



SCINTILLATOR DETECTOR HEADS

TECHNICAL DATA SHEET



Scintillator Detector Heads

The XDS Oxford scintillator detector heads come in multiple sizes and various configurations that are tailored to meet your individual needs, whether for an individual detector or an array for a multi crystal analyser.

Applications

- Pulse counting applications
- Pulse height analysis applications

Features

- DC coupled, 50Ω input impedance
- Output matched to 50Ω

Options

- Lanthanum Bromide (LaBr₃) or Sodium Iodide (NaI) crystals available
- Standard sizes of Ø30mm or Ø13mm
- Crystal thickness of 2.5mm or 5.0mm
- Companion CP15 pre-amplifier for LaBr₃ or NaI
- Companion C400 or CX1 pulse-counting detector controller

Scintillation Crystals

XDS Oxford offer a range of Sodium Iodide and Lanthanum Bromide Scintillation crystals and thicknesses. The choice of which crystal best suits experimental needs is a balance between count rate and energy resolution.

Crystal	Sodium Iodide (NaI)	Lanthanum Bromide (LaBr ₃)
Primary Decay time (nsec)	250	16
Relative Light output (NaI = 100%)	100	165
Maximum Wavelength Emission (nsec)	415	380

Sodium Iodide Detectors

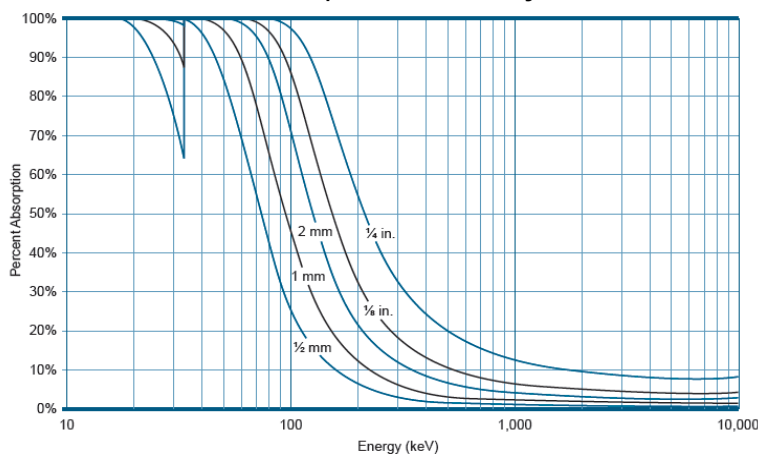
Ø30mm NaI (Ti) Detectors

C30Na25B	2.5mm thick crystal
C30Na50B	5.0mm thick crystal

Ø13mm NaI (Ti) Detectors

C13Na25B	2.5mm thick crystal
C13Na50B	5.0mm thick crystal

Sodium Iodide (Ti) Absorption Efficiency



Lanthanum Bromide Detectors

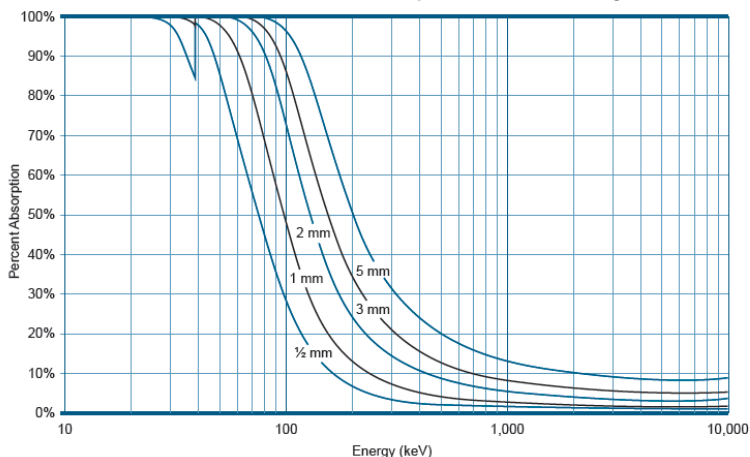
Ø30mm LaBr₃ (Ce) Detectors

C30LaBr25B	2.5mm thick crystal
C30LaBr50B	5.0mm thick crystal

Ø13mm LaBr₃ (Ce) Detectors

C13LaBr25B	2.5mm thick crystal
C13LaBr50B	5.0mm thick crystal

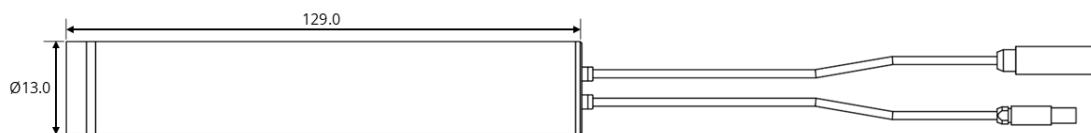
Lanthanum Bromide (Ce) Absorption Efficiency



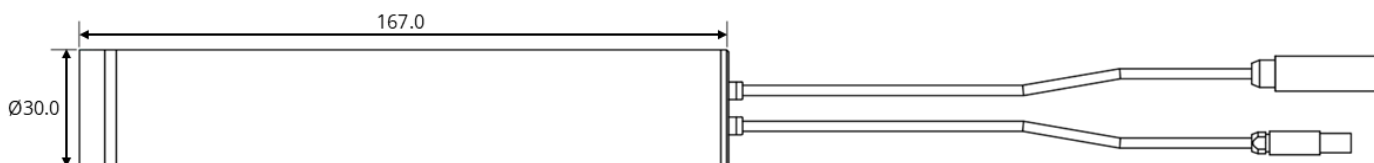
Scintillation Head Sizes

The Scintillation detector heads are available in two standard sizes of Ø30mm and Ø13mm diameter. Custom sizes can be made on request.

