



YARWAY

Features

The Yarway Series 4000 five probes and above alarm system represents the latest advancement in electronic level indication. The 4000 Series has upgraded programmable logic for up to three probes each for high and low trips. Cascade time delays availability for trips and motherboard and daughter card construction for ease of maintenance separates this unit from all others on the market. Based on the conductivity probe technology now widely accepted in the industry, it was specially designed to meet increasing demand for a reliable, cost effective means of sensing water in various applications. The probes can be mounted directly to the pressure vessel or column. The probes are welded stainless steel HP and LP electrode with zirconia insulator (3000 psig @ saturation, up to 1200°F [207 barg @ saturation, up to 649°C]) or threaded stainless steel LP electrode with Teflon® insulator (850 psig @ 525°F [58 barg @ 274°C]). The Series 4000 consists of three major components: the column with probes, the detection and verification unit and the remote display. The number of probes can be selected and spaced to indicate liquid level through a desired range. The column is custom manufactured to provide the most accurate indication for any application. Independent detection circuitry for each probe allows selecting relay output for alarms or trips. Local indication is standard within the Type 4X/IP65 D&V enclosure. Bright red and green indicator for the control room is standard.

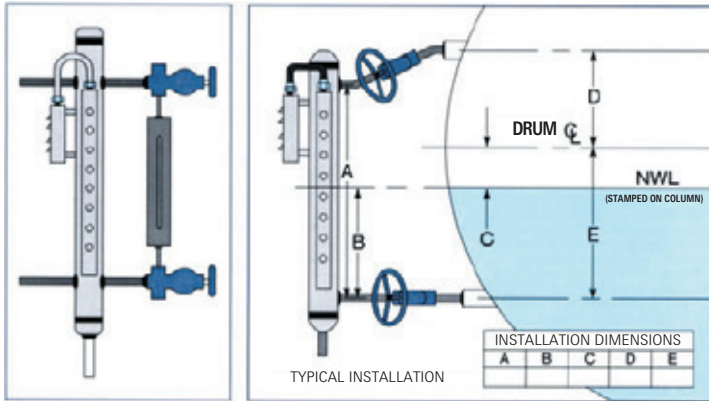
Note

Teflon® is a registered trademark of E.I. du Pont de Nemours & Company.



Typical applications

- Boiler Drum Level
- Equipment Drains (Desuperheaters, Control Valves, Sootblower Systems)
- Receiver Tanks (Condenser, Water Tank, Deaerator)
- Flash Tanks, Feedwater Heaters



Water Columns

Ratings

3000 psig [207 barg] @ saturation
1800 psig [124 barg] @ saturation
850 psig [58 barg] @ saturation

Materials of Construction

Seamless Pipe and 1 1/2" NPS [40 mm] vessel stub fittings (8" length) and 3/4" NPS [20 mm] stub drain connections. Standard water column is 3" NPS [75 mm], 36" [758 mm] length. Pipe schedules: [3000 psig] XXS, [1800 psig] Sch 160 and [850 psig] Sch 160. Probe covers are stainless steel IP32. Each standard 36" [758 mm] comes with 36" HT probe wires extending from the conduit connection.

- Optional:
- Remote junction box (Type 4X/IP67).
 - Prewired column mounted junction box (Type 3R/IP22).
 - Extended length column over 36" [758 mm].
 - 2" NPS [50 mm] and 3" NPS [75 mm] vessel fittings.
 - Redundant probe level indication. (Requires 4" [100 mm] diameter column)
 - Isolation and Drain Valves.
 - 3/4" NPS [20 mm] vent connection.
 - Flanged or Female socket weld connections.
 - Insulation heat jacket.
 - Weldolet/Bossets on connections.
 - Welded support brackets.

Manufacturer's Standard Materials

SA 106 gr B UNS K03006 to $T_{max} = 1000^{\circ}\text{F}$ [538°C] EN 10210-1, S275J0H

Optional:

SA 335 gr P22 UNS K21590 to $T_{max} = 1200^{\circ}\text{F}$ [649°C] EN 10210-1, S275J0H

SA 312 TP316 UNS S31600 to $T_{max} = 1500^{\circ}\text{F}$ [816°C] DIN 17175 X5CrNiMo17-12-2/1.4401

Extended delivery time optional materials

SA 335 gr P11 UNS K11597 to $T_{max} = 1200^{\circ}\text{F}$ [649°C] DIN 17175 13CrMo 4 4 (1.7335)

SA 335 gr P91 UNS K90901 to $T_{max} = 1200^{\circ}\text{F}$ [649°C] DIN 17175 X20CrMoV 12 1 (1.4922)

SA 312 TP304 UNS S30400 to $T_{max} = 1500^{\circ}\text{F}$ [816°C] DIN 17175 X5CrNi 18-10/1.4301

T_{max} established by ASME B&PV Code Sect IID
EN/DIN material = closest equivalent

Density error correction options

1. Steam heating tube for overall span density error correction.
2. Probe placement offset for single user specified operating point error correction.

Electrodes

1. Welded Stainless steel HP and IP electrode with zirconia insulator – 3000 psig @ saturation, up to 1200°F [207 barg @ 649°C].
2. Threaded stainless steel LP electrode with Teflon® insulator – 850 psig @ 525°F [58 barg @ 274°C]

Hazardous Area Usage

Diode barrier sets for intrinsically safe protection are available for electrode/sense wire energy limiting if water column is used in a class.

Specifications

- Up to twenty-four level indication/programmable switching applications.
- Independent detection to display circuit for each probe.
- Failure of any channel or probe does not disable system.
- Low voltage mixed dual frequency sine wave used for water detection (<12 Vac RMS nominal).
- Net integral zero current waveform. No DC = no possibility of electrolysis of water or plating.
- Field-selectable alarm and trip points.
- Standard local bi-color display.
- Unit accepts up to three remote displays.
- Primary level redundant internal power supplies.
- Internal power supply failure indication.
- Auto-switching dual line power inputs.
- Programmable logic for up to three probes each for high and low trips.
- Cascade time delays available on trips.
- Motherboard and daughter card construction for ease of maintenance.
- Patent pending.
- Enclosure: Type 4/4X/IP65
- Maximum sensitivity: 1µS/1MΩ - cm water
- Input Power:
 - Auto-switching dual 120Vac/240 Vac nominal, 50-60 HZ
 - 84 VA nominal
 - Unit incorporates MOV protection
- Relay contacts:
 - Six 2xForm C, DPDT
 - 12A @ 120Vac
 - 5A @ 240Vac
 - 10A @ 28 VDC
- Motor Load:
 - 1/3 HP @ 120 Vac
 - HP @ 240 Vac
- Operating Temperature:
 - 0 - 160°F [-17°C/+71°C]

Standard Assembly

- Type 4X/IP65 Enclosure
- One Remote Red/Green LED Display
- Water Column with Probes

Optional

- One or two 4-20mA loop outputs.
- Latching audio pre-trip warning on remote display.
- Continuity check for short/open probe/wire detection. Short based on less than 1/10 nominal water conductivity.
- Steam and water flow ratio matching via 4-20 mA loop inputs.
- SSR outputs with MOV protection.
- Keyed lockout of trip logic relays.
- High-output LED driver cards for up to 4 total displays.

Meets requirements of ANSI/ISA S84-01-96 "Safety Instrumented Systems" with short/open detection specified.