

ALPHA BETA GAS PROPORTIONAL MONITORS

CHFMTM Compact Hand & Foot Monitor

Highlights

- The industry's smallest full featured alpha/beta hand and foot contamination monitor
- Footprint of less than 2.5ft²
- Wall-mount, desk-mount, and cart-mount options available
- Counting cycles start automatically via photoelectric sensing
- Automatic background compensation monitors for abrupt changes in ambient gamma level
- Internal battery backup provides full operation for up to 8-hours
- Inlet and outlet gas flowmeters adjustable on front panel
- User friendly interface utilizes a high-resolution color touchscreen
- Counting cycles are logged locally and also broadcast via the wireless or ethernet RadNet Output Option
- Individual alpha & beta alarms can be set for each detector channel in cpm or dpm

Description

Having a footprint less than 2.5 ft², the *Bladewerx cHFM*TM is a space saving alpha/beta contamination monitor configurable with multiple gas-flow proportional detectors -- a combination of hand, foot, and frisker detectors. The modularity and small footprint provide excellent versatility and allow for wall mounting, cart mounting, or table top use. The CHFM is compact, easy to setup, and user friendly, making it highly efficient for personnel monitoring in high traffic applications. It performs counting and alarming in frisker ratemeter mode when the hand-held frisker probe is being used and in fixed count time mode when monitoring hands and feet. Each detector has its own user settable parameters and alpha and beta measurements are individually analyzed and displayed. The software also provides automatic background compensation with statistical monitoring for abrupt changes in ambient gamma level.

Basic System Components

The cHFM is a complete contamination monitoring system comprised of three independently mounted components; the electronics assembly comprised of the electronics enclosure and one or more SDB (Simple Detector Board) modules, the hand monitor assembly, and the foot monitor assembly. The system includes all necessary cables and tubing to connect the three assemblies. An internal battery provides for 8-hours continuous operation away from AC power.

Electronic Assembly

The electronics assembly provides the user interface and all necessary detector support electronics. It consists of an aluminum dust-tight and splash-proof enclosure containing a Windows CE 5.0 processor board along with internal counting logic coupled to the detectors via the rear panel-mounted SDB detector interface modules. It is removable from the wall-mount bracket without tools and uses quick-release cables and gas connectors from the detectors to allow the assembly to be easily detached from the mounting bracket for maintenance.

The front panel includes all indicators and controls. The LCD touchscreen display is used for system configuration as well as to display counting results. Front-panel mounted LEDs are used for status indication; the Alarm LED (Red) indicates that contamination was detected, the Ready LED (Green) indicates the monitor is ready to perform a count, the Out of Service LED (Yellow) indicates a trouble condition and that the monitor cannot be used. Two



*cHFM Cart-Mount Option

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flowmeters are also mounted to the front panel to provide inlet gas flow adjustment, and to indicate outlet gas flow. The audible Sonalert™ alarm sounds when contamination is detected and is silenced/reset by pressing the alarm Acknowledge pushbutton. For counting small articles on the hand detector, a Count pushbutton is provided to manually start a count cycle, thereby over-riding the photoelectric sensors.

The click-rate speaker, driven by the frisker probe, is located on the side panel along with the power button and the USB port for downloading log data.

The rear panel of the electronics assembly includes the 12 VDC charger/power connector, P-10 gas quick-release connectors, and the Ethernet connector. The detector electronics SDB modules are mounted externally to the rear panel and provide the interface between the data processing computer and the gas proportional detectors. The SDB modules (one per detector) are easily removable without tools.



* cHFM Electronics Assembly

Hand and Foot Monitors

The wall mount for the hand monitor and electronics assembly is designed so that the LCD display can be positioned at an adjustable height with respect to the hand monitor so that a comfortable hand position is not compromised by the display height. The foot detector assembly can be conveniently placed on the floor or on a cart below the wall mount and allows for an adjustable angle of from 15° to 30° for comfortable foot placement. Both hand and foot monitor assemblies are equipped with 24 cm x 39 cm (9"x15") gas proportional detectors with MHV connectors for high voltage and signal plus a quick-disconnect connector for the P-10 counting gas. The hand and foot monitors use photoelectric sensors to trigger the count cycle when a user places their hand or foot on the surface of the detector assembly.

Frisker

The gas proportional frisker has a nominal 100 cm² sensitive area and includes an MHV connector, which supports high voltage, signal, and counting gas flow. It is attached to the wall mount bracket along with the hand detector and electronic assembly. When the frisker is removed from the mounting bracket a micro switch automatically activates frisker counting mode.

Alarm Output and Remote Monitoring

Contamination levels and status changes are annunciated on the display, the status LEDs, and audibly via the Sonalert. When the net detector count rate exceeds the user defined alarm level, the alarm condition is indicated by displaying the net detector reading on a color-coded background (red = alarmed, yellow = out of service, green = normal). With the 802.11 Ethernet connection, the cHFM reports status and readings to a local network running Bladewerx RadNet software or other RadNet-compliant client software.

Data Logging

The cHFM creates log files every time a user does a count. The log files are stored locally as text files and may be copied to a flash drive inserted into the built-in USB port. Log data files are saved in a Microsoft Excel-compatible "comma-delimited text" format.

Specifications

Hand and Foot Detectors

- Gas flow proportional, nominal active area 936 cm² (24 cm wide x 39 cm long)
- Protective grid open area:
Hand detector: 53 %
Foot detector: 53%
- Aluminized Mylar window: 45 mg/cm²
- Typical alpha efficiency: Pu²³⁹ = 15–30%, Th²³⁰ = 15–25%.
- Typical beta efficiency: Tc⁹⁹ 8-15%, Cl³⁶ = 15-25%, SR-Y = 20-35%
- Large area sources recommended for calibration

Frisker Detector

- Gas flow proportional, nominal active area 100 cm² (10 cm wide x 10 cm long)
- Protective grid open area: 60%
- Aluminized Mylar window: 2 layers 0.8 mg/cm²
- Typical alpha efficiency: Pu²³⁹ = 17.5%
- Typical beta efficiency: SR-Y = 20%, Tc⁹⁰ = 20%

General

- AC/DC Powered
- Weight: 75 lbs. (34 kg) (all components)
- Dimensions: (H x W x D)
- Hand Monitor: 4.5" x 18.5" x 13.5"
- Foot Monitor: 11.0" x 11.9" x 17.7"
- Electronics Box: 11.0" x 12.9" x 4.8"
- Temperature: 0 to 122 °F (-20 to 50°C)
- Humidity: 5 to 100% (non-condensing)

Base Model

BIN-CHFM-S1-F1 Compact Hand & Foot Monitor

Options

BIN-CHFM-OPT1 Wireless RadNet Output
 BIN-CHFM-OPT2 SI Units
 BIN-CHFM-OPT3 Frisker Detector
 BIN-CHFM-OPT12 Ethernet RadNet Output
 BIN-CHFM-OPTP Portable Cart-Mount Option

Spare Parts

BSP-GasDet Gas Proportional Detector
 BSP-Frisker-41 Frisker Probe Detector
 BSP-PEsensor Photoelectric Sensor
 BSP-4Channel 4 Channel Counter PCB
 BSP-SDB-MHV SDB Module
 BPT-LION-4100 Battery 4.1 Ah Li-Ion
 BPT-ACADP-1222 AC adapter/charger (U.S.)
 BPT-ACADP-1222US AC adapter/charger (AUS)
 BPT-ACADP-1222UK AC adapter/charger (U.K.)