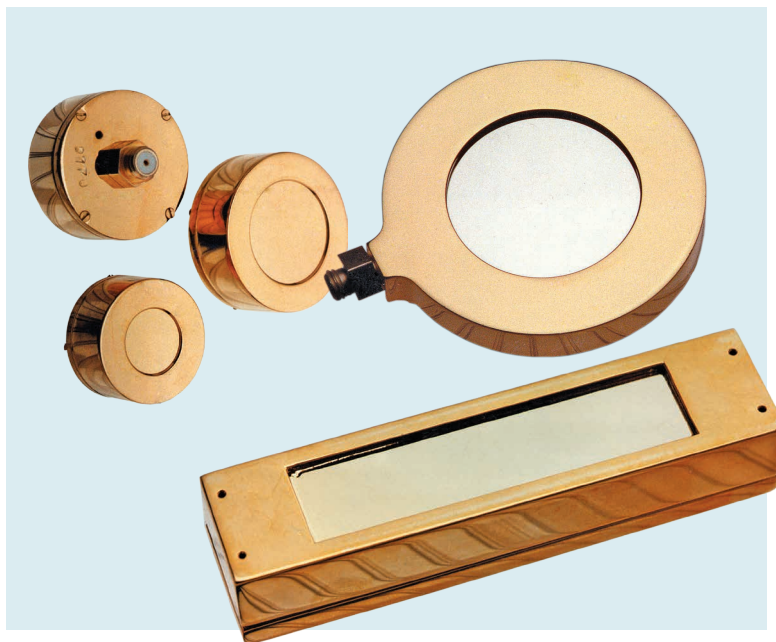




Silicon Lithium (SiLi) detectors for charged particles

Features

- Designed for highly penetrating charged particles
- Up to 3 MeV Betas, 30 MeV protons, 140 MeV Alphas. More if detectors are stacked (LTC/LTR)
- Wide range of active areas
- Both circular and rectangular mount shapes available
- Telescope arrangements with minimized thin Li back contact (LTC/LTR)



Description

Wide range of detector sizes:

- In standard – Active areas from 200 mm² up to 1600 mm²; thickness 5 mm.
- Upon request – Larger active areas (like 2000 mm² circular) or thicknesses up to 10 mm.

Gold front entrance window – Nominal 2000 angstrom equivalent Silicon.

Lithium back contact:

- Typically for LEC/LER energy detectors – 300 μm.
- Typically for LTC/LTR transmission detectors – 50 μm.

Gold plated brass mounts:

- Circular for LEC/LTC detectors.
- Rectangular for LER/LTR detectors.
- The standard dimensions are given below within the table.

In standard, with Microdot female connector located:

- Axially (on the back of the detector) for LEC/LER detector type.
- Radially (on the side of the detector) for LTC/LTR detector type.

Typical delivery 4-6 months for standard designs as given below within the table. All these detectors are built to order. Any special design on request.

Silicon Lithium (SiLi) detectors for charged particles

Specifications

CANBERRA offers Lithium drifted Silicon detectors to address the need for better detection efficiency for high energy charged particles. With standard thicknesses between 2–5 mm (and on request up to 10 mm), these so called Si(Li)'s have better stopping power than common implanted Silicon detectors.

LEC – Lithium Energy Circular

Model N°	Active area (mm ²)	Mount diameter (mm)	FWHM resolution		Active thickness (µm)
			Alpha (keV)	Beta (keV)	
LEC 200-2000	200	28.5	30	25	2000
LEC 200-3000			40	35	3000
LEC 200-4000			40	35	4000
LEC 200-5000			50	45	5000
LEC 300-2000	300	31.5	35	30	2000
LEC 300-3000			40	35	3000
LEC 300-4000			40	35	4000
LEC 300-5000			45	40	5000
LEC 500-2000	500	39.6	40	35	2000
LEC 500-3000			45	40	3000
LEC 500-4000			50	45	4000
LEC 500-5000			55	50	5000

LER – Lithium Energy Rectangular

Model N°	Active area (mm ²)	Mount L x W x H (mm)	FWHM resolution		Active thickness (µm)
			Alpha (keV)	Beta (keV)	
LER 30x10-2000	30 x 10	47 x 22 x 13	35	30	2000
LER 30x10-5000			45	40	5000
LER 50x10-2000	50 x 10	72 x 17.4 x 14	40	35	2000
LER 50x10-5000			55	50	5000
LER 40x40-2000	40 x 40	55 x 53 x 10	100	70	2000

CANBERRA's LEC-LER type Si(Li)s can be used for typical energy measurements, while the transmission Si(Li)s LTC-LTR can be stacked as a telescope arrangement. CANBERRA offers a choice of a circular housing (LEC-LTC) or a rectangular housing (LER-LTR) for standard configurations. All types of CANBERRA Si(Li)s can be operated either under vacuum or atmospheric pressure (see the following page). Segmented Si(Li) detectors can also be provided by CANBERRA – please check a dedicated ESLX-S & LTS specification sheet.

Silicon Lithium (SiLi) detectors for charged particles

LTC – Lithium Transmission Circular

Model N°	Active area (mm ²)	Mount diameter (mm)	FWHM resolution		Active thickness (µm)
			Alpha (keV)	Beta (keV)	
LTC 200-2000	200	34.7	35	30	2000
LTC 200-3000			40	35	3000
LTC 200-4000			45	40	4000
LTC 200-5000			50	45	5000
LTC 300-2000	300	34.7	40	35	2000
LTC 300-3000			45	40	3000
LTC 300-4000			45	40	4000
LTC 300-5000			50	45	5000
LTC 500-2000	500	38.7	45	40	2000
LTC 500-3000			50	45	3000
LTC 500-4000			50	45	4000
LTC 500-5000			55	50	5000

LTR – Lithium Transmission Rectangular

Model N°	Active area (mm ²)	Mount L x W x H (mm)	FWHM resolution		Active thickness (µm)
			Alpha (keV)	Beta (keV)	
LTR 30x10-2000	30 x 10	47 x 22 x 13	40	35	2000
LTR 30x10-5000			50	45	5000
LTR 50x10-2000	50 x 10	72 x 17.4 x 12	45	40	2000
LTR 50x10-5000			55	50	5000
LTR 40x40-2000	40 x 40	55 x 53 x 10	100	70	2000

Measurement Conditions

- With Alpha ²⁴¹Am source (5.486 MeV) under vacuum.
- Beta resolution is approximated by the peak width of a test generator (Model 814FP Pulsar).
- With a CANBERRA charge amplifier (2003BT or 2004 after loading resistor modification [10 M instead of 100 M]).
- Shaping time of 0.5 to 1 µs with CANBERRA amplifier 2025 or 2026.
- At a room temperature of +20 °C, in darkness.
- Special mount design on request.

Operating and storage conditions – For storage temperature higher than 20 °C, please consult factory to avoid Lithium retro-drift.

Operating Conditions

- Temperatures – <+35 °C.
- Humidity – <80%, non condensing.

Ask CANBERRA for special environmental conditions.

Storage Conditions

- Temperatures – <+20 °C.
- Humidity – <80%, non condensing.

For higher storage temperatures, please consult factory to avoid any Lithium retro-drift.

Recommended Preamplifiers

CANBERRA 2003BT or 2004 after loading resistor modification (10 M instead of 100 M).

