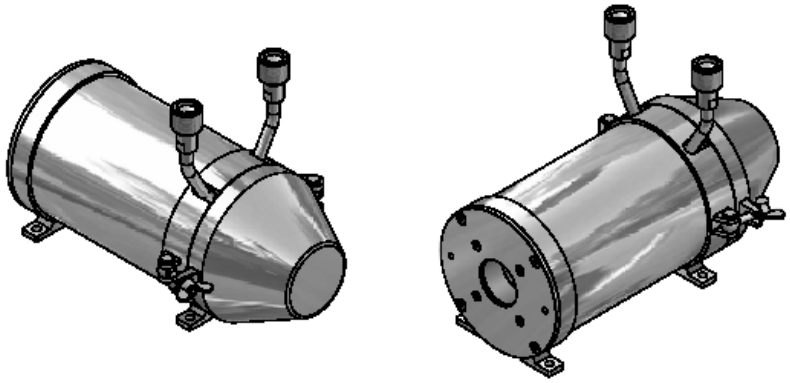
MKG-01 Liquid Gamma Monitor



The MKG-01 liquid gamma monitor is intended for the on-line measurement of activity of liquids flowing through pipelines.

It can work as an autonomous monitor as well as a part of the large monitoring system.

Purpose

The MKG-01 liquid gamma monitor is intended for the on-line measurement of activity of liquids flowing through pipelines. The measuring range depends on the detector type used.
The MKG-01 monitor can be used as part of a large monitoring systems with remote centralized indication, or in connection with the local display unit as an autonomous monitor, which provides the data indication locally at the place of measurement.
The MKG-01 detector's output can be customized for application in most of the common radiation monitoring systems based on different interfaces and communication protocols.

Description

The MKG-01 liquid gamma monitor consists of two basic parts:

- Probe
- Shielding

The standard MKG-01 is equipped with a sensitive and reliable SDG-52 probe with a NaI(Tl) scintillation detector 2 x 2 in and photomultiplier tube. All elements of the probe are encapsulated in a waterproof metal case which meets the IP 66 electrical protection as standard. The probe is also provided with a built-in preamplifier. This preamplifier ensures the signal transfer through a connecting cable for a minimum of 150 meters.
As an option, the MKG-01 can be alternatively equipped with the SDG-53 probe with the detector 3 x 3 in, with the SDG-51 probe with the detector 1 x 1 in or with another suitable probe for example with GM-tube detector.
The scintillation probe can optionally include an Am-241 pulser and thermistor which allows temperature stabilization of the spectra in the connected MCA.

Main advantages

- Non-invasive monitor to process pipelines
- Can be used for different pipelines diameter and for both horizontal and vertical pipelines
- Variety of compatible probes and front collimators for different applications
- Front collimator and back part of the shielding pig can be removed for an easy maintenance and quick replacement of the probe
- Optional cooling for high temperature liquids

Specification

Energy range	150 keV ~ 2.5 MeV
Power supply	24 VDC / less than 30W
Electrical protection	IP 66
Dimensions* (Φ x l)	160 x 350 mm (6.3 x 13.8 in)
Weight:	
Standard shielding assembly	about 50 kg (110 lb)
Operating temperature range**	0 ~ 50°C (32 ~ 122°F)
Maximum relative humidity	90% (non-condensing)

** With 1 in shielding (without connection pieces for water cooling)*
*** This operational temperature is applied only to the SDG-52 probe without cooling. Optional cooling allows higher temperature of the liquid.*

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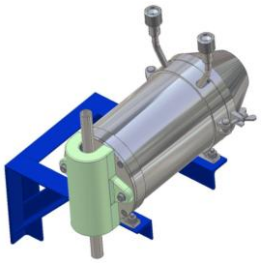
Description

The (SDG-52) probe is enclosed in lead shielding to minimize the influence of background radiation. The shielding structure consists of several layers:

- Lead shielding of the probe from all sides 2.53 cm (1 in) thick. At the front of shielding pig there is a collimator window. The shape and the dimensions of the collimator can be customized to local specific conditions. By reducing the collimator window dimensions, the measurement range is changed towards higher activities of liquid in the pipe. The standard collimator window size is 5 cm (2 in) (corresponds to scintillation detector, optionally 7.6 cm (3 in) or 2.5cm (1 in)
- Additional shielding layers to shield the secondary X rays created in the lead
- Outside metal layering to cover the lead shielding
- Optionally: a cooling layer around the probe
- Optionally: a front lead shielding around the pipeline for applications with higher background and lower activities to be measured in the pipeline (lower MDA required). Not always necessary

Optionally the MKG-01 liquid gamma monitor can be equipped with a cooling jacket outside the probe (still inside the shielding), when the temperature of the medium in pipe line exceeds the limit acceptable for the probe 0 ~ 50°C (32 ~ 122°F). Cooling water inlet and outlet are provided and the connection can be customized. After having acquired the liquid temperature in the pipeline for each specific installation, the required flow rate of cooling water can be calculated. If requested, additional electrical cooling can be supplied (optionally).
Example of support structure for the monitor and additional shielding around the pipeline:



1.5 in pipeline

12 in pipeline

Optional accessories

- MCA unit for the processing the pulses with RS-485 output
- Local display unit LZJ-22 (with or without integrated MCA) for the local processing, archiving and displaying of the data
- 120/230 VAC / 24 VDC adapter
- Additional water cooling
- Additional electrical cooling
- Thermistor in the probe used
- Am-241 Pulser for SDG-52 (SDG-53, SDG-51)
- Support for wall/floor mounting of the monitor

Ordering data

When ordering, please specify the name, type and the model.

Model	Description
K0232-01	MKG-01 Liquid Gamma Monitor basic configuration with SDG-52 probe (without pulser, thermistor or cooling)
K0704	SDG-51 Probe with NaI(Tl) detector 1 x 1 in
K0705	SDG-52 Probe with NaI(Tl) detector 2 x 2 in
K0719	SDG-53 Probe with NaI(Tl) detector 3 x 3 in
K0712	SDG-02 Probe with energy compensated GM-tube
K0232-xx	MKG-01 – the parameters will be specified according to the customer's requirements. For example, probe dimensions and the size of the collimator window, etc.

VF Flexible solutions

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Contact address

Czech Republic
VF, a.s., nám. Míru 50
CZ 679 21 Černá Hora
tel. +420 516 428 611
fax +420 516 428 610
office@vf.cz

Slovak Republic
VF, s.r.o., M. R. Štefánika 9
SK 010 02 Žilina
tel. +421 415 072 411
fax +421 415 072 410
office@vf.sk

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