

F&J SPECIALTY PRODUCTS, INC.

The Nucleus of Quality Air Monitoring Programs

TRITIUM COLLECTION SYSTEMS

100 — 120 VAC



KH3-200



MRB200H3



MRB200H3-60ML



TCS-3000-BL



TCS-5000-BLDC

Rev: 02 September 2020

Table of Contents

Product	Page
KH3-200	3-4
MRB200H3	5-6
MRB200H3-60ML	7-8
TCS-3000-BL	9-10
TCS-5000-BLDC	11
F&J Product Line Sheet	12

Tritium Collection System Model KH3-200

NOTABLE FEATURES:

- Tritium in Water Vapor Collection System
- Automatic Flow Control
- Digital Flowmeter displaying flow, elapsed time and accumulated volume
- Large, bright LED Display
- Correction of flow rate and volume to a reference temperature and pressure (4 options)
- Tri-125ml bubbler system
- Brushless motor
- 100 - 240VAC; 50/60Hz; single phase



GENERAL DESCRIPTION:

The Model KH3-200 Tritium collection system consists of a three 125 ml bubbler jar train for collection of tritium in water vapor. A diaphragm pump with an automatic flow control mechanism utilizing the F&J digital flowmeter system is provided.

Typical flow range is 0.8 to 5 SLPM (other flow range options are available). Recommended sampling rate is 2-3 LPM.

Real-time data download is available through the RS232 port. An optional flash card data storage device is available.

The unit is designed for intermittent short-term indoor use. Please consult the product specifications for the design temperature range and the installation category.

SPECIFICATIONS:

PUMP TYPE:	Diaphragm
MOTOR:	Brushless Type; 12VDC PWM
MAXIMUM CAPACITY:	Typical 1-5 SLPM control range Other flow ranges available upon request.
POWER REQUIREMENTS:	100-240 VAC; 50/60 Hz; 1 ampere; single phase
FUSE PROTECTION:	2 amperes (in recessed plug)
ELECTRICAL CORD:	All temperature, 3-wire, 16 gauge
DIMENSIONS:	18”H×13”W×12”D (45.7 cm H×33.0 cm W×30.5 cm D)
NOISE LEVEL :	Average dB 51.0 @ 1 meter
WEIGHT:	12.3 lbs. (5.6 kg)
INSTALLATION CATEGORY:	Pollution Degree 2

TRITIUM COLLECTION SYSTEM:

Removable 125 ml bubbler jars; One three bubbler train (2 bubbler jars & 1 moisture trap)

AIR FLOW MEASUREMENT SYSTEM

- Air flow: $\pm 4\%$ of full scale
- Temperature: $\pm 0.9^{\circ}\text{F}$ (0.5°C) (Not displayed)
- Absolute Pressure: ± 0.6 inches Hg (15,24 mm Hg) (Not displayed)

ON-BOARD CALCULATIONS

- Flow calculation from differential pressure value corrected to a reference T and P
- Elapsed Time
- Cumulative Volume corrected to a reference T and P

OPERATING TEMPERATURE: (0°-40°C) (32°F-104°F)

STORAGE TEMPERATURE: (-10°C-50°C) (14°F-122°F)

OPERATING HUMIDITY: 0-95% RH non-condensing

COMMUNICATIONS INTERFACES:

RS-232 available for real-time data download of airflow data

OPTIONS:

- Flash Card Data Storage Device 232FCDS
- Flash Card (2 GB) 372239
- PC Flash Card Reader SDDR-199-A20

Tritium Collection System Model MRB200H3

NOTABLE FEATURES:

- Tritium in Water Vapor Collection System
- Automatic Flow Control
- Digital Flowmeter displaying flow, elapsed time and accumulated volume
- Large, bright LED Display
- Correction of flow rate and volume to a reference temperature and pressure (4 options)
- Brushless motor
- Tri-20ml bubbler system
- 100VAC; 50/60Hz; single phase



GENERAL DESCRIPTION:

The Model MRB200H3 Tritium collection system consists of a three 20 ml vial bubbler train for collection of tritium in water vapor. A diaphragm pump with an automatic flow control mechanism utilizing the F&J digital flowmeter system is provided.

Typical flow range is 75 to 200 sccm (other flow range options are available).

Real-time data download is available through the RS232 port. An optional flash card data storage device is available.

