ISIS Neutron Beam Monitor

Scintillator and PMT based beam monitor

Benefits

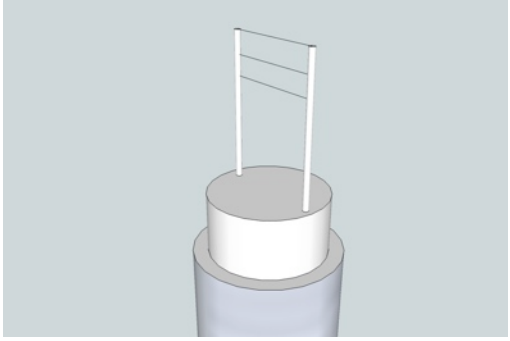
Large Dynamic Range
Less unit to unit variation than H ion chambers
Custom scintillator layouts available
Fast response time

Features

Active Area (Max)	30 X 80 mm^2
Active Area (Min)	10 x 10 mm^2 with 15 scintillator crystals. Fewer crystals, hence lower output configurations are available.
Scintillator Type	GS20 - Alumino-silicate doped with lithium-6 oxide.
Scintillator Cube Size	250µm usually distributed 7mm apart over 40 x 30 mm^2
Efficiency	10^{-4} at 1 Angstrom
Time Resolution	
Dynamic Range	
Max Lifetime (typ)	Up to 5 years in hot environments, e.g. Instrument walls.

These monitors are used for data normalisation and in a diagnostic role to determine correct settings of beam line equipment including choppers, jaw settings and beam line scrappers. More than eighty ISIS Neutron Beam Monitors of this type are in use on ISIS. The majority of the ISIS neutron beam monitors are based on scintillation technology.

The scintillator array is viewed with a 10 stage photomultiplier tube which is screened with a mu metal tube. The photomultiplier tube is connected to an active voltage divider network and a pre amplifier. The monitor is housed in a steel tube to provide further magnetic shielding, The housing is equipped with an aluminium end cap. The end cap is machined to 100 µm in the active area of the beam to minimise neutron scattering.



The ISIS Neutron Beam Monitor is available with an optional discriminator card in NIM format. This unit collects the output from the beam monitor and outputs a NIM Pulse out on LEMO. The discriminator card has been developed alongside the ISIS Neutron Beam Monitor specifically to preserve signal quality and reduce noise. This complete solution to the monitor requirement enables the simplest integration option.

Quantum Detectors Ltd.
info@quantumdetectors.com
Rutherford Appleton Lab, Harwell Oxford, OX11 0QX
+44(0)1235 44 5795