

Biotage® Initiator+

Installation and Safety



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Installation

Warning

- » Follow regional safety practices when handling and moving shipping boxes and containers, and moving the system.
- » Observe general and specific safety regulations for the use of the system and its accessories and consumables at all times, in order to reduce the risk of personal injury, fire, and explosion; see "Warning Summary" on page 11.

Notice: All Biotage® Initiator+ systems must be unpacked and installed by an authorized Biotage service engineer.

Note: We recommend that the boxes and packing materials are kept by the customer in case the system needs to be returned for service or moved to another location.

Download Biotage® Initiator+ User Documentation

The following user documentation can be downloaded at www.biotage.com:

- » Biotage® Initiator+ Installation and Safety, P/N 355976 (this document)
- » Biotage® Initiator+ Safety Translations, P/N 355977
- » Biotage® Initiator+ Getting Started Guide for Organic Synthesis, P/N 355975
- » Biotage® Initiator+ SP Wave Getting Started Guide for Peptide Synthesis, P/N 356071
- » Biotage® Initiator+ Alstra™ Getting Started Guide for Peptide Synthesis, P/N 356230
- » Biotage® Initiator+ Alstra™ Quick Guide, P/N 356231
- » Release Notes

If you have problems downloading the user documentation, please contact your local Biotage representative. See contact information on the back of this document or visit our website www.biotage.com.

Software License Agreement

Biotage Sweden AB licenses the Initiator+ software to you only upon the acceptance of all of the terms and conditions in the software license agreement. By using the software, you consent to be bound by and are becoming a party to that agreement.

A hard copy of the software license agreement is supplied with Biotage® Initiator+ and Biotage® Initiator+ SP Wave systems. Biotage® Initiator+ Alstra™ customers can either request a copy

from their local Biotage representative before the installation or read it on their system:

1. Turn on the system using the power switch located underneath the touch screen.
2. Once the main menu appears, press **About**.
3. In the **About** dialog, select the **License** tab.

Site Requirements

Before the system is installed by an authorized Biotage service engineer, the installation site should be prepared as follows:

Fume Hood The system must be placed in a well-ventilated fume hood or an equivalent enclosure to reduce the risk of exposure to harmful gases from the reaction in progress e.g. in case of a vial breakage or leakage.

The fume hood must be able to support the weight of the system:

- » Initiator+: 21 kg (46.3 lbs)
- » Initiator+ Eight: 28 kg (61.7 lbs)
- » Initiator+ Sixty: 34 kg (75 lbs)
- » Initiator+ SP Wave: 33 kg (72.7 lbs)
- » Initiator+ Alstra: 42 kg (92.6 lbs)

The dimensions of the system are (W x D x H):

- » Initiator+: 365 x 422 x 421 mm (14.4" x 16.6" x 16.6")
- » Initiator+ Eight: 400 x 500 x 580 mm (15.7" x 19.7" x 22.8")
- » Initiator+ Sixty: 625 x 422 x 470 mm (24.6" x 16.6" x 18.5")
- » Initiator+ SP Wave: 400 x 500 x 685 mm (15.7" x 19.7" x 27.0")
- » Initiator+ Alstra: 640 x 430 x 640 mm (25.2" x 16.9" x 25.2")

Operating Temperature 18°C to 32°C (64.4°F to 89.6°F)

Ambient Air The system must be located in an area where the ambient air is clean and dry. No emission of solid particles or smoke in the air by adjacent equipment is allowed. The level of dust and humidity should be comparable to that of normal laboratory spaces.

Humidity: 20% to 95% at room temperature

Electrical Supply	100 to 127 VAC, 50/60 Hz or 220 to 240 VAC, 50/60 Hz See the label at the rear of the system. Connect only to a grounded outlet.
Cooling (Only for Organic Synthesis)	Pressurized air supply: > 60 L/min (> 2.1 cubic feet/min), 2.5 to 4.0 bar (0.25 to 0.40 MPa; 36 to 58 PSI) When running in organic synthesis mode, the system must be connected to a supply of dry pressurized air. If the air contains liquids, the microwave reaction vial may break during cooling and contents may erupt, possibly resulting in personal injury and loss of materials.
Inert Gas (Only for Peptide Synthesis)	Initiator+ SP Wave: Approx. 2 L/min (0.07 cubic feet/min), 0.5 bar (0.05 MPa; 7.25 PSI) Initiator+ Alstra (microwave cavity): Approx. 2 L/min (0.07 cubic feet/min), 0.5 bar (0.05 MPa; 7.25 PSI) Initiator+ Alstra (manifold option): Approx. 4 L/min (0.14 cubic feet/min), 0.5 bar (0.05 MPa; 7.25 PSI) Note: It is optional to connect the system to an inert gas supply.
Vacuum (Only for Peptide Synthesis)	Partial pressure range: 100 to 300 mbar (10 to 30 kPa; 1.5 to 4.4 PSI) Recommended partial pressure: 100 mbar (10 kPa; 1.5 PSI) Flow rate: 11 L/min (0.39 cubic feet/min) In order to protect the vacuum system, we recommend that a scrubber bottle is used to stop volatiles and condensation from entering and damaging the vacuum system. For more information, see the getting started guide for peptide synthesis supplied with the system.
External Fire Protection	External fire protection should be installed according to local regulations for equipment operating unattended.