The unit is designed for continuous indoor use. Please consult the product specifications for the design temperature range and the installation category.

Collection efficiency for tritium in water vapor is greater than 99% utilizing ethylene glycol.

Tritium Collection Systems

SPECIFICATIONS:

PUMP TYPE:	Diaphragm
MOTOR:	Brushless Type
MAXIMUM CAPACITY:	Typical 75 cc/min to 200 cc/min. control range Other flow ranges available upon request.
POWER REQUIREMENTS:	100 VAC; 50 Hz; 1 ampere; single phase
CIRCUIT BREAKER PROTECTION:	1 amperes
ELECTRICAL CORD:	All temperature, 3-wire, 16 gauge
DIMENSIONS:	14”H × 9”W × 12.5”D (35,6 cm H × 22,9 cm W × 31,8 cm D)
WEIGHT:	8 lbs. (3.6 kg)
INSTALLATION CATEGORY:	Pollution Degree 2

TRITIUM COLLECTION SYSTEM:

- Removable 20 ml scintillation vials; One three vial train
- Detection Limit: 1E-10 µCi/cc
- Efficiency: > 99% with ethylene glycol

AIR FLOW MEASUREMENT SYSTEM

- Air flow: ± 4% of full scale
- Temperature: ± 0.9°F (0.5°C) (Not displayed)
- Absolute Pressure: ± 0.6 inches Hg (15,24 mm Hg) (Not displayed)

ON-BOARD CALCULATIONS

- Flow calculation from differential pressure value corrected to a reference T and P
- Elapsed Time
- Cumulative Volume corrected to a reference T and P

OPERATING TEMPERATURE: (0°-40°C) (32°F-104°F)

STORAGE TEMPERATURE: (-10°C-50°C) (14°F-122°F)

OPERATING HUMIDITY: 0-95% RH non-condensing

COMMUNICATIONS INTERFACES: RS-232 available for real-time data download of airflow data

OPTIONS:

- Flash Card Data Storage Device 232FCDS
- Flash Card (2 GB) 372239
- PC Flash Card Reader SDDR-199-A20

Tritium Collection System Model MRB200H3-60ML

NOTABLE FEATURES:

- Gaseous Pollutant Collection System
- Automatic Flow Control
- Digital Flowmeter displaying flow, elapsed time and accumulated volume
- Large, bright LED Display
- Correction of flow rate and volume to a reference temperature and pressure (4 options)
- Brushless motor
- Tri-60ml bubbler system
- 100 - 120VAC; 50/60Hz; single phase



GENERAL DESCRIPTION:

The Model MRB200H3-60ML Tritium collection system consists of a three 60 ml vial bubbler train for collection of gaseous air pollutants. A diaphragm pump with an automatic flow control mechanism utilizing the F&J digital flowmeter system is provided.

Typical flow range is 1 to 5 SLPM (other flow range options are available).

Real-time data download is available through the RS232 port. An optional flash card data storage device is available.

The unit is designed for continuous indoor use. Please consult the product specifications for the design temperature range and the installation category.

SPECIFICATIONS:

PUMP TYPE:	Diaphragm
MOTOR:	Brushless Type
MAXIMUM CAPACITY:	Typical 1 SLPM to 5 SLPM control range Other flow ranges available upon request.
POWER REQUIREMENTS:	100 - 120 VAC; 50 Hz; 1 ampere; single phase
CIRCUIT BREAKER PROTECTION:	5 amperes
ELECTRICAL CORD:	All temperature, 3-wire, 16 gauge
DIMENSIONS:	14"H × 9"W × 12.5"D (35,6 cm H × 22,9 cm W × 31,8 cm D)
WEIGHT:	17.5 lbs. (8 kg)
INSTALLATION CATEGORY:	Pollution Degree 2
BUBBLER SYSTEM:	Removable 60 ml glass scintillation vials; One three vial train

AIR FLOW MEASUREMENT SYSTEM

- Air flow: ± 4% of full scale
- Temperature: ± 0.9°F (0.5°C) (Not displayed)
- Absolute Pressure: ± 0.6 inches Hg (15,24 mm Hg) (Not displayed)

ON-BOARD CALCULATIONS

- Flow calculation from differential pressure value corrected to a reference T and P
- Elapsed Time
- Cumulative Volume corrected to a reference T and P

OPERATING TEMPERATURE: (0°-40°C) (32°F-104°F)

