

LEVEL SENSOR

For water level measurement in pool, tank and drain.



Level Sensor for PWR. EDF qualification RCCE, K1, K2, K3, K3ad and NC

The Challenge

Level measurement is an important parameter for NPP safety.

The control of the level may ensure good cooling conditions and improve process management. Today the level measurement should resist to the accident conditions (Irradiation, seism, pressure, temperature, vibration...).

The Solution

ARCYS has developed robust and maintenance-free level sensor (analogue measurement or switch level). These solutions use magneto-resistive principle: the resistance of the sensor depends to the water level.

ARCYS is proud to supply fully qualified level measurement solutions for EPR™ design.



Level Sensor picture

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TECHNICAL FEATURES

- **Measurement length:** from 0,1 m to 12 m. Other length on request
- **Accuracy:**
 - ± 21 mm for analogue level sensor
 - ± 5 mm for switch sensor
- **Resolution:** 15 mm (for analogue level sensor)
- **Operating temperature:** Continuous 90°C, 135°C (900 minutes), 156°C (20 minutes)
- **Pressure:** Max: 18 bar at 25°C. Other pressure on request.
- **I and U for analogue level sensor:** Max: 137VDC and 10mA
- **I and U for switch level sensor:** Max: 60VDC and 500mA
- **Insulation:** 10⁸ Ω
- **Dielectric behaviour:** 500 V/ 5mA
- **Electrical base connector:**
 - K1/K3ad: Souriau 8NA1Y121PN00SA
 - K2/K3ad/K3 &NC: Souriau 8N45S211225K2
- **Irradiation:** 350 kGy cumulated
- **Vibration:** 0,2 g, from 57 Hz to 500 Hz
- **Magnetic induction:** < 4.10⁻⁴ T
- **Seismic resistance:** Max: 30 g / 10 Hz
- **Reliability:** 10⁻⁶ failure/hour
- **Qualification:** RCCE, K1, K2, K3, K3ad & NC

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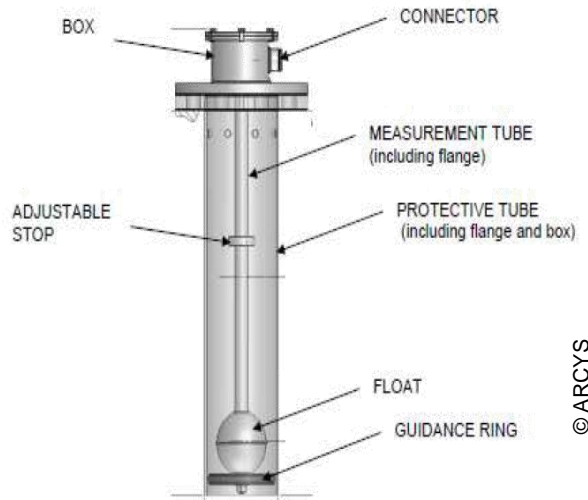
Proven Technology

ARCYS has developed this technology for NPP and for nuclear submarines.

The magneto-resistive principle offers major advantages:

- Excellent long-term stability,
- Maintenance-free,
- High resistance to radiation,
- Seismic resistance.

This level sensor solution is selected for the new PWR design line EPR™ and is currently being installed in EPR™ reactors in France and China (more than 500 level sensors provided by ARCYS 2014-2017).



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Analogue Level Sensor Layout

SENSOR MODELS

- **Analogue level sensor (0,1 to 12m):**
- Continuous level measurement with a float (permanent magnet inside) travelling up and down along a tube in which reed switches are installed.
- **Switch Sensor (0,1 to 12m) :**
 - 1 Switch for 1 level alarm
 - 2 Switches for 2 levels alarm (one probe)
 - 3 Switches for 3 levels alarm (one probe)
- **Qualification :** K1, K2, K3, K3ad, NC

Options :

- Sensor support
- Transmitter
- Stainless steel 316 or 904

Your benefits at a glance

- Robust full qualified sensors for safety
- Easy to use : passive analogue sensor
- Maintenance-free. No calibration
- High resistance under ionizing radiations



Contacts ARCYS: