



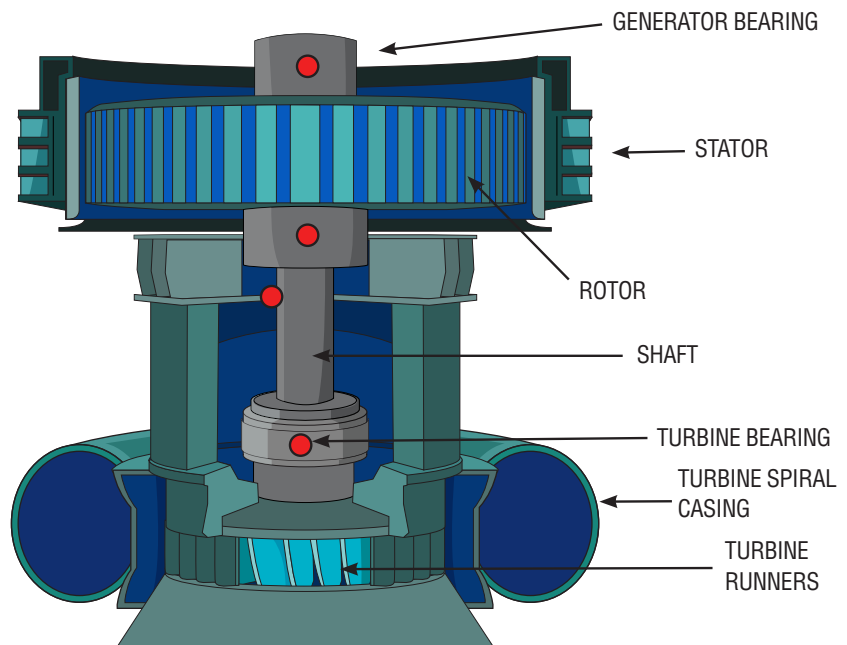
HYDROELECTRIC POWER GENERATION



HYDROELECTRIC POWER GENERATION

The core of a typical hydroelectric power plant is the turbine. As water runs through the penstock on its way from the reservoir to the outflow, it circulates past the turbine runner. The water flow causes the runner blades to rotate, thereby turning the turbine shaft. The turbine shaft subsequently turns the generator shaft, creating electricity.

Hydro turbines rotate slowly, typically at an operating speed of 75 to 1000 rpm. Turbines are often required to operate at partial load in order to meet fluctuating electricity demands. This part load operation can increase the potential for water pressure pulsations, turbulence and cavitation. Runner components are prone to fatigue and damage because of the errant vibration caused by these fluctuations. In addition to runner components, turbine and generator shafts and bearings are also prone to vibration. Those vibrations can be faults including unbalance, misalignment, bearing fatigue and/or overload and insufficient bearing lubrication.



● Suggested Sensor Placement

ICP® ACCELEROMETERS & 4-20 mA TRANSMITTERS



CE



LOW COST ICP® ACCELEROMETERS

MODELS 602D01 & 603C01

Easy installation in tight spaces

General purpose, hermetically sealed

M12 connector version available

CE



PRECISION ACCELEROMETERS WITH VELOCITY OUTPUT

MODELS V0622B01 & V0625B01

100 mV/ips sensitivity

Low frequency response ideal for monitoring of slower speed equipment

CE



PRECISION TRIAXIAL ACCELEROMETER

MODEL 639A91

13 kHz high frequency response on all three axes

Extremely small footprint (0.95" x 0.95" excluding the side exit connector)

CE



CERAMIC SHEAR ICP® ACCELEROMETERS W/ OR W/O INTEGRAL POLYURETHANE CABLE

MODELS RTD602D91, RTD602D11

Dual output vibration & Resistance Temperature Detector

Sensitivity ($\pm 10\%$): 100 mV/g (10.2 mV/(m/s²))

Measurement Range: ± 50 g (± 490 m/s²)

