

# Laundry Contamination Monitors LCM-300 series



**Laundry Contamination Monitors LCM-300 series are mobile devices that serve for checking contamination of laundry by alpha, beta and gamma emitting radionuclides. They can also be used for checking contamination of other subjects of suitable size.**

## Purpose

The Laundry Contamination Monitors LCM-300 series are mobile devices that primarily serve for checking contamination of washed, dried, and laid-out laundry originating from areas where it could have been in contact with alpha, beta and/or gamma radionuclides. They can also be used for checking contamination of other items of suitable size.

The LCM-300 Laundry Contamination Monitors exist in several various models. The basic model LCM-300BG for nuclear power plants is primarily designed for checking beta and gamma contamination in two measurement channels. The detectors applied are also sensitive to alpha radiation. The LCM-300 monitors of other models may be designed for checking alpha contamination with alpha discrimination or for checking gamma contamination only.

## Description

The basic type LCM-300BG monitor consists of two conveyors placed one above the other with integrated detection blocks. The detection blocks of the bottom conveyor usually contain four gamma radiation detectors located in lead shielding; the detection block of the upper conveyor usually contains eight beta radiation detectors (also sensitive to alpha). In order to prevent the shielding of the beta (and/or alpha) radiation by the upper conveyor matter, the material used for the upper conveyor belt is netlike with square holes. As to secure the tight measurement geometry, the height of the entire upper conveyor with the detection block is adjustable.

After being unfolded onto the bottom conveyor, the laundry is transported to the measurement chamber between both the upper and lower detection block where measurement is carried out in continual or incremental mode. The incremental mode (with intermittent movement of the belts) is slower, however, it provides a much higher measurement sensitivity. When the pre-set signalization levels are exceeded, the conveyors stop and the optic and acoustic signalization are set off.

## Main advantages

- Rapid laundry measurement from both sides concurrently
- Mobile automatic conveyor with belts on both sides which prevent the laundry from falling off
- Discrimination of alpha/beta/gamma radiation if necessary
- Easy control and maintenance
- Automatic background compensation
- High sensitivity
- No gas flow detectors used

## Common Specification

Dimensions	1275 x 1640 x 3510 mm (50.2 x 64.6 x 138.2 in)
Weight	1150 kg (2535 lb)
Interface	Ethernet
Power supply	230 VAC/50 Hz
Adjustable speed	0.06 ~ 0.14 m/s
Measurement chamber width	740 mm (29 in)
Measurement chamber height	5 - 140 mm (0.2 ~ 5.5 in)

### Bottom conveyor

Length	3 500 mm
Belt material	polyurethane

### Upper conveyor

Length	2 000 mm
Hole dimensions	6.5 x 6.5 mm
Standard shielding by the belt	35%

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## Description

Monitor control, measurement evaluations, and measurement information are provided by the PLC unit with a colour touch-screen.

Other control and signalization features are also available: a lockable switch to start the device, buttons: Stop; Move (forward/rewind); Confirm empty conveyor belt; Emergency stop.

The device is equipped with auto-diagnostic functions to check the radiation contamination and correct operation.

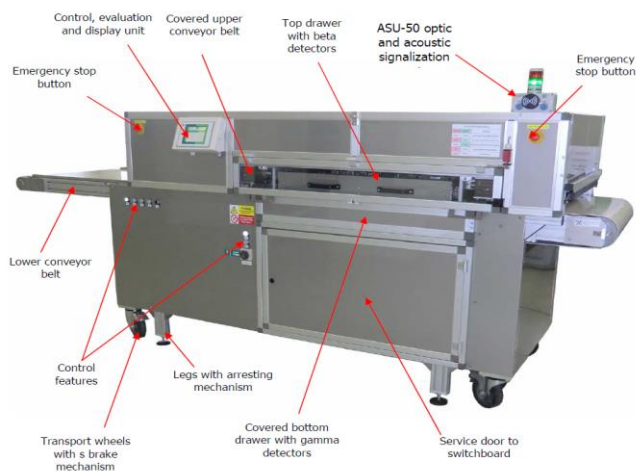
The Ethernet interface allows communication with the device as well as its remote control. The monitor also includes a USB interface for easy export and/or import of files with pre-set parameters, and for export of the measurements archive.

The monitors provide a display of the results after the measurement is finished (background, counts from all channels, activity measured, etc.) as well as re-measurement in case of contamination close to the alarm level.

## Models and Accessories

Type	Name	Description
<b>K1502</b>	LCM-300AG	Upper detectors alpha, lower gamma
<b>K1110</b>	LCM-300BG	Upper detectors alpha + beta, lower gamma
<b>K1503</b>	LCM-300CG	Upper detectors alpha / beta, lower gamma

## LCM monitor / main parts and functions



## Specification

Units displayed \* cps, Bq, Bq/cm<sup>2</sup>

### Detectors of lower conveyor belt

Type of detected radiation gamma as standard  
 Number of detectors 4  
 Detector dimensions 425 x 50 x 175 mm (16.7 x 2 x 6.9 in)  
 Measurement range 130 cps ~ 300 kcps  
 Alarm level 3 Bq/cm<sup>2</sup> (81 pCi/cm<sup>2</sup>), continuously  
 Detection limit 1.2 Bq/cm<sup>2</sup> (33 pCi/cm<sup>2</sup>)  
 Reference nuclide <sup>137</sup>Cs

\* other units available on request

### Detectors of upper conveyor belt

Type of detected radiation beta as standard (alpha as option)  
 Number of detectors 8  
 Detector dimensions 378 x 87.5 x 175.5 mm (14.9 x 3.5 x 6.9 in)  
 Measurement range 15 cps ~ 300 kcps  
 Alarm levels beta 0.3 Bq/cm<sup>2</sup> (8.1 pCi/cm<sup>2</sup>) (continuously)  
 alpha 0.1 Bq/cm<sup>2</sup> (2.7 pCi/cm<sup>2</sup>)  
 Detection limit 0.2 Bq/cm<sup>2</sup> (5.4 pCi/cm<sup>2</sup>)  
 Reference nuclide <sup>137</sup>Cs

### Optional accessories

- Application of radionuclide vectors in sensitivity set-up



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