Move a Biotage® Initiator+ System

Warning

- » Before moving the system, please read and observe the safety requirements in "Warning Summary" on page 11.

If you need to move the system within the laboratory or between laboratories in the same building, follow the instructions below. If you need to ship the system, please contact Biotage® 1-Point Support™ for instructions.

To move the system:

1. Prepare the new site according to the site requirements above.
2. If using an Initiator+ Alstra system:
 - a. Clean the liquid path as described in "Monthly Cleaning of the Liquid Path" in the getting started guide for peptide synthesis supplied with the system.

- b. Empty the system of liquids by priming it with air:
 - i. Remove the solvent inlets from their bottles.
 - ii. Ensure that the vacuum is switched on.
 - iii. Press **Menu** and select **Maintenance** in the appearing menu.
 - iv. Start the prime by pressing **Prime All**.
 - c. Turn off the vacuum pump, or if using an external vacuum system, close the valve.
 - d. Release the pressure:
 - i. Press **Menu** and select **Maintenance** in the appearing menu.
 - ii. Press **Empty Wash Station** repeatedly until equilibrium is achieved.
 - e. Empty the waste reservoir and the scrubber bottle (if used).
3. If using an Initiator+ SP Wave system:
 - a. Clean the liquid path as described in the getting started guide for peptide synthesis supplied with the system.
 - b. Empty the system of liquids by priming it with air:
 - i. Remove the solvent inlet from its bottle.
 - ii. Ensure that the vacuum is switched on.
 - iii. Select the **Maintenance** tab in the right-hand panel.
 - iv. Open the **Prime** task by pressing it.
 - v. Start the prime by pressing **Run**.
 - c. Turn off the vacuum pump, or if using an external vacuum system, close the valve.
 - d. Release the pressure:
 - i. Select the **Maintenance** tab in the right-hand panel.
 - ii. Open the **Empty wash station** task by pressing it.
 - iii. Release the pressure by pressing **Run**.
 - iv. Repeat steps ii through iii until equilibrium is achieved.
 - e. Empty the waste reservoir and the scrubber bottle (if used).
 4. When the system is not processing, shut it down:
 - a. Press **Main Menu/Log Out** in the right-hand panel or, if using an Initiator+ Alstra system in peptide synthesis mode, press **Menu** and select **Main Menu** in the appearing menu.
 - b. In the main menu, press **Shut Down**.
 5. When the message saying that it is safe to turn off the system appears on the touch screen, turn off the system. The mains switch is at the front of the system.
 6. Unplug the power cord from the power outlet.
 7. Disconnect any cables/external equipment connected to the **ETHERNET 1**, **DVI** (only available on some systems),

- VGA** (only available on some systems), and/or **USB** ports at the rear of the system.
8. Disconnect any external equipment connected to the USB port at the front of the system.
 9. If connected, disconnect the pressurized air supply from the pressurized air inlet at the rear of the system (above the power inlet).
 10. If using an Initiator+ Alstra system:
 - a. Remove and empty the waste tray located below the microwave cavity.
 - b. Disconnect the waste tubing from the **WASTE** port at the rear of the Alstra module.
 - c. Disconnect the solvent inlet tubes from the **S1**, **S2** and **S3** ports on the right side of the Alstra module.
 - d. If connected, disconnect the inert gas supply from the **N2 IN** port at the rear of the Alstra module.
 11. If using an Initiator+ SP Wave system:
 - a. Disconnect the waste tubing from the **VAC** port on the right side of the SP Wave module.
 - b. Disconnect the solvent inlet tube from the **SYSTEM SOLVENT IN** port at the rear of the SP Wave module.
 - c. If connected, disconnect the inert gas supply from the **N2** port at the rear of the SP Wave module.
 12. Carefully lift the system by the base plate and place it on a trolley. Note that the weight of a system is between 21 kg and 42 kg depending on the system model; see the technical specification on page 7. Two or more persons are needed when lifting the system. Follow regional safety practices when lifting the system.
- To set up the system at the new location:**
13. Move the trolley and the rest of the equipment to the new location.
 14. Carefully lift the system by the base plate and place it in a well-ventilated fume hood or an equivalent enclosure. Place the system so that the mains switch is easy to access. Two or more persons are needed when lifting the system. Follow regional safety practices when lifting the system.
 15. Level the system by adjusting the height of the feet.
 16. Connect a pressurized air supply to the pressurized air inlet. Note that a system does not have to be connected to a pressurized air supply when running in peptide synthesis mode.
 17. If you wish to connect the system to your network, connect a shielded TP cable to the **ETHERNET 1** port.
 18. If you wish to connect a mouse and an external screen, connect the mouse to one of the **USB** ports at the rear of the system and the screen to the **DVI** or **VGA** port (depending on which port your system is equipped with).