Single-point ISO 17025 accredited calibration



CE



VIBRATION TRANSMITTER

MODEL 682C03

Outputs 4-20 mA signal proportional to acceleration, velocity, or displacement

ICP® accelerometer input

Analog vibration output via front BNC



CE



BEARING FAULT DETECTOR

MODEL 682C05

Provides early warning of bearing and gear faults

Operates with PLC, DCS, SCADA, alarm and control systems

Outputs 4-20 mA signals for peak acceleration and overall vibration



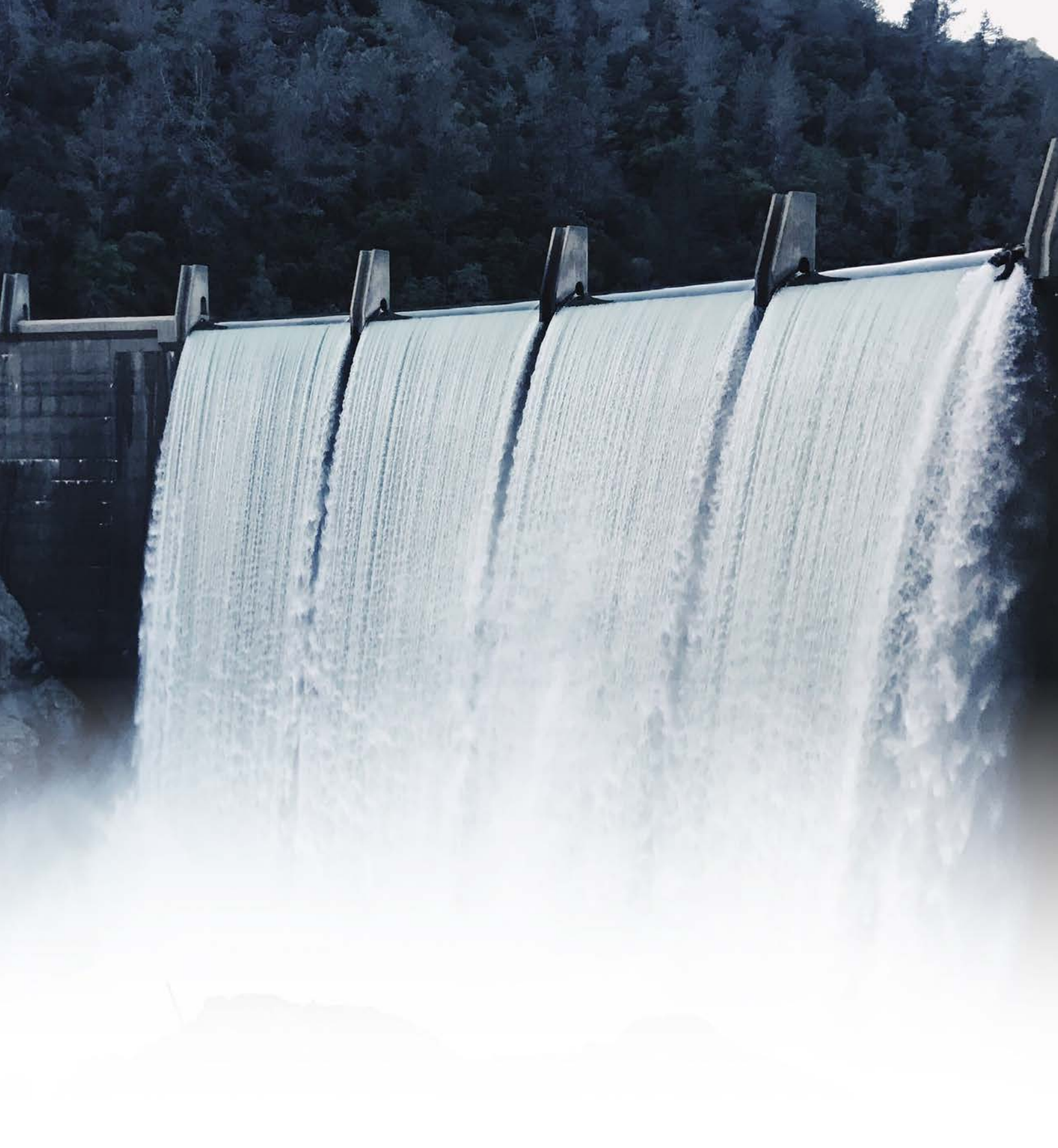
4-20 MA OUTPUT DISPLACEMENT SENSOR

MODEL 653A01

Outputs 4-20 mA signal proportional to displacement

2 to 40 mil pk-pk measurement range

1.5 to 300 Hz frequency range



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