

# TRITIUM GAS DECONTAMINATION SYSTEM

## AIR OR GAS

Model ~ TRI-DECON

### FEATURES:

#### HIGH EFFICIENCY TRITIUM DECONTAMINATION

#### SYSTEM INCLUDES INLET & OUTLET TRITIUM MEASUREMENT:

- USER SETTABLE UNITS -  $\mu\text{Ci/l}$  or  $\text{Bq/m}^3$  etc.
- WIDE RANGE - DIGITAL ACCURACY
- PROGRAMMABLE DIGITAL READOUT
- SENSITIVE FOR OCCUPATIONAL EXPOSURE
- DYNAMIC BACKGROUND COMPENSATION
- BUILT-IN HIGH LEVEL ALARM
- BUILT-IN LOW FLOW ALARM
- IN-LINE

**CONVENIENT  
&  
EASY TO USE  
MINIATURE TRITIUM GAS  
REMOVAL FACILITY**



357 ELECTRONICS

### DESCRIPTION:

Technical Associates **TRI-DECON** is a system for Tritium removal from air or gas.

- A rugged system for harsh environments.
- In-line operated.
- Inlet and outlet hoses allow decontamination of interiors of fume hoods, exhaust stacks, etc.
- User friendly controls are provided.



347 ELECTRONICS



**TECHNICAL ASSOCIATES**

Divisions of



US NUCLEAR CORP

**OVERHOFF TECHNOLOGY**

**Ticker UCLE**

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### DETECTOR:

#### Ranges:

**MODEL 357 Electronics:** TO 1.0  $\mu\text{Ci}/\text{m}^3$

**MODEL 347 Electronics:** TO 0.5  $\mu\text{Ci}/\text{m}^3$

### ELECTRONICS SPECIFICATIONS: MODEL 357

RANGE:	Single range, 1 to 19,999 $\mu\text{Ci}/\text{m}^3$ or 0.1 to 1,999.9 MBq/ $\text{m}^3$
DISPLAY:	Digital, 4 1/2" digit LED
ACCURACY:	$\pm 10\%$ of reading, $\pm 1 \mu\text{Ci}/\text{m}^3$ , whichever is greater
STABILITY & LONG-TERM DRIFT:	$\pm 1 \mu\text{Ci}/\text{m}^3$ of ambient temperature
NOISE:	$\pm 1 \mu\text{Ci}/\text{m}^3$ , 2 sigma, with 20 second time constant
GAMMA COMPENSATION:	Second ion chamber pair of equal volumes, mounted in cruciform pattern, serves to cancel effects of external Gamma fields.
RESPONSE RATE, ELECTRONIC:	two linear time constants, 30 seconds for $<80 \mu\text{Ci}/\text{m}^3$ 3 seconds for $>80 \mu\text{Ci}/\text{m}^3$
WARM-UP TIME:	Less than 5 minutes for high voltage power supplies to stabilize
ALARM SYSTEM:	Single alarm, with set point adjustable from 1 to 1000 $\mu\text{Ci}/\text{m}^3$
ION CHAMBER VOLUME:	Measuring: 1600 $\text{m}^3$ ; Total Wetted: 2000 $\text{cm}^3$
ION TRAP:	Kanne Type, coaxial integral
PORTS:	Hose barb fittings for 3/16" I.D. vinyl tubing
ENVIRONMENTAL:	Storage: $-40^\circ\text{C}$ to $60^\circ\text{C}$ ( $-40^\circ\text{F}$ to $140^\circ\text{F}$ ) Operating: $0^\circ\text{C}$ to $50^\circ\text{C}$ ( $32^\circ\text{F}$ to $122^\circ\text{F}$ ) Humidity: 0-95% RH non-condensing
PHYSICAL CABINET:	19" Rack mount, aluminum extrusions front and rear panels
POWER:	115 VAC or 240 VAC 50/60 Hz
DIMENSIONS:	8.8" (223mm) H x 19.0" (483mm) W x 16.0" (406mm) D
WEIGHT:	40 lbs (18.2 kg)
FLOWMETER:	0-10 lpm adjustable rotameter
DUST FILTER AND PUMP:	High efficiency respirator type cartridge. Long life continuous duty oscillating piston positive displacement pump.
POWER:	115 VAC or 240 VAC 50/60 Hz
DIMENSIONS:	7.0" (178mm) H x 17.0" (432mm) W x 16.0" (406mm) D
WEIGHT:	20 lbs (9.1.4kg)