19. If using an Initiator+ Alstra system:
 - a. Connect a waste reservoir to the **WASTE** port at the rear of the Alstra module.
 - b. Connect vacuum to the waste reservoir. In order to protect the vacuum system, we recommend that a scrubber bottle is used to stop volatiles and condensation from entering and damaging the vacuum system. For more information, see the getting started guide for peptide synthesis supplied with the system.
 - c. Connect the solvent inlet tubes to the **S1**, **S2** and **S3** ports on the right side of the Alstra module.

Note: Always assign solvents to the S1 and S2 bottles.

Note: As the needle used for S2 and S3 is cleaned after each dispensation using the solvent in the S2 bottle, the S2 solvent has to be compatible with the S3 liquid, e.g. do not use DCM in S2 when using piperidine in S3.

Note: Assign activators, bases, and miscellaneous reagents, if used, to bottle S3 (normally 20% piperidine in DMF).
 - d. If using inert gas (optional), connect an inert gas supply to the **N2 IN** port at the rear of the Alstra module.
 - e. Position the waste tray underneath the microwave cavity.
20. If using an Initiator+ SP Wave system:
 - a. Connect a waste reservoir to the **VAC** port on the right side of the SP Wave module.
 - b. Connect vacuum to the waste reservoir. In order to protect the vacuum system, we recommend that a scrubber bottle is used to stop volatiles and condensation from entering and damaging the vacuum system. For more information, see the getting started guide for peptide synthesis supplied with the system.
 - c. Connect the solvent inlet tube to the **SYSTEM SOLVENT IN** port at the rear of the SP Wave module.
 - d. If using inert gas (optional), connect an inert gas supply to the **N2** port at the rear of the SP Wave module.
21. Connect the system to a grounded (earthed) power outlet with the correct mains voltage and frequency.
22. Ensure that the power cord and any cables, hoses, and tubing connected to the system cannot come in contact with water or chemicals. Corrosives and solvents can degrade the cord/cable insulation and dissolve the hoses and tubing. There is a risk of electric shock, fire, and/or equipment damage.
23. Turn on the system. The mains switch is at the front of the system.

To add user accounts, change system settings, and configure a network connection:

1. Log into system mode:
 - a. Press **System**. All system owner accounts are listed in the **Select User** dialog.
 - b. Select your user account and press **OK**.
 - c. If your account is password-protected, the **Input Password** dialog opens. Enter the password and press **OK**.

Note: A system owner account with the password “1234” was created at the factory. If this account is still used with the factory password, we recommend that the password is changed (select the account at the **Manage Users** tab and press **Edit**).

2. To add user accounts to the system:
 - a. Select the **Manage Users** tab and press **New**. The **User Editor** opens.
 - b. Press the **Name** text box and enter the user name.
 - c. To password protect a user account with system owner privilege, press the **Password** text box and enter the password.
 - d. With the system connected and configured to your network (see step 4 below), it is possible to allow the user to request an e-mail when an experiment has been completed and when user intervention is required during a peptide synthesis on an Initiator+ Alstra system, e.g. when a solvent needs to be replenished or a sample of the resin is scheduled to be removed. To enter the user's e-mail address, press the **E-mail** text box.
 - e. Press the **Roles** text box and select the user privilege:
 - » To give the user chemist privilege, press **Chemist**. The chemist privilege gives the user access to synthesis mode, i.e. the user can set up and run experiments, and view and manage experiment results.

Note: With Initiator+ Alstra systems, you do not have to set up a user to be able to set up and run peptide synthesis experiments but by doing so you have the possibility to have a default amino acid palette, get e-mail notifications, and have your name in the experiment results.

