

# Low Power Scintillation Probe for (portable) MCA Systems

## FEATURES

- Suitable for X-ray and gamma-ray spectroscopy
- High resolution spectroscopy
- Crystal sizes from 30 x 30 mm (or smaller) up to 152 x 76 mm
- Built-in Ultra stable Cockroft Walton High Voltage Generator
- Built-in Preamplifier and spectroscopic amplifier
- Ruggedised assembly, water and gas tight
- Low power consumption ( 175 mW)
- Designed for easy interfacing with AMPTEK and FAST ComTec MCA's

## DESCRIPTION

The probe consists of a ruggedised construction of a scintillation crystal, a photomultiplier Tube and all associated electronics. All possible type of scintillation crystals can be provided (NaI(Tl), CsI(Tl), BGO etc.). The probe has an internal High Voltage supply based on the Cockroft Walton principle. This ensures stable gain also at high count rates and low power consumption.

The Housing is made of Anodized Aluminum with a thickness of 0.5 mm around the scintillation crystal.

The signals from the photomultiplier Tube are processed with a hybrid low power preamplifier plus a spectroscopic shaping amplifier system; the output pulses can be directly fed into the MCA. The low power consumption make the scintillation probe ideally suited for use with portable, battery operated multi-channel analyzer systems.

## SPECIFICATIONS

Specifications are provided on the standard 30 x 30 mm scintillation crystal size. For larger crystal dimensions, other photomultiplier types and dimensions apply.

**Scintillation crystal:** Standard 30 x 30 mm NaI(Tl) or larger

**Photomultiplier Tube:** 30 mm diameter, fast linear focussed

**High Voltage Generator:** Cockroft Walton type

**High Voltage regulation:** 300 - 1200 V (20 turn screw potentiometer at back of assembly)

**Test point:** Present at back of assembly (1 V = 1 kV)

**Power requirements:** 225 mW

**Electrical connections:** 2-core shielded cable for power supply and signal (3 m). Special connectors optionally available

LEMO Type 00 extra signal connector at back of probe.

**Power supply:** + 5 V - + 7 V (optionally + 12 V - + 15 V)

**Spectroscopy amplifier**

**Output Impedance:** 50 Ohm

**Pulse shape:** Bipolar , 3 us rise time, 3 us fall time

**Maximum output:** + 4.0 V (Factory calibrated for nuclide of interest)

**Energy Resolution:** \* 7.5 % FWHM at 662 keV  
\* 14 % FWHM for 59.5 keV

**HV generator noise:** < 2 keV



NaI detector shown here in a system with a SiPin-, CZT detector and an AMPTEK Rover System