### OPTIONS:

<ul style="list-style-type: none"><li>Remote alarm units</li></ul>	<ul style="list-style-type: none"><li>Logarithmic output</li></ul>
<ul style="list-style-type: none"><li>Remote meter displays</li></ul>	<ul style="list-style-type: none"><li>RS232 output</li></ul>
<ul style="list-style-type: none"><li>Tritium gas calibrator</li></ul>	<ul style="list-style-type: none"><li>Plate-Out proof wire grid chamber</li></ul>
<ul style="list-style-type: none"><li>Calibration resistor</li></ul>	<ul style="list-style-type: none"><li>4-20 mA output</li></ul>



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## AIR OR GAS

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### ELECTRONICS SPECIFICATIONS: MODEL 347

RANGE:	0.1 to 1,999.9 $\mu\text{Ci}/\text{m}^3$ or 0.01 to 199.99 $\text{MBq}/\text{m}^3$
DISPLAY:	Digital, 4 1/2" digit LED
ACCURACY:	$\pm 10\%$ of reading, $\pm 1 \mu\text{Ci}/\text{m}^3$ , whichever is greater
STABILITY & LONG-TERM DRIFT:	$\pm 1 \mu\text{Ci}/\text{m}^3$ of ambient temperature
GAMMA COMPENSATION:	Second ion chamber pair of equal volumes, mounted in cruciform pattern, serves to cancel effects of external gamma fields up to 25 mR/hr
RESPONSE RATE, ELECTRONIC:	two linear time constants, 30 seconds for $< 80 \mu\text{Ci}/\text{m}^3$ ; 3 seconds for $> 80 \mu\text{Ci}/\text{m}^3$
WARM-UP TIME:	Less than 5 minutes for high voltage power supplies to stabilize
ALARM SYSTEM:	Single alarm, with set point adjustable from 1 to 1000 $\mu\text{Ci}/\text{m}^3$
ION CHAMBER VOLUME:	Measuring: 2900 $\text{m}^3$ ; Total Wetted: 4000 $\text{cm}^3$
ENVIRONMENTAL:	Storage: $-40^\circ\text{C}$ to $60^\circ\text{C}$ ( $-40^\circ\text{F}$ to $140^\circ\text{F}$ ) Operating: $0^\circ\text{C}$ to $50^\circ\text{C}$ ( $32^\circ\text{F}$ to $122^\circ\text{F}$ ) Humidity: 0-95% RH non-condensing
PHYSICAL CABINET:	Benchtop, aluminum extrusions front and rear panel
POWER:	115 VAC or 240 VAC 50/60 Hz
DIMENSIONS:	8.8" (223mm) H x 19.0" (483mm) W x 16.0" (406mm) D
WEIGHT:	45 lbs (20.4kg)
FLOWMETER:	0-10 lpm adjustable rotameter
DUST FILTER AND PUMP:	Separately mounted
POWER:	115 VAC or 240 VAC 50/60 Hz
DIMENSIONS:	7.0" (178mm) H x 17.0" (432mm) W x 16.0" (406mm) D
WEIGHT:	20 lbs (9.1.4kg)

### OPTIONS:

• Remote alarm units	• Logarithmic output
• Remote meter displays	• RS232 output
• Tritium gas calibrator	• 4-20 mA output
• Calibration resistor	