 - » To give the user system owner privilege, press **System owner**. The system owner privilege gives the user access to system mode, i.e. the user can change system settings, manage users, configure a network connection, save logs on a USB memory device, calibrate the robot (if available), etc. It is possible to password protect a user account with system owner privilege; see step c.
 - f. To save the new user account, press **Save**.

3. If you have connected a mouse, select the **General** tab and turn on the mouse pointer by pressing **On** in the **Mouse Setting** field.
4. If you have connected the system to your network (see step 17 on page 3), select the **Network Configuration** tab and enter the network parameters:
 - a. Select the network type by pressing **Dynamic** or **Static** and edit the network parameters in the **Network** field. To save changes, press **Save**.
 - b. To be able to print organic synthesis reports to a network printer with postscript support:
 - i. Enter the correct **Printer IP Address** and **Port** by pressing the corresponding text box. Note that only printers with postscript support can be used with the system.
 - ii. Select the paper size by pressing the **Paper Size** text box repeatedly until the desired format is displayed.
 - iii. To test the connection, press **Print Test Page**. If a test page is printed, the connection is working properly.

Note: This feature is not available on an Initiator+ Alstra system when in peptide synthesis mode.
 - c. To be able to allow users (with an e-mail address defined in their user accounts) to receive an e-mail when an experiment has been completed and when user intervention is required during a peptide synthesis, e.g. when a solvent needs to be replenished or a sample of the resin is scheduled to be removed:
 - i. Press the **Outgoing Mail Server (SMTP)** text box and enter the mail server address.
 - ii. Select the **Sender address when instrument is sending mail notifications** text box and enter the e-mail address that you want to be the sender of the e-mail notifications.

For more information, contact your IT administrator.

5. For any new network configurations to take effect, restart the system:
 - a. Press **Log Out/Main Menu** and then **Shut Down**.
 - b. When the message saying that it is safe to turn off the system appears on the touch screen, turn off the system.
 - c. Turn on the system.
6. If running in organic synthesis mode, perform a reference run as described on page 7.

Connections

Biotage® Initiator+

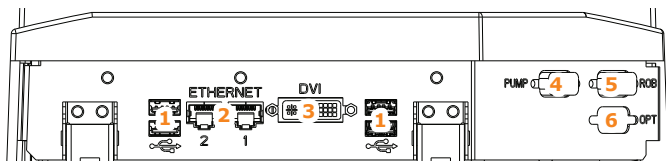


Figure 1. Top connections at the rear of the Initiator+ system.

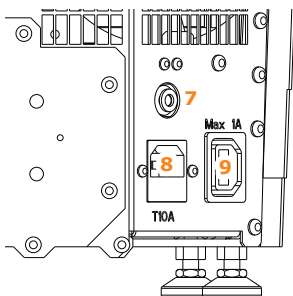


Figure 2. Bottom connections at the rear of the Initiator+ systems.

Port	Label	Connect
1		Mouse (optional). Note that the top right USB port (blue) is 3.0 and the rest are 2.0.
2	ETHERNET	Network (optional). Note that only the ETHERNET 1 port can be used.
3	DVI	External screen (optional).
4	PUMP	SP Wave module (optional) or Alstra module.
5	ROB	Robot (if installed).
6	OPT	Only used by Biotage service engineer.
7		Pressurized air supply: > 60 L/min (2.1 cubic feet/min), 2.5 to 4.0 bar (0.25 to 0.40 MPa; 36 to 58 PSI).
8	T10A (T8A on older units)	Electrical supply: 100 to 127 VAC, 50/60 Hz or 220 to 240 VAC, 50/60 Hz. Fuses: T10A or T8A depending on the system version; see the label. 2 required. Connect only to a grounded outlet.
9	Max 1A	Electrical supply for Robot or SP Wave module (optional).

Biotage® SP Wave Module

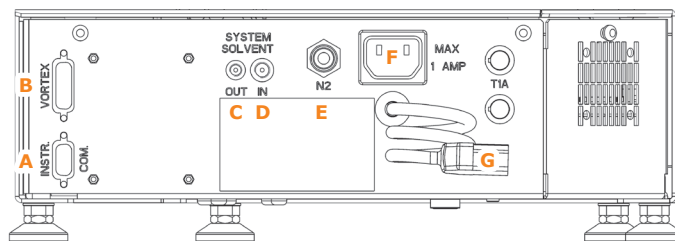


Figure 3. Connections at the rear of the SP Wave module.

