

PET Detector BDM II User Guide



Technical Parameter

Model	PET Detector BDM II
Power Supply	DC 24V
Rated Power Consumption	<12W
Dimensions	1620×1070×275 mm ³
Weight	930g
Number of Probes	4
Scintillation Crystal	13×13 LYSO array
Detection Area	26.5×106 cm ²
Crystal Dimensions	1.89×1.89×13.0mm ³
Energy Resolution	≤15%@511Kev
Time Resolution	~900ps
Sampling Method	MVT
Max Count Rate	~2.0Mcps
Global Clock Synchronization	Yes
Data Output Method	RJ45 interface (Gigabit Ethernet, UDP protocol)

Working Environment

Operating Temperature	0~+35 C
Storage Temperature	-40~+70 C
Relative Humidity	20%~75%
Atmospheric Pressure	70~110kpa

Important Notices

Ensure the power supply voltage is within the rated range ;
Do not open the product casing without authorization ;
Avoid strong impacts, vibrations, and shocks ;
Protect the product from fire, moisture, corrosion, and strong external electrical shocks.

Package includes

Name	Quantity
BDM II	1
Category 6 Cable	1
Clock Cable	1
Power Cable	1
Clock Board Kit	1



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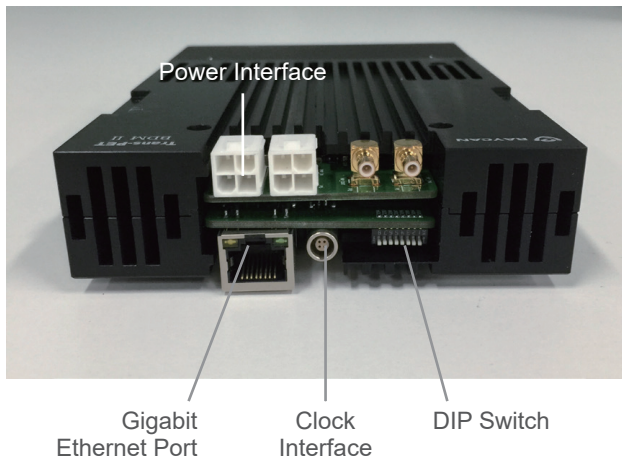


Product Overview

The PET Detector BDM II is a high-resolution, fully digital PET detector designed, developed, and produced by Suzhou Raycan Technology Co., Ltd. The BDM II uses LYSO probes to directly output information on Gamma photon energy, position, and time. Users can quickly build a high-resolution PET system for teaching and research by selecting one or more BDM II detectors.

The PET Detector BDM II employs a new digital method called Multi-Voltage Threshold (MVT) to digitize scintillation pulses. This method outputs digitized information on pulse energy, position, and time. The traditional equal-time interval sampling is upgraded to equal-voltage interval sampling, combined with the prior shape characteristics of the scintillation pulse, to obtain energy, position, and time information. This method is especially suitable for high-speed pulse information acquisition.

Product Illustration



Front-end Probe

The high-performance front-end probe is a compact, high-resolution, fully digital PET detector probe. It uses high-quality LYSO scintillation crystals combined with a new Silicon Photomultiplier (SiPM) to provide rapid response and high resolution. It can effectively detect high-energy X-rays and Gamma photons. Each front-end probe contains 4 individual probes, and each probe consists of a 13×13 LYSO scintillation crystal array, with individual crystal dimensions of $1.89 \times 1.89 \times 13$ mm³. Four such probes provide a total detection area of 26.5×106 mm².

Data Acquisition System

The high-speed scintillation pulse data acquisition system is designed to meet the needs of digitizing scintillation pulses. It offers high efficiency, high performance, and low cost. The core is the MVT sampling method, which provides a digital solution for multi-channel scintillation pulses. The analog scintillation pulse signals from the front-end probe are digitized here and then packaged into network data packets via the UDP protocol and transmitted through the Gigabit Ethernet port to a personal computer for information extraction.

DIP Switch

The DIP switch is used to encode individual BDM units when multiple units are running simultaneously. It uses hexadecimal encoding from low to high bits.

Clock Interface

The PET Detector BDM II global clock interface. The signal level standard is LVDS, and the interface model is LEMO SL520.