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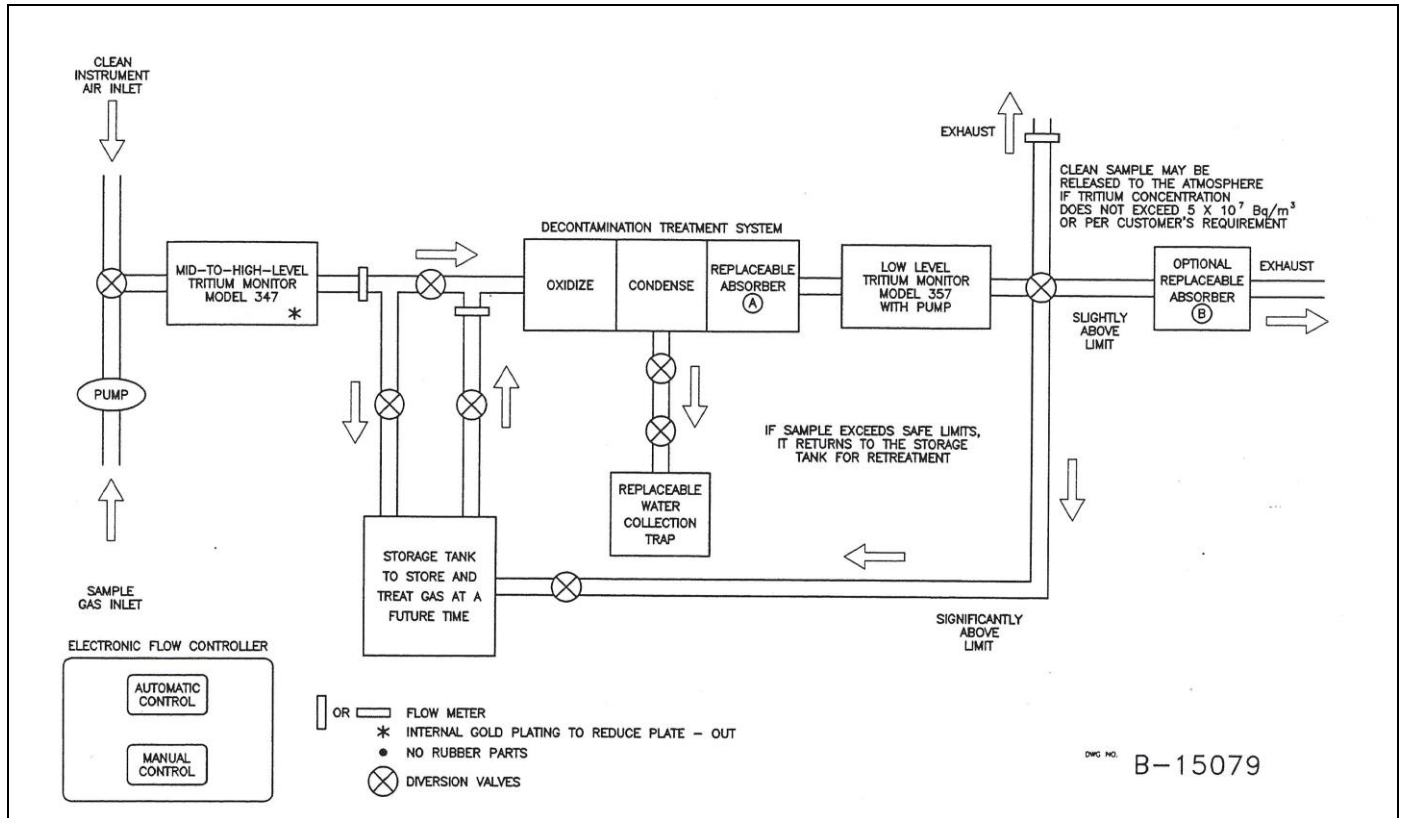
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### TRI-DECON FLOW PATH

- Contaminated air or gas enters the system through a pump, goes into the Tritium Inlet Monitor (the Mid-High Level MODEL-347) to gauge the pre-treatment contamination level.
- It may then go straight into the treatment / decontamination system or be routed into a storage tank for later treatment.
- The treatment system starts with an oxidizer to convert any elemental Tritium ( $T_2$  or HT) into water vapor ( $T_2O$  or HTO).
- The gas stream then enters a condenser which routes the liquid water into the water collection trap.
- In line absorber finishes the drying process of the air stream.
- Air stream passes through the Low-Level Tritium exit Monitor (MODEL-357).
- The clean sample is sorted to the exhaust.
- The dirty sample is diverted for further scrubbing, repeating the cycle until finished and clean.



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