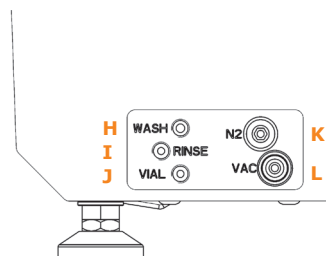


Figure 4. Connections on the right side of the SP Wave module.

Port	Label	Connect
A	INSTR. COM.	Initiator+ (connect to the PUMP port; see Figure 1).
B	VORTEX	Vortex unit.
C	SYSTEM SOLVENT OUT	Needle.
D	SYSTEM SOLVENT IN	System solvent bottle (S4).
E	N2	Inert gas supply (optional): approx. 2 L/min (0.07 cubic feet/min), 0.5 bar (0.05 MPa; 7.25 PSI).
F	MAX 1 AMP	Biotage® Robot Eight.
G		Initiator+ (connect to port 7; see Figure 2).
H	WASH	Needle wash station.
I	RINSE	Only used for maintenance of drain valves.
J	VIAL	Vortex unit (for emptying reactor vial).
K	N2	Inert gas to the microwave cavity (optional).
L	VAC	Waste reservoir with vacuum.

Biotage® Alstra Module

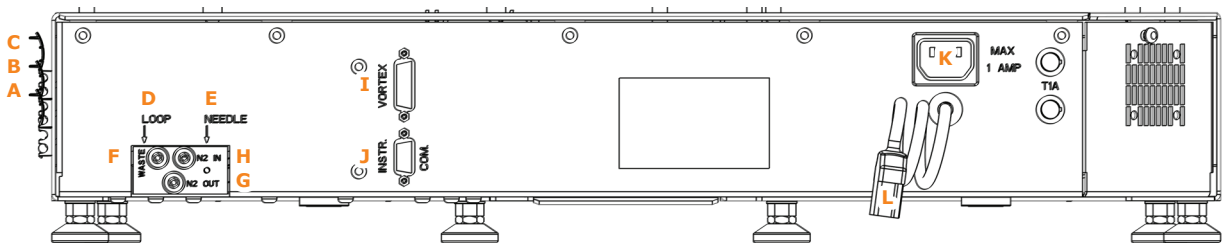


Figure 5. Connections at the rear and right side of the Alstra module.

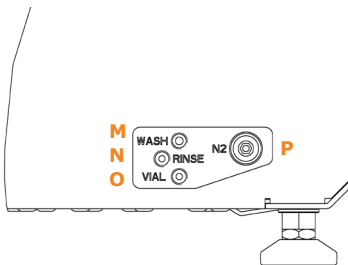


Figure 6. Connections on the front inside right of the Alstra module.

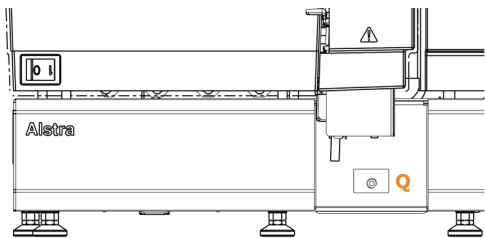


Figure 7. Connections on the front of the Alstra module.

Port	Label	Connect
A	S1	Solvent bottle S1.
B	S2	Solvent bottle S2.
C	S3	Solvent bottle S3.
D	LOOP	Sample loop and needle for dispensing system solvent S1 and liquids on the rack.
E	NEEDLE	Needle for dispensing solvent S2 and S3.
F	WASTE	Waste reservoir with vacuum.
G	N2 OUT	Inert gas connector to the inert gas manifold (optional).
H	N2 IN	Inert gas supply to the microwave cavity and inert gas manifold (if installed): approx. 4 L/min (0.14 cubic feet/min), 0.5 bar (0.05 MPa; 7.25 PSI).

Port	Label	Connect
I	VORTEX	Oscillating mixing unit.
J	INSTR. COM.	Initiator+ (connect to the PUMP port; see Figure 1).
K	MAX 1 AMP	Robot.
L		Initiator+ (connect to port 7; see Figure 2).
M	WASH	Needle wash station.
N	RINSE	Only used for maintenance of drain valves.
O	VIAL	Oscillating mixing unit (for emptying reactor vial).
P	N2	Inert gas outlet to the microwave cavity.
Q		UV detector (optional).

Perform a Reference Run

A reference run should be performed when it is required to check the accuracy of the temperature and/or pressure readings, e.g. after the microwave cavity and IR-sensor have been cleaned due to a vial breakage or leakage.

Note: If using a Biotage® Initiator+ SP Wave system or a Biotage® Initiator+ Alstra system in peptide synthesis mode, it is neither necessary nor possible to perform a reference run.