STORAGE TEMPERATURE: (-10°C-50°C) (14°F-122°F)

OPERATING HUMIDITY: 0-95% RH non-condensing

COMMUNICATIONS INTERFACES: RS-232 available for real-time data download of airflow data

OPTIONS:

- Flash Card Data Storage Device 232FCDS
- Flash Card (2 GB) 372239
- PC Flash Card Reader SDDR-199-A20

Tritium Collection System Model TCS-3000-BL

NOTABLE FEATURES:

- Microprocessor controlled electronics
- Flow rate measurements and volume totalizations are corrected to a factory settable reference Temperature and Pressure (4 options)

Classical STP	0°C, 760mm Hg
Normal T and P	20°C, 760mm Hg
Modified Normal T and P	21,1°C, 760mm Hg
Standard Ambient T and P	25°C, 760mm Hg
- RS-232 Port
- LED Display
- Precision machined orifice
- Flow rate accuracy within $\pm 4\%$ F.S.
- Flow rate / volume options:
 - sccm / scc
 - SLPM / SL
- Brushless motor
- 100-120VAC; 50/60Hz, single phase



GENERAL DESCRIPTION:

The Model TCS-3000-BL Tritium Collection System is a tritium collection system consisting of a diaphragm pump, a brushless DC motor, automatic flow control and 2 removable polycarbonate Indicating Silica Gel columns. The flow and volume of air passing through the system is adjusted and measured by a microprocessor controlled Digital Flow Meter (DFM). The DFM utilizes a precision-machined orifice to measure flowrate. The DFM displays on-board calculations on a bright large character LED display. Flowrate and totalized volume are both corrected to a reference T and P. Elapsed time, flowrate and volume are displayed at operator selection.

Multiple operator selectable data download frequencies are available through the RS232 port for collection and/or storage of real-time data.

The unit is designed for continuous indoor use. Please consult the product specifications for the design temperature range and the installation category.

Tritium Collection Systems

SPECIFICATIONS:

PUMP TYPE:	Diaphragm
MOTOR:	Brushless; 12VDC
CAPACITY:	Maximum capacity dependent upon pump size and flow sensor design.
POWER REQUIREMENTS:	100 – 120VAC; 50/60 Hz; 1 ampere; single phase
CIRCUIT BREAKER PROTECTION:	1 amperes
ELECTRICAL CORD:	All temperature, 3-wire, 14 gauge; ~9 feet
DIMENSIONS:	9”D × 24”W × 20”H
WEIGHT:	67 lbs. (30,3 kg)
INSTALLATION CATEGORY:	Pollution Degree 2

ELECTRONIC SPECIFICATIONS

MEASUREMENT ACCURACY

Air flow:	± 4% of full scale
Temperature:	± 0.9°F (0.5°C) (Not displayed)
Barometric Pressure:	± 0.6 inches Hg (Not displayed)

OPERATING TEMPERATURES: 10° - 104°F (-12° - 40°C)*

STORAGE TEMPERATURE: 0° - 122°F (-17° - 50°C)

* With optional heating system

CALIBRATION: Calibration-verification once per year; Factory calibration as needed.

COMMUNICATIONS INTERFACES: RS-232

ON-BOARD CALCULATIONS

- Flow calculation from differential pressure value corrected to a reference T and P
- Elapsed Time
- Cumulative Volume corrected to a reference T and P

OPTIONS:

- FlashCard Datalogger system for collection and storage of real-time data exiting the RS232 port.
- FlashCard data storage device: P/N: 232FCDS
- FlashCard 2 GB; P/N: 372239
- FlashCard Reader; P/N: SDDR-199-A20

NOTE:

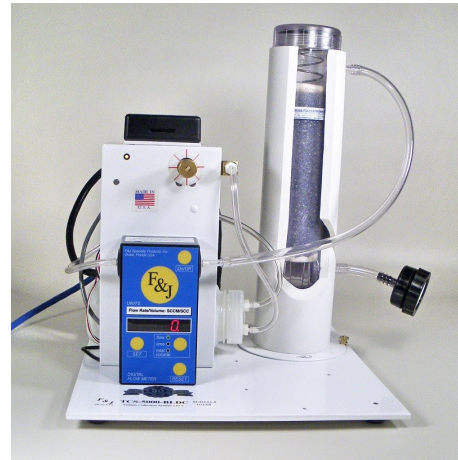
Other tritium absorbing media may be utilized, such as molecular sieve, water or ethylene glycol.

