# **YARWAY** ELECTRONIC WATER LEVEL GAUGE
MODEL 3200

Electronic Water Level Gauge designed for high or low pressure feedwater heater, and boiler drum level indication.

Yarway 3200

"When the water level in at least one of the gauge glass is not readily visible to the operator in the area where control actions are initiated, either a fiber optic cable (with no electrical modifications of the optical signal) or mirrors shall be provided to transfer the optical image of the water level to the control area. Alternatively, any combination of two of the following shall be provided:
(a) an independent remote water level indicator
(b) an independent continuous transmission and display of an image of the water level in the gauge glass."

The Yarway 3200 was designed to satisfy the described code requirement. The system installed as one of two remote indicators along with the required gauge is shown. A duplicate system can be used as the second remote indicator. The column with probes provides independent remote indication and it also acts as a stabilizer for the gauge.

## FEATURES

- Electronic self-monitoring and indication in the D&V unit; optional probe wire continuity monitor, power supply failure (redundant power supplies), clock (DC detection circuit) failure and level fault
- On board water detection indication in the D&V unit
- Three way adjustment for water Conductivity
- Solid state electronics
- Solid state output to drive up to three remote displays
- NEMA 4X (IP65) enclosed detection and verification unit
- Nema 4X column mounted pre-wired Junction Box
- 5 A power relay contact output for each probe to control trips and alarm
- 5 A power relay contact output for electronic faults
- 5 A power relay contact output for level fault (water over steam)
- 2000 psi and 3000 psi (138 to 207 bar) FM approved systems
- Two color display with two rows of LEDs

## GENERAL APPLICATION

For high or low pressure feedwater heater, and boiler drum level indication.

**The 2019 ASME* Boiler and Pressure Code (Section I, Para. PG-60) states:** "Boilers having a maximum allowable working pressure exceeding 400 psi (3 MPa) shall have two gauge glasses. Instead of one of the two required gauge glasses, two independent remote water level indicators (two discrete systems that continuously measure, transmit, and display water level) may be provided and the required gauge glass may be shut off, but shall be maintained in serviceable condition."

## SPECIFICATIONS

- Power source: 120 or 240 V AC, single phase, 50-60 Hz, 1/2 to 1/4 A
- Relay contact ratings: 5 A at 120 or 240 V AC (resistive), 5 A at 30 V DC (resistive), 3 A at 120 V AC (inductive).
- Column: Ratings – Carbon Steel 2000 psi and 3000 psi (138 to 207 bar) at 700°F (371°C). Other materials-Stainless Steel and Chrome Moly for various pressures and temperatures.
- Enclosure: NEMA 4X (IP65)
- Minimum conductivity capability: 0.5 micro mho
- Electronics to column distance:
  0.5 to 4 micro mho - 65 ft (20m)
  4 to 25 micro mho - 165ft (50m)
  > 25 micro mho - 500ft (150m)

# **YARWAY** ELECTRONIC WATER LEVEL GAUGE
## MODEL 3200

### DESCRIPTION

Electronic Level Indication was developed to satisfy basic level indication needs utilizing vacuum brazed probes for boiler drum, feedwater heaters and other liquid level applications. The Yarway 3200 consists of three major components: the column with probes and junction box, the detection and verification unit D&V and the remote display.

The conductivity probe with vacuum brazed insulators, has been used and proven reliable for many years of service. The Swagelok metal to metal seal of the probe insures leak proof installation in the column.

The electronic system in the D&V unit is connected to 5, 8, 10, 12 or more probes on the water column. The number of probes can be selected and spaced to indicate liquid level through a desired operating range. The column is custom manufactured to provide the most accurate indication for any application. An individual relay is provided for every probe level to provide versatility in selecting high/low or other system alarm and trip points.

A remote LED display panel, is customized for the number of probe levels in your column. A local display mounted on the D&V door is optional.

Operation of the system is based on measurement of the difference in resistance between water and steam, which is compared with a known reference resistor. The signal output to the probes is a symmetrical source wave ± 5 V DC current which precludes electroplating of the probe. The system measures the returning signal to indicate 'water' or 'steam'.

System diagnostics perform an ongoing wire continuity check (using optional two wires per probe) to ensure the integrity of the cable connecting the probes to the D&V. System fault indication is provided by a relay which monitors the internal power supply, clock and wire continuity. A second relay, for level fault, activates if water is detected above steam.

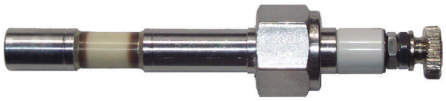

FIGURE 1
Probe

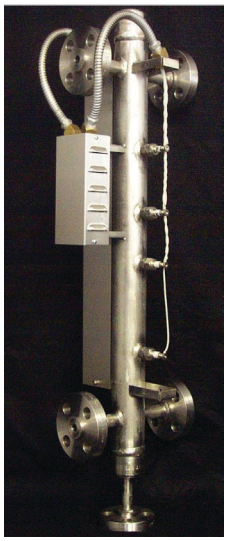

FIGURE 2
Column

## LEVEL PROBE AND COLUMN

Yarway 3200 level probe and column are designed for steam/water level measurements using conductivity type electronic level detection systems. The probe and columns are typically used with the Yarway 3200 and are also fully compatible with any existing electronic systems; example Clark-Reliance, Hydrastep, or similar manufacturers.

The Yarway probe and column provide an excellent opportunity to replace leaking probe gaskets, failed probes, and corroded columns with superior technology. The use of a junction box is pre-wired to the probes which makes installation simple.

## FEATURES OF YARWAY BRAZED PROBES

- High density zirconium oxide ceramic wetted insulator improves steam and water detection through minimized contaminant build-up and enhanced water shedding
- 304 Stainless Steel body and tip
- Body and Tip are vacuum brazed to insulator
- Conductivity sensing to 0.25 micro mho through high joint integrity
- Simplified construction using brazed joint eliminates requirement for Belleville washers, copper cushion washer and critical rod bolt tension preload
- 100% gas tested to 2000 psi (138 bar)
- Hydro tested to 6000 psi (414 bar)
- Maximum pressure 3000 psi (207 bar)
- Maximum temperature 1200°F (649°C)
- Two-year warranty from date of shipment
- Swagelok seal profile machined into bar stock probe body
- High Pressure Probe P/N YAR-9300-0034

## FEATURES OF YARWAY LEVEL COLUMNS

- A106 Carbon Steel design pressures 2000 and 3000 psi (138 to 207 bar) at 700°F (371°C) max.
- Other column materials: Chrome Moly and various Stainless Steel materials
- Connections: Pipe stub, NPT, Butt weld and flanged connections
- Column mounted junction box with all probes pre-wired to the terminals
- Options: Lifting lug, Flanges or Isolation valves

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