To perform a reference run:

1. Press **System** in the main menu to log into system mode. All user accounts with system owner privilege are listed in the **Select User** dialog.
2. Select your user account and press **OK**.
3. If your account is password-protected, the **Password** dialog opens. Enter the password and press **OK**.
4. Select the **Reference Run** tab.
5. Read and follow the instructions provided on the screen.

If the reference run fails, clean the IR-sensor as described in the getting started guide for organic synthesis (supplied with the system) and rerun the reference run. If this does not solve the problem, please export a run log (press **Export to USB**) and contact Biotage 1-Point Support. See the back of this document or visit www.biotage.com for contact information.

Upgrade the Biotage® Initiator+ Software

Please refer to the instructions delivered with the new software.

Upgrade to Biotage® Initiator+ SP Wave

An Initiator+ system can be upgraded to an Initiator+ SP Wave system to run peptide as well as organic synthesis using microwaves. For more information, please contact your local Biotage representative. See contact information on the back of this document or visit our website www.biotage.com.

Technical Specification

Heating Process

Temperature Range	Organic synthesis: 40°C to 300°C
	Peptide synthesis*: 40°C to 100°C
	Note: Biotage® Microwave Reaction Vials 10–20 mL may not be used at temperatures above 250°C.
Temperature increase	Typically 2°C/sec to 5°C/sec depending on solvent and power applied.
Reaction Time	Organic synthesis: Up to 96 hours. Typically, most reactions require 2 to 15 minutes of irradiation.
	Peptide synthesis*: Up to 24 hours. Typically, most reactions require 5 to 30 minutes of irradiation.

Pressure Range	Organic synthesis: 0 to 30 bar (3 MPa; 435 PSI)
	Peptide synthesis*: Run at atmospheric pressure
	Note: Biotage Microwave Reaction Vials 10–20 mL may not be used at pressures above 20 bar.
Power Range	Organic synthesis: 0 to 400 W from magnetron at 2.45 GHz
	Peptide synthesis*: 0 to 120 W from magnetron at 2.45 GHz
Reaction Volumes	Organic synthesis: 0.2 to 20 mL in microwave reaction vials
	Peptide synthesis*:
	Initiator+ SP Wave: 0.8 to 6.4 mL in reactor vials Initiator+ Alstra: 0.6 to 20 mL in reactor vials
Agitation	Organic synthesis: Magnetic stirrer (300 to 900 rpm)
	Peptide synthesis*:
	Initiator+ SP Wave: Vortex unit (500 to 1300 rpm) Initiator+ Alstra: Oscillating mixing unit (600 rpm)
Inert Gas (Only for Peptide Synthesis*)	Initiator+ SP Wave: Approx. 2 L/min (0.07 cubic feet/min), 0.5 bar (0.05 MPa; 7.25 PSI)
	Initiator+ Alstra (microwave cavity): Approx. 2 L/min (0.07 cubic feet/min), 0.5 bar (0.05 MPa; 7.25 PSI)
	Initiator+ Alstra (manifold option): Approx. 4 L/min (0.14 cubic feet/min), 0.5 bar (0.05 MPa; 7.25 PSI)
	Note: It is optional to connect the system to an inert gas supply.

* Peptide synthesis can only be performed on Initiator+ Alstra and Initiator+ SP Wave systems.

Liquid Handling, Biotage® Initiator+ Alstra™

Syringe Pumps	Flow rate: 6 to 50 mL/min
	Accuracy: < 1% deviation at full stroke
Solvent Bottles	Maximum 3 x 1000 liter. Three GL45 laboratory glass bottles are delivered with the system (1 x 5 liters, 1 x 2 liters, and 1 x 1 liter).
Reagents Bottles	Maximum 5 x 185 mL. Five laboratory glass bottles (custom made) are delivered with the system.
	Note: The reagent bottles are specially designed for the system and can only be ordered from Biotage.
Liquid-Level Detector	Resolution solvent dependent. Liquid detector level can be turned on/off in the software.

Liquid Handling, Biotage® Initiator+ SP Wave

Syringe Pump	Flow rate: 2 to 50 mL/min Accuracy: < 1% deviation at full stroke
Solvent Bottle	Maximum 1 x 10 liter. One GL45 2000 mL laboratory glass bottle is delivered with the system.
Reagents Bottles	Maximum 3 x 100 mL. Three GL45 laboratory glass bottles are delivered with the system.

