

Synthra HCNplus (Catalog No. 012)

Synthra HCNplus is a flexible and completely automated synthesis system for routine production of [^{11}C]HCN generated by gas-phase synthesis with additional labeling possibilities and radio-HPLC purification and SPE separation and formulation setup for the desired tracer production. With easy-to-use configuration software SynthraView, the Synthra HCNplus module offers both fully automatic and manual modes of operation.

Gas Phase Capabilities

- ✓ High specific activities are achieved from in-target produced [^{11}C]CO₂ ranging from 5 Ci/ μmol to 30 Ci/ μmol .

The [^{11}C]CO₂ produced in target is quantitatively trapped in the stainless steel capillary tubing at -180 °C and converted to [^{11}C]CH₄ by reduction on a Ni-catalyst. Subsequently, the [^{11}C]CH₄ is trapped in the CH₄ trap at -120 °C on Carboxen® and unreacted hydrogen is removed from the system. In a successive gas phase reaction, the [^{11}C]methane is converted into [^{11}C]HCN with anhydrous ammonia on a platinum catalyst at 950 °C and can be used for further synthesis.

[^{11}C] Labeling Possibilities

- ✓ **[^{11}C]HCN production:** [^{11}C]HCN is ready for release after only 5 min starting from trapping the [^{11}C]CO₂. The possible yield is better than 70 %.
 - Up to 50 sequential HCN preparations are possible from a single box set-up.

General Features

- ✓ **Heating and cooling capabilities**
 - Six heating zones
 - Four with cooling capabilities
 - Temperature range: -196 °C – 950 °C
- ✓ **Detectors and controllers**
 - Six shielded radiation detectors
 - Four electronic flow controllers
 - Three pressure sensors
- ✓ **Self-Cleaning System**
- ✓ **Dispensers and valves**
 - HR-dispenser (up to 50.000 steps, 2.5/5 mL)



- HPLC pneumatic injection valve (1.5 mL sample loop)
- Built-in preparative Radio/UV-HPLC system (0 – 40 mL/min) for product separation and fixed wavelength LED detector with 255 nm or 280 nm
- Five spare valves for customization
- Chemically inert valves with small dead volume < 35 μL , 5 bar rated

- ✓ **Dimensions** (w x d x h): 55 x 50 x 48 cm

- ✓ **Weight:** approx. 40 kg

Synthesis Features

- ✓ **Two closed 3 mL reaction vessels** with integrated cooling (-196 °C – 200 °C) to reduce synthesis time (min. volume: 50 μl)
- ✓ **Ten reagent vials**
 - Three small (1 – 3 mL) and seven large (10 – 15 mL) volume glass vials for reagents

Additional Synthesis Options

- ➔ **[^{11}C]CO** (Catalog No. 003co): After purification, the [^{11}C]CO₂ is released into the column oven for Zn- or Mo-catalyzed reduction to [^{11}C]CO.

Synthra C-11 Family

Product Description and Technical Specifications

synthra



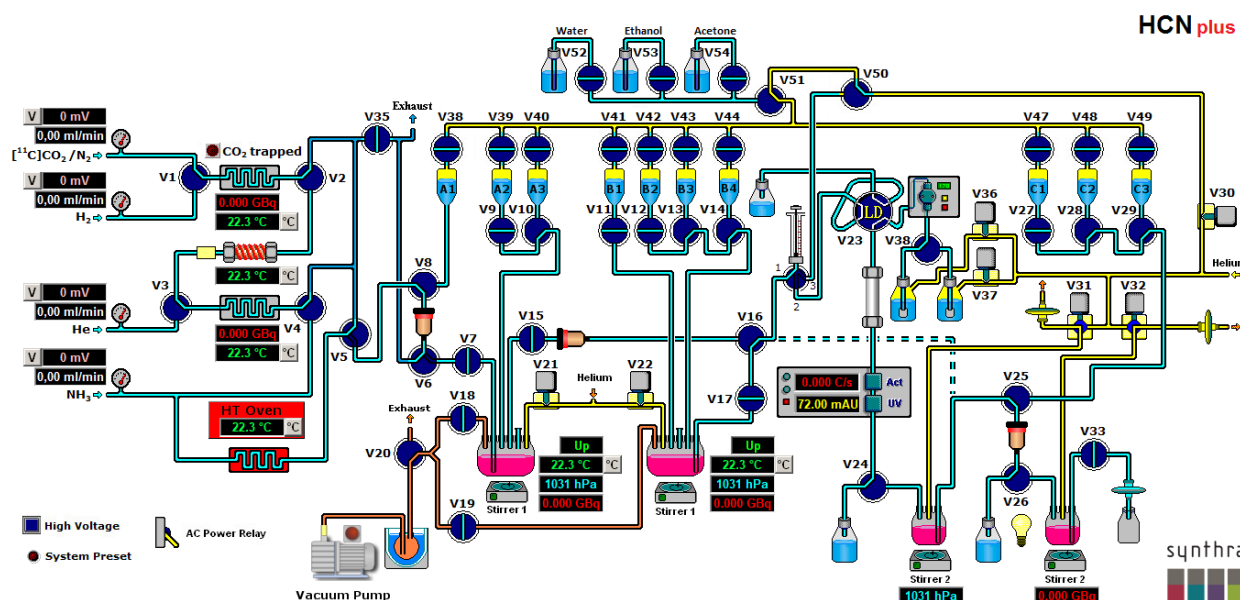
- **Product solvent evaporator** (Catalog No. 000pse)
- **Variable wavelength UV/VIS detector** (Catalog No. 000vuv)
- **Quaternary gradient pump** (Catalog No. 000qgp)

Terminal Control

- ✓ A laptop (Win 10 Pro) with preinstalled controlling software SynthraView is included
- ✓ Four digital inputs for communication with external devices upon request

GMP Features

- ✓ Synthesis files for [¹¹C]HCN and several [¹¹C]radiotracers available
- ✓ **GMP/GLP compliant.** Electronic control and data collection (27/18 channels)
- ✓ **21CFRpart11 & LIMS** compatible



The Graphical User Interface (GUI) of the SynthraView software.