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1040-5

Accident Range Gaseous Effluent Monitor

The 1040-5 Accident Range Gaseous Effluent Monitor assures noble gas is monitored under accident conditions up to 10^5 µCi/cc, and may be furnished in conjunction with new or existing normal range monitors. This monitor utilizes a beta scintillation detector, operated in the current output mode for accident range, to assure the historical problem of 1 decade overlap for normal and accident range detectors does not apply. Through the use of the same species detectors, the radiation measurement assures a minimum of 1 decade overlap between detectors over the entire energy range.

The sample is withdrawn from the process flow stream via isokinetic nozzles through the customer's sample line to the isokinetic splitter. The splitter directs isokinetic flow through the respective motorized selector valve to either the normal or accident range sampling system. (The Normal Range System is described in the 1040-1 data sheet.) Under accident range conditions, the sample passes through one of the redundant filter paths and the mass flow controller to the accident range gas sample volume and then through the pumping system and back to the process flow stream. Where isokinetic sampling is required, a bypass flow path for the full normal range flow rate is provided, and a flow rate of 1,000 SCCM is routed through the accident range monitor. Filter transfer may be initiated manually, or automatically, based on gas channel activity. Two lead shielded filter carriers are provided to safely remove the loaded filters and transport the filters for laboratory analysis.

The normal range system must have the capability of providing a control contact which is set to make contact approximately 1 decade below full scale. This contact initiates the switch-over of the selector valves, closing the sample path to the normal range skid, shutting down the normal range pumping system, starting the accident range pumping system, and sounding the alarm. When the radiation drops below the top of the first decade of

Key features

- Beta scintillation detector operated in the current mode for noble gas
- Range 10^{-3} to 10^5 µCi/cc
- Particulate and iodine filters provided
- Sample flow in direct proportion to process flow
- May be adapted to existing normal range monitor
- Automatic purge of sampling system
- Accident range gas monitor suitable as Kaman replacement
- Meets requirements of NRC Reg. Guide 1.97
- 11 cc stainless steel gaseous sample volume
- Compatible with 1060 Digital Process Control System, local or remote mounting

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the accident range system, the sample flow reverts to the normal range path and resets the alarm. The accident range detector signal is displayed by the accident range 1060 Local Control Unit in gross noble gas counts or concentration in µCi/cc, and compensated for changes in pressure at the gas volume chamber. A low-flow alarm for the accident range sample flow is also provided.

Technical specifications

Power requirements
120 V ac, 1 phase, 50/60 Hz

Gas sample flow rate
1000 ccm, accident

Sample temperature limit
32 °F to 122 °F (0 to 50 °C)

Sample inlet
0.75 inch OD

Sample outlet
0.75 inch OD

Maximum internal pressure
10 psig

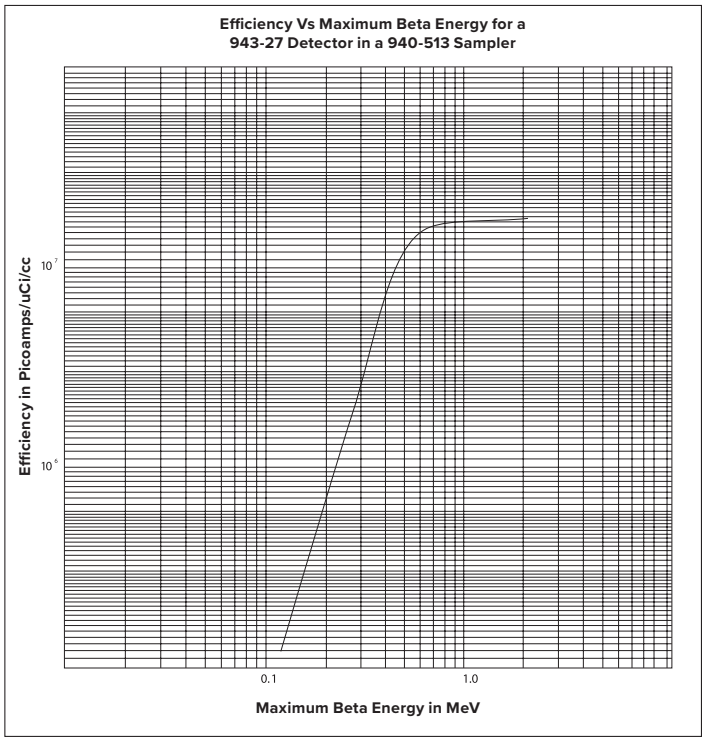
Dynamic range
10^{-3} to 10^{5} µCi/cc

Gas sample volume
30 cc

Skid overall dimensions
(w x d x h)
35 in x 60 in x 42 in
(88.9 cm x 152.4 cm x 106.7 cm)

Skid weight
1700 lb (771.1 kg)