System Requirements

Temperature	Operating temperature: 18°C to 32°C (64.4°F to 89.6°F) Storage and transportation temperature: -25°C to 60°C (-13°F to 140°F)
Humidity	20% to 95% at room temperature
Electrical Supply	Initiator+: 100 to 127 VAC, 50/60 Hz or 220 to 240 VAC, 50/60 Hz Alstra and SP Wave module: 100 to 240 VAC, 50/60 Hz Connect only to a grounded outlet.
Fuses	Initiator+: T10A or T8A depending on the system version; see the fuse rating at the power inlet, 2 required. Alstra and SP Wave module: T1A at the power inlet, 2 required
Maximum Power Consumed	Initiator+: 1100 VA Alstra and SP Wave module: 290 VA
Cooling	Pressurized air supply: > 60 L/min (2.1 cubic feet/min), 2.5 to 4.0 bar (0.25 to 0.40 MPa; 36 to 58 PSI) Note: A system only has to be connected to a pressurized air supply when running in organic synthesis mode.
Vacuum (Only for Peptide Synthesis)	Partial pressure range: 100 to 300 mbar (10 to 30 kPa; 1.5 to 4.4 PSI) Recommended partial pressure: 100 mbar (10 kPa; 1.5 PSI) Flow rate: 11 L/min (0.4 cubic feet/min) In order to protect the vacuum system, we recommend that a scrubber bottle is used to stop volatiles and condensation from entering and damaging the vacuum system. For more information, see the getting started guide for peptide synthesis supplied with the system.
UV Detector (Only on Initiator+ Alstra, Optional)	Wavelength: 290 nm UV monitored Fmoc deprotections can be performed using the 10 or 30 mL vial and 20% piperidine in DMF or 20% piperidine in NMP.

Weight	Initiator+: 21 kg (46.3 lbs) Initiator+ Eight: 28 kg (61.7 lbs) Initiator+ Sixty: 34 kg (75 lbs) Initiator+ SP Wave: 33 kg (72.7 lbs) Initiator+ Alstra: 42 kg (92.6 lbs)
Dimensions (WxDxH)	Initiator+: 365 x 422 x 421 mm (14.4" x 16.6" x 16.6") Initiator+ Eight: 400 x 500 x 580 mm (15.7" x 19.7" x 22.8") Initiator+ Sixty: 625 x 422 x 470 mm (24.6" x 16.6" x 18.5") Initiator+ SP Wave: 400 x 500 x 685 mm (15.7" x 19.7" x 27.0") Initiator+ Alstra: 640 x 430 x 640 mm (25.2" x 16.9" x 25.2")
Max Sound Level	70 dB(A)

Interfaces

Touch Screen	10.4"
Ethernet LAN	Complies with IEEE 802.3 (ANSI 8802-3)
USB	USB 2.0 (4 ports) and 3.0 (1 port)

Archiving/Back-Up

Via USB

Printing and Accessing the Initiator Remote Viewer (Only Available for Organic Synthesis)

Via LAN

Safety

Intended Use

All Initiator systems from Biotage are intended solely for organic and/or peptide synthesis and have to be operated in a laboratory environment by trained professionals.

All operations must be performed:

- » According to the user documentation delivered with the system.
- » According to instructions available at www.biotage.com.
- » According to instructions provided through dialogs appearing on the screen.
- » According to instructions given by the technical support staff from Biotage.
- » Within limits set by the system's technical specifications.

Failure to follow these instructions and/or failure to operate within the limits set by the technical specifications may result in personal injury and/or equipment damage.

Education, Training, and Competence

It is your responsibility to provide all applicable health and safety regulations to your personnel. You must also ensure that all personnel involved in the operation and maintenance of the system fulfill the following criteria:

- » Have the necessary education, training, and competence required for the intended use of the system.
- » Observe general and specific safety regulations for the use of the system and its accessories and consumables at all times, in order to reduce the risk of personal injury, fire, and explosion.

Warranty and Liability

See the "Biotage Terms & Conditions of Sale" document at www.biotage.com.

Service

All service or adjustments must be performed by an authorized Biotage service engineer. Before handing over the system for service, it should be emptied of system solvent (if using an Initiator+ Alstra or Initiator+ SP Wave system) and cleaned from harmful residues as described in the getting started guide supplied with the system.

It is the responsibility of the customer to inform Biotage 1-Point Support representatives if the system has been used with hazardous biological, radioactive, or toxic chemicals, prior to any service being performed. When returning equipment to

Biotage, this should be done in accordance with the material return procedures supplied separately by Biotage.

Only genuine Biotage consumables and accessories must be used in the system.

