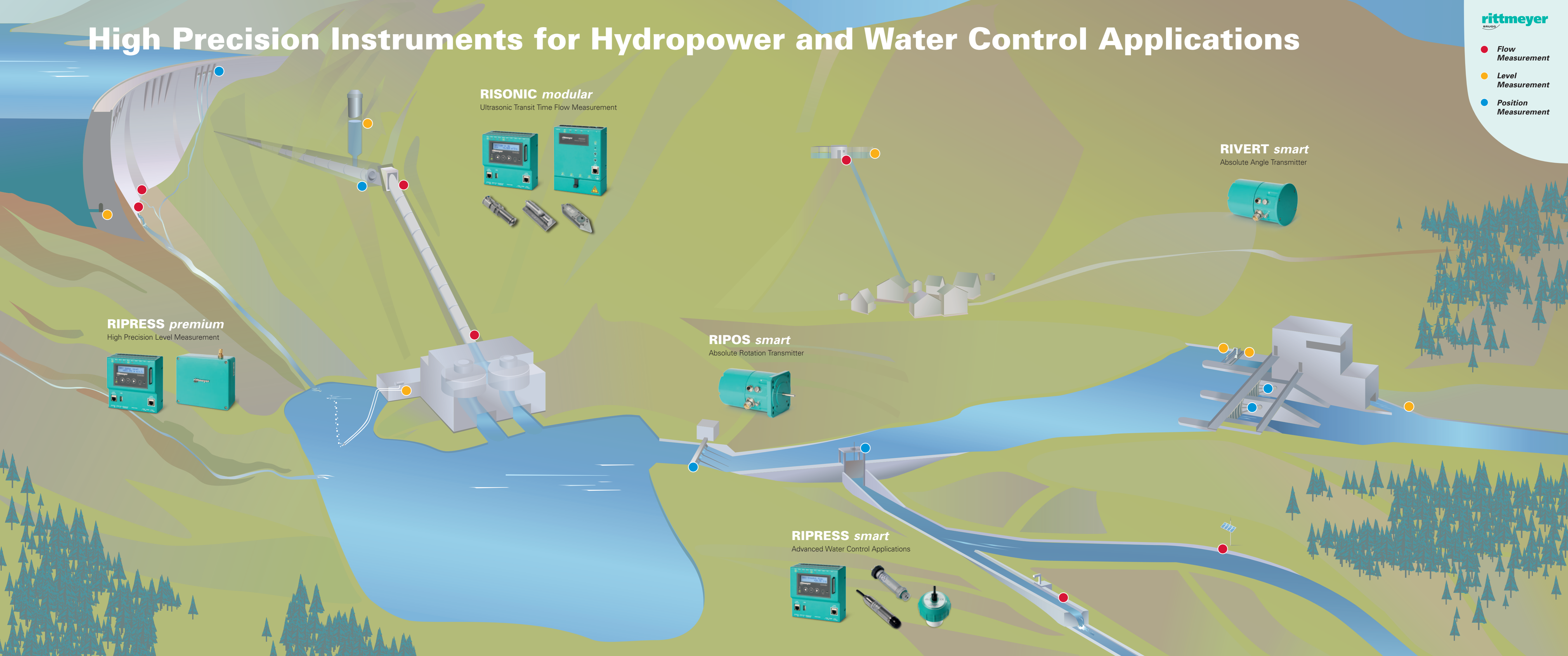
RIPRESS premium
High Precision Level Measurement



RIPOS smart
Absolute Rotation Transmitter



RIPRESS smart
Advanced Water Control Applications



Rittmeyer offers state-of-the-art instrumentation solutions and process control systems for hydropower and water control applications. From simple components to turn-key installations, Rittmeyer has an answer for today's needs to increase plant efficiency and to improve the management of water resources.

- Founded in 1904
- Headquarters in Switzerland
- Global presence (subsidiaries and partners)
- Member of the BRUGG Group (2000 employees)

YOUR PARTNER FOR ADVANCED INSTRUMENTATION SOLUTIONS

- Wide range of products for flow, level and position measurement
- Over 20,000 installations worldwide
- Consulting and engineering services, including CFD analysis
- Factory tests and simulation
- Installation and commissioning

Flow measurement for pipes



- Filled and partially filled pipes
- Penstock monitoring and leakage detection
- Turbine performance testing per IEC 60041
- Bi-directional flow for pump storage power plants

Flow measurement for channels



- Free channel profile up to 100 meter width
- Robust stainless steel sensors for polluted water
- Multi-channel meter with total flow calculation
- Communication via satellite or GSM/GPRS modem

Level measurement



- Piezoresistive or superior quartz crystal sensors
- Level and volume management
- Hydrostatic or pneumatic measurement
- Trash rack monitoring

Position measurement



- Gate position: radial, crest, slide and lock gate
- Valve position: flap, butterfly and spherical valve
- Gate misalignment monitoring
- Position measurement via spring-return rope drum