Particulate filter paper
Hollingsworth & Voss #LB-5211-A-O with a collection efficiency of 99.97 % for particles 0.3 micron and larger
Iodine filter
Silver zeolite cartridge



The accident range effluent monitor consists of the following components:

- Isokinetic sample splitter for sample flow to normal and accident range skids
- Motorized valves automatically selected by radiation measurement for diversion of sample stream to normal or accident range systems
- Open-frame sampling skid with the following components mounted, plumbed, and wired:
  - Parallel path particulate/ iodine accident range filter assemblies
  - Shielded portable transport for filters
  - Gas sampler, fixed volume, with 4 pi shielding
  - Current mode beta scintillation detector
  - Pressure transmitter upstream of the gas sampler for automatic compensation of count rate for gas density
  - Mass flow controller for isokinetic sample flow rate
  - Positive displacement pumping system
  - Plumbing and valving, as required
- 1060 Digital Process Control System, local or remote mounting

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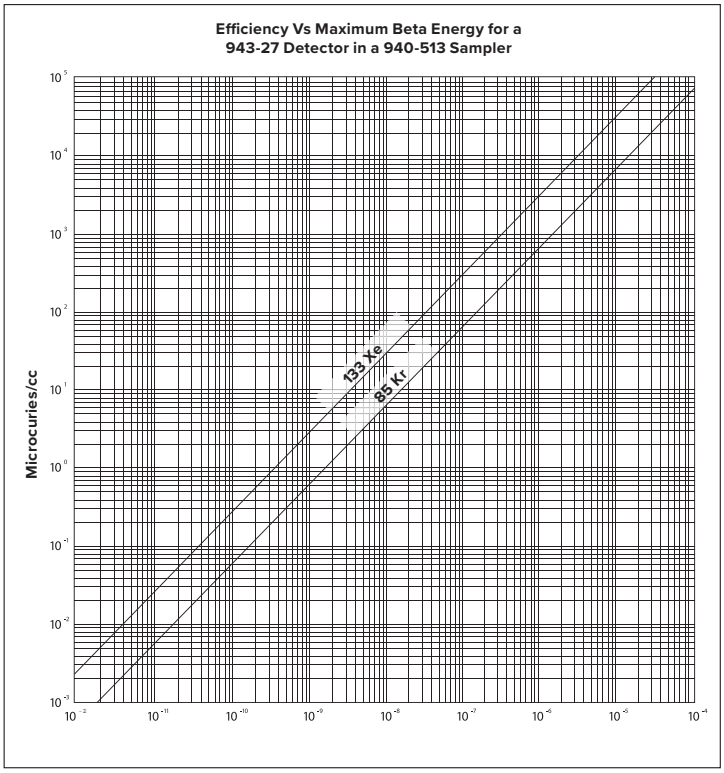
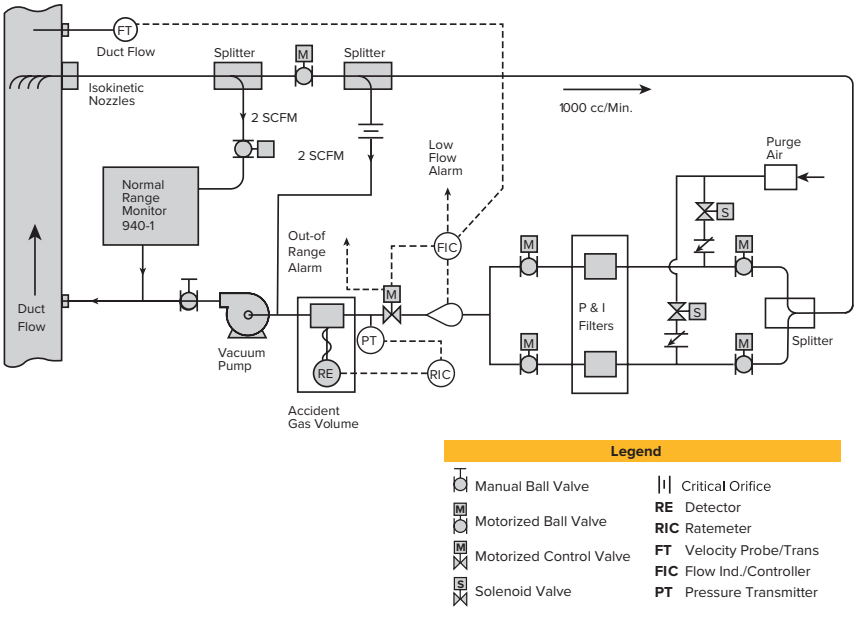


Ordering information

Model

1040-5: Accident Range Gaseous Effluent Monitor

Note: The **1040-5** Accident Range Monitor may be paired with the **1040-1** Series of monitoring systems.



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