

Twilite Three

The MR-compatible blood sampling system



Product Information

SWISSTRACE has updated its high sensitivity blood sampler for PET arterial input function. The twilite three will be available from late summer 2018. The system is ideal for use in conjunction with PET(/CT), PET/MR or beta-probes. It measures the time-course of radioactivity in whole blood with high temporal resolution (native 1 second) in small and large experimental subjects. Coincidence detection ensures that the system is insensitive to background radioactivity in the imaging suite or subject.

The core of the twilite system is a very compact detector head machined from medical grade tungsten, which shields the LYSO crystals from outside radiation and is fully MR compatible (BGO version available on request). The scintillations are conveyed to photomultiplier tubes in the base unit via two flexible, high efficiency, liquid-core light guides. This elegant design is without any electronics or moving parts in the detector head and thus avoids the introduction of MR artifacts due to electromagnetic interference. The blood catheter passes between the LYSO crystals in an uninterrupted loop, minimizing risk in human research experiments and allowing standard sterile Luer-lock items to be used. A large touch-screen on the front-panel serves as the user interface, and also displays the current status and measured values. Sensitivity, linearity and signal-to-noise are best-in-class.

Data acquisition can be performed directly on the twilite three, using the dedicated PMOD module PSAMPLE (www.pmod.com, license for lifetime PSAMPLE use included with twilite three) for post-processing. PSAMPLE may also be used for tethered data acquisition or for simultaneous recording of data from multiple SWISSTRACE devices via a TCP/IP interface. PMOD specializes in PET quantification through kinetic modeling and parametric mapping, fully utilizing the arterial input function captured by the twilite three.

The founders of SWISSTRACE have a long-standing experience in quantitative PET in human and small animal research, allowing us to provide detailed application training (including small animal surgical techniques) as part of all installations. Compatibility has been proven for clinical PET/CT and PET/MR from major vendors and for a wide range of small animal systems. If used with an arterio-venous shunt in small animals, the twilite allows the measurement of the whole blood arterial input function without any blood loss.

Specifications

Sensor head	Dimensions	80 × 62 × 56 mm (L × W × H). Approx. 5 kg
	Material	Machined from solid Inermet (TM) tungsten
	Scintillator	LYSO
	Connection	Via flexible liquid-core light guides, minimum length 2m, PET/MR configuration 5 m & 8 m pairs with optical couplers
Base unit	Ergonomic case containing photomultiplier tubes and acquisition electronics	
	Stand-alone operation possible for system check	
	Internal data storage (FTP retrieval)	
Data acquisition	Software	PMOD, PSAMPLE module
	System requirements	64-bit OS (Windows 7-10, MacOSX, Linux)
	Interface	TCP/IP



Partners

π.pmod



University of
Zurich ^{UZH}

unitectra

swisstrace GmbH

Eustrasse 34
6313 Menzingen
Switzerland

++41 79 639 59 29
info@swisstrace.ch
www.swisstrace.ch