C13 Scintillation Detector Head (mm)



C30 Scintillation Detector Head (mm)

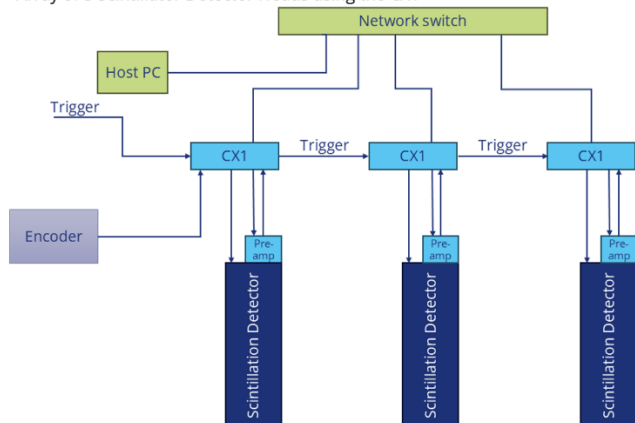


Scintillation Detector Array

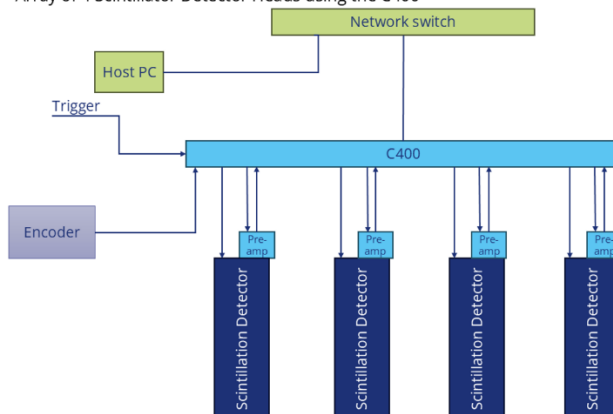
Scintillator Detector Heads can be used singularly or as an array, according to experimental need. There are multiple options available for how to set up an array, depending on the electronics available. A singular detector head requires a CP15 pre-amplifier and a CX1, along with the relevant cables, whereas a large array may be better suited to the Four-Channel C400 Pulse Counting Detector Controller.

Both the CX1 and C400 can be used in series for large arrays of Scintillation Detectors.

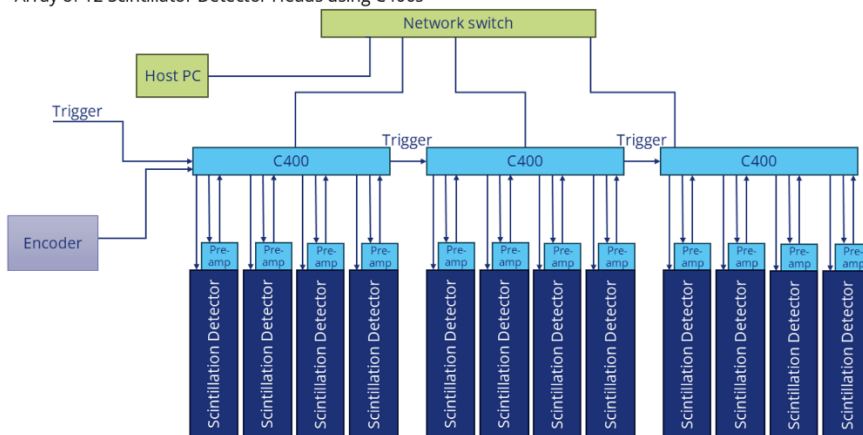
Array of 3 Scintillator Detector Heads using the CX1



Array of 4 Scintillator Detector Heads using the C400



Array of 12 Scintillator Detector Heads using C400s



Scintillator Detector Cabling

The Scintillator Detector Heads come with two inbuilt Coax cables. The Black coax with a Lemo PLG connects to the 'Signal In' connector on the CP15 Pre-amplifier and the Red coax with the SHV SKT connects to the SHV PLG of the Multiway Scintillator to PPU cable.

Multiway Scintillator to Pre-amplifier Cable

This Multiway cable contains a Coax SHV, the Pre-Amp Power and Small Signal Coax cables. The XDS CP15 Pre-amps include series termination at their outputs, so signals can be sent to a high impedance receiver as well as a 50 Ω terminated receiver, although termination at both ends provides the best pulse shape with long cables.

Pre-amplifier Power and Expansion Cable

The pre-amplifier power cable and expansion connector is a screened multi-way cable terminated in 9-pin male D-sub connectors. It is important to avoid injecting noise into wideband pre-amplifiers.

It is recommended that the screen of the Pre-amp Power Cable is connected at both the Pre-amp and the Pulse Processing Unit CX1 end and the pre-amplifier end.

Multiway Scintillator to PPU Cable		Pre-amp Power and Expansion Cable	
Part Number	Signal Cable	Part Number	Signal Cable
WYX31905	Scintillator to PPU Cable 5m	WYX29505	RS232 9 Pin Serial Output Cable 5m
WYX31910	Scintillator to PPU Cable 10m	WYX29510	RS232 9 Pin Serial Output Cable 10m
WYX31915	Scintillator to PPU Cable 15m	WYX29515	RS232 9 Pin Serial Output Cable 15m
WYX31920	Scintillator to PPU Cable 20m	WYX29520	RS232 9 Pin Serial Output Cable 20m



Ordering Information

Part Number	Description
CP15-N	Pre-amplifier suitable for NaI scintillator
CP15-L	Pre-amplifier suitable for LaBr ₃ scintillator
CX1	Single-Channel Pulse Processing Unit
C400-4XN20	Four-Channel Pulse Processing Unit with -2kV auxiliary HV supply