Tritium Collection System Model TCS-5000-BLDC

NOTABLE FEATURES:

- Microprocessor controlled electronics
- Brushless Motor
- Flow rate measurements and volume totalizations are corrected to a factory settable reference Temperature and Pressure (4 options)

Classical STP	0°C, 760mm Hg
Normal T and P	20°C, 760mm Hg
Modified Normal T and P	21,1°C, 760mm Hg
Standard Ambient T and P	25°C, 760mm Hg
- RS-232 Port
- LED Display
- Precision machined orifice
- Flow rate accuracy within $\pm 4\%$ F.S.
- Flow rate / volume options:
 - sccm / scc
 - SLPM / SL
- 100-120VAC; 50/60Hz, single phase



SPECIFICATIONS:

PUMP TYPE:	Diaphragm
MOTOR:	Brushless PWM motor; 12VDC
CAPACITY:	Minimum 100 cc/min; Maximum 300 cc/min. (Different ranges are available)
POWER REQUIREMENTS:	100 – 120 VAC; 50/60Hz; 1 ampere; single phase
CIRCUIT BREAKER PROTECTION:	1 amperes
ELECTRICAL CORD:	All temperature, 3-wire, 16 gauge
DIMENSIONS:	16 ½ "L × 12 "W × 15"H (42L × 30.5W × 38 cm H)
NOISE LEVEL:	Average dB 51.00 @ 1 meter
AVERAGE dB:	51.0
WEIGHT:	12.5 lbs. (5.7 Kgs.)
INSTALLATION CATEGORY:	Pollution Degree 2

ELECTRONIC SPECIFICATIONS

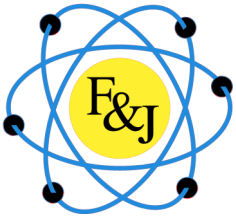
MEASUREMENT ACCURACY

Air flow:	$\pm 4\%$ of Full Scale (F.S.)
Temperature:	$\pm 2^\circ\text{F}$ (1°C) (Not displayed); available from RS232 output
Barometric Pressure:	± 1 inch Hg (Not displayed); available from RS232 output

OPERATING TEMPERATURES:	32° to 104°F (0° to 40°C)
STORAGE TEMPERATURE:	-20° to 122°F (-28° to 50°C)
CALIBRATION:	Calibration-verification once per year; Factory calibration as needed
COMMUNICATIONS INTERFACE:	RS-232 available for realtime data download.

ON-BOARD CALCULATIONS

- Flow calculation from differential pressure value corrected to a Reference T and P
- Elapsed Time
- Cumulative Volume corrected to a Reference T and P



F&J SPECIALTY PRODUCTS, INC.

The Nucleus of Quality Air Monitoring Programs

PRODUCT PROFILE

Air Sampling Systems

- High Volume Air Samplers
 - Portable Grab Samplers
 - Environmental Systems
 - Enzyme Dust Samplers
 - PM10 Systems
- Continuous Air Samplers
 - Environmental Systems
 - Portable
 - Fixed Station
- Personal Air Samplers
- Emergency Response DC Powered Air Sampling Systems

Filter Paper

- Glass Fiber
- Cellulose
- Membrane
- Quartz

Filter Holders

- Open face
- In-Line
- PAS Filter Holders
- Materials
 - Plastic
 - Aluminum
 - Stainless Steel

Radon Detection Devices

- 2-Day Passive Charcoal Canisters
- 7-Day Passive Charcoal Canisters
- Continuous Radon Monitors

Tritium Detection Systems

- Portable and Fixed Station Collection Systems utilizing Silica Gel or Molecular Sieve Absorbents
- Continuous Tritium Monitors

New Products

- Global Air Sampling Systems
- Digital Flowmeter Air Samplers
- C-14 Collection Systems
- ELITE DIGITAL LIGHT (EDL) Air Samplers
- Isokinetic Air Sampling Systems
- MEGA High Volume Air Samplers
- ULTRA High Volume (CTBTO) Air Samplers

Radioiodine Collection Cartridges

- TEDA Impregnated Charcoal
- Silver Zeolite
- Custom Cartridges
- Bulk Silver Zeolite

Air Flow Calibrators

- World Calibrator Series
- Compact Digital V.2 Series
- Mini-Calibrator