

THERMO-ELECTRIC COOLERS

SO₃ AEROSOL REMOVAL SERIES

Specifically Designed to Remove SO₃ Aerosol

Perma Pure's BaldwinTM SO₃ Aerosol Removal Series is specifically designed for gas sample applications with relatively high SO₃ content (>10 ppm). The SO₃ Aerosol Removal Series has special timing circuits that alternate freeze and thaw the precisely packed heat exchangers. Before an active heat exchanger thaws, the alternate active heat exchanger reaches the -7°C set-point to ensure uninterrupted operation and no SO₃ slippage. This sub zero temperature forms a thin ice layer that captures and removes SO₃ aerosol from the sample stream.



Features Perma Pure's Unique Durinert[®] Heat Exchangers

Durinert[®] offers the inertness of glass but the durability and heat transfer capability of stainless steel. The inertness and durability of Durinert[®] heat exchangers make them the ideal solution for low NO_x and acidic SO₃ applications.

General Description of Operation

The two heat exchangers located on the left side of the sample cooler are connected in series. The sample stream first passes through an inactive (i.e., not cooled with thermoelectric elements) Durinert[®] coated heat exchanger used for removing gross amounts of water. The sample then passes to an active Durinert[®] coated heat exchanger. The exit dew point from this heat exchanger is controlled to +4°C, thereby reducing the moisture concentration to less than 1%. The gas sample then flows through the gas sample pump where it alternately passes through frozen Kynar[®] packed heat exchangers, located on the right side of the cooler, then to three-way Teflon[®] solenoid control valve, and finally to the remainder gas sampling system. Condensate is pumped from each heat exchanger by a dedicated peristaltic drain pump head.

Model Comparison

	Model 545	Model 10410
Common Industry Applications	Coal Combustion Glass Furnaces Refineries	Coal Combustion Glass Furnaces Refineries
Standard Sample Gas Flow Rate	1-5 LPM	5-10 LPM
Number of Impingers	2 - Durinert 5" 2 - Packed Kynar 5"	2 - Durinert 10" 2 - Packed Kynar 10"
Dimensions	14.5 X 12.75 X 12.25" HWD	14.5 X 12.75 X 12.25" HWD
Weight	30 lbs	36 lbs

Available Options: Acid Safety Scrubber Kit (Part No. 3KAS-004); Water Slip Sensor /w Holder Assembly (Part No. 3KCW-002) (Note: Water Slip Sensor Requires 3CCB-018 Alarm Board)



THERMO-ELECTRIC COOLERS

SO₃ AEROSOL REMOVAL MODEL 545

Physical Description

Alternating channels (pre-programmed)
2 x 5" Durinert[®] (inert coated stainless steel) heat exchangers connected in series (passive / active)
2 x 5" packed Kynar heat exchangers (active / active)
3 LCD displays w/ associated LED indicators

Operating Specifications

Standard Sample Gas Flow Rate	1-5 LPM 2.1-10.6 SCFH
Maximum Inlet Dew Point at Rated Flow	173°F @ 43% H ₂ O 78°C
Dimensions	14.55 x 12.62 x 12.32 in. HWD 37.0 x 32.1 x 29.5 cm
Weight	35 lbs 15.9 kg
Maximum Inlet Sample Temperature	400°F (200°C) Durinert [®] Impingers 280°F (138°C) Kynar [®] Impingers
Maximum Inlet Pressure	45 psig 3 bar / 2250 mmHg
Maximum Heat Exchanger Pressure Drop	<+1 in. H ₂ O
Ambient Temperature Range	33-104°F 0.56-40°C
Outlet Sample Gas Dew Point	19.4°F -7°C
Inlet Tubing Connection	3/8 in. FPT
Outlet Tubing Connection	1/4 in. FPT
Drain Tubing Connection	3/8 in. FPT
Voltage	110 (220 optional) VAC 50/60 Hz
Power Supply	740W

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THERMO-ELECTRIC COOLERS

SO₃ AEROSOL REMOVAL MODEL 10410

Physical Description

Alternating channels (pre-programmed)
 2 x 10" Durinert® (inert coated stainless steel) heat exchangers connected in series (passive / active)
 2 x 10" packed Kynar heat exchangers (active / active)
 3 LCD displays w/ associated LED indicators



Operating Specifications

Standard Sample Gas Flow Rate	5-10 LPM 10.6-21 SCFH
Maximum Inlet Dew Point at Rated Flow	173°F @ 43% H ₂ O 78°C
Dimensions	14.55 x 12.62 x 12.32 in. HWD 37.0 x 32.1 x 29.5 cm
Weight	35 lbs 15.9 kg
Maximum Inlet Sample Temperature	400°F (200°C) Durinert® Impingers 280°F (138°C) Kynar® Impingers
Maximum Inlet Pressure	45 psig 3 bar /5 2250 mmHg
Maximum Heat Exchanger Pressure Drop	<+1 in. H ₂ O
Ambient Temperature Range	33-104°F 0.56-40°C
Outlet Sample Gas Dew Point	19.4°F -7°C
Inlet Tubing Connection	3/8 in. FPT
Outlet Tubing Connection	1/4 in. FPT
Drain Tubing Connection	3/8 in. FPT
Voltage	110 (220 optional) VAC 50/60 Hz
Power Supply	740W

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