

1. Synthesis module

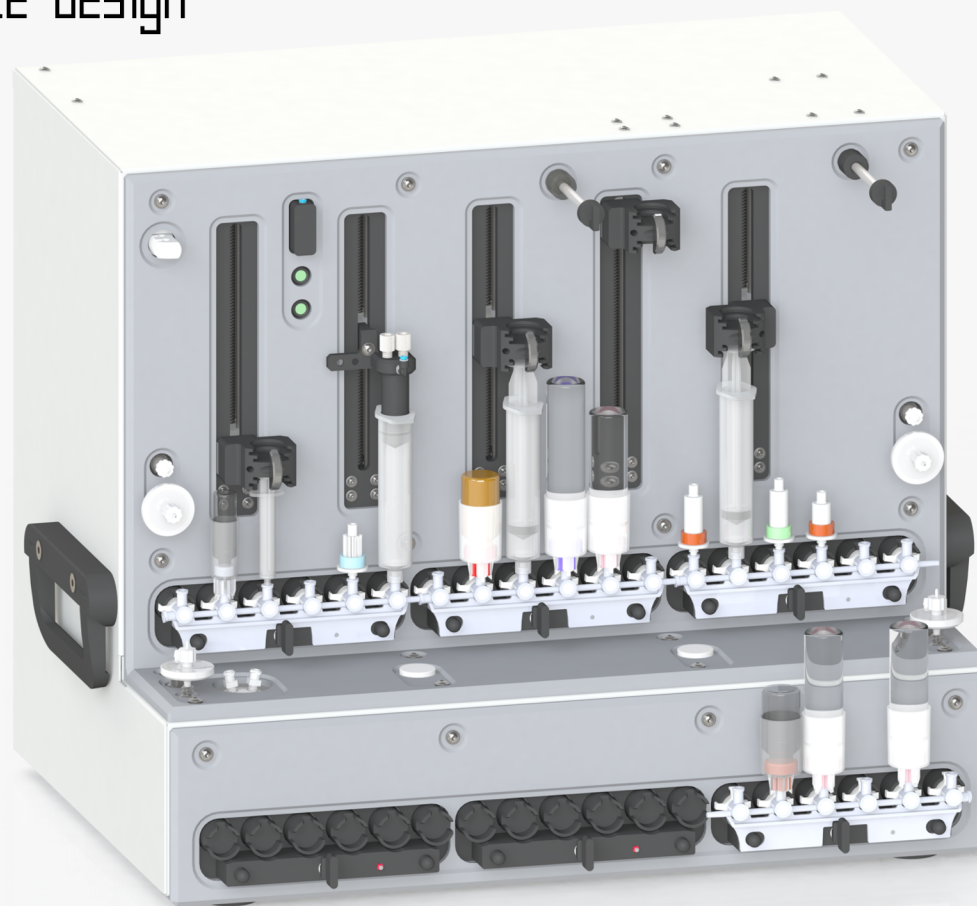
The device has been developed by taking into account current needs for advanced routine production of radiopharmaceuticals (RPs).

The module is supplied with technologies for synthesis of the most demanded RPs labeled with Fluorine-18. An open software platform and a modifiable flow distribution system allow users to develop their own RP synthesis technologies.

The list of available RP synthesis technologies is constantly updated.

Radiopharmaceutical	Yield NDC, %	Clinical use
[¹⁸ F]FDG	>65	tumors of various localization, neurodegenerative diseases of the brain
[¹⁸ F]FDG dual		
[¹⁸ F]PSMA-1007	>35	prostate cancer
[¹⁸ F]FET	>20	brain tumors
[¹⁸ F]MISO	>15	assessment of hypoxia of tumors of various localization
[¹⁸ F]NaF	>90	tumors of the bone system and metastatic skeletal lesions
[⁶⁸ Ga]PSMA-617	>70	prostate cancer, including assessment of sensitivity to radionuclide therapy
[⁶⁸ Ga]PSMA-11		neuroendocrine tumors, including assessment of sensitivity to radionuclide therapy
[⁶⁸ Ga]DOTA-TATE		
[⁶⁸ Ga]DOTA-NOC		
[⁶⁸ Ga]FAPI-4	tumors of various localization (inhibitor of fibroblast activation factor)	
[¹⁷⁷ Lu/ ²²⁵ Ac]DOTA-TATE	>85	therapy of generalized neuroendocrine tumors of various localization
[¹⁷⁷ Lu/ ²²⁵ Ac]PSMA-617		therapy of generalized castration-resistant prostate cancer

2. Device design



Parameters	Value
general parameters	
dimensions	525*443*405 mm (w*h*d)
weight	up to 30.2 kg
components	
rotary valve actuator	up to 6, 6 valves in each block, autocalibration
syringe pumps	up to 5, 0.1-10 ml/min, autocalibration
reaction unit	2, heating rate 0.7°C/sec, up to 150°C, cooling rate 0.5°C/sec
digital gas regulator	1, 10-500 ml/min
sensors	up to 6 radioactivity, 2 pressure, 2 temperature

Parameters	Value
connections	
inert gas	inlet 1.5 bar (1/8" tube)
	outlet (1/8" tube)
	outlet (1/8" tube)
compressed air	inlet 6-8 bar (6 mm tube) outlet 6-8 bar (6 mm tube)
power supply	800 W, 220 VAC (C13 connector)
control	Ethernet (8p8c connector)
wetted surfaces	
cassette	PP / PP (rotor / base)
reaction vessel	simax
reagent vials	PE, simax
tubes	silicone
fittings, adapters	PE

3. Software

Software features:

- automatic and manual control;
- editing of the synthesis and purification timelists by user, that allows application of the device for RP development;
- addition of actuating and measuring components by user;
- setup and calibration of the device by user;
- registration of synthesis parameters;
- generation of reports on device operation.

The software is unified for the entire device product line for user convenience.

4. General information

The reagent distribution subsystem is based on the use of two blocks of rotary valves (a total of 12 valves). The liquid transfer lines are all fully disposable (blocks of rotary valves, reaction vessel, transfer lines and connections).

The integrated control system allows avoiding the use of otherwise bulky external control units.

Module features:

- possibility to use embedded as well as user developed synthesis technologies;
- flexible multifunctional software;
- automatic and manual operation modes;
- compact size and light weight;
- low operating costs.

More detailed information at Gerat13.com.

Opti-Synt 18+18
rev. 1.0