Safety Features

The magnetron, which generates microwaves, is switched off if:

- » The temperature in the vial increases by more than 30°C/s (54°F/s).
- » The temperature in the vial decreases by more than 50°C/s (90°F/s).
- » The temperature in the vial exceeds 310°C (590°F) if using an Initiator+ system, or 110°C (230°F) if using an Initiator+ Alstra system or an Initiator+ SP Wave system in peptide synthesis mode.
- » The pressure in the vial increases or decreases by more than 5 bar/s (0.5 MPa/s; 72.5 PSI/s).
- » The pressure in the vial exceeds 32 bar (3.2 MPa; 464 PSI).

When running in organic synthesis mode, the microwave cavity lid will not be opened automatically if:

- » The temperature in the microwave reaction vial exceeds 61°C (142°F).
- » The pressure in the microwave reaction vial exceeds 4 bar (0.4 MPa; 58 PSI).

Labels Used on the System

Labels used on the system:



In accordance with all the essential requirements of all applicable European product directives; see Declaration of Conformity.



In accordance with both U.S. and Canadian safety standards; see Declaration of Conformity.

RoHS

In accordance with the Restriction of Hazardous Substances Directive; see "Restriction of Hazardous Substances (RoHS) Directive" on page 13 and the Declaration of Conformity.



The product contains certain hazardous substances and can be used safely during its environmental protection use period (EPUP), as indicated by the number in the center, and should enter into the recycling system after the EPUP.



Subject to the Waste Electrical and Electronic Equipment (WEEE) Directive; see "WEEE Compliance Statement" on page 13.



Manufacturer.



Consult accompanying user documentation.



Read and follow the specific precautions to avoid possible exposure to excessive microwave energy on page 10.

Precautions to Avoid Possible Exposure to Excessive Microwave Energy

- » Do not operate a damaged system. It is particularly important that the microwave cavity lid is closed properly and that there is no damage to the:
 - » lid;
 - » hinges and latches;
 - » vent screw;
 - » locking mechanism; or,
 - » lid seals and sealing surfaces.

If the system has been damaged and does not function properly, shut it down and contact Biotage 1-Point Support immediately.

- » Do not attempt to operate the system if the microwave cavity contains trapped objects or moisture. If this is the case, clean the microwave cavity as described in the getting started guide supplied with the system.
- » Do not introduce electrical conductive materials through the open reactor access port.
- » Do not fill a vial above or under the stated volume range; see the technical specification on page 7.
- » Ensure that the system is switched off and the power cord is disconnected before cleaning the microwave cavity, IR-sensor, and the exterior of the system, before replacing a cavity lid seal and fuses, and before switching between peptide and organic synthesis modes.
- » Service or adjustments (other than those described in the user documentation) must be made only by an authorized Biotage service engineer.

Precautions to Take When Planning and Preparing Reactions

- » Before using any chemical, the user must be familiar with:
 - » The hazards of the chemical.
 - » How to use the chemical safely.
 - » What to expect if the recommendations are not followed.
 - » What to do if accidents occur.
 - » How to recognize symptoms of overexposure and what to do if such incidents occur.

The relevant information can be found in the chemical's Safety Data Sheet (SDS).

- » Do not fill a vial above or under the stated volume range; see the technical specification on page 7.
- » Do not label or use metal objects of any kind inside or on the vial, since arcing and cracking may occur.
- » Chemicals whose behaviors are unknown when exposed to microwave heating have to be treated with caution. Perform a test reaction at lower temperature and lower concentration.
- » Good microwave absorbers that are insoluble, have to be kept below the surface of the solvent because otherwise they may cause damage to the vial.

Organic Synthesis

- » Ensure that the waste tray (including tray insert and lid) is in its position.
- » Be aware of the risk of chemical exposure when running an uncapped microwave reaction vial in open reactor access mode.
- » Reactions where there may be a risk of explosion or that are extremely exothermic should not be performed on the system.
- » The system is a closed vessel system; specific precautions have to be applied to reactions or reagents that release gases. Low concentrations and temperatures are recommended for these types of reactions.
- » Any unknown reactions should be tried out in volumes below 5 mL.
- » For the best heating performance and to reduce the risk of vial breakage when using low-absorbing or non-polar solvents, e.g. toluene and dioxane, always fill microwave reaction vials to the specified maximum volume and set the absorption level to **Low**.
- » Temperatures above 250°C and/or pressures above 20 bar are not allowed when using Biotage Microwave Reaction Vials 10-20 mL.
- » Do not scale up a reaction more than a volume factor of 5–10 at a time.
- » If a septum is exposed to high temperature for a long time, it may decompose. Do not heat the reaction mixture for longer than 24 hours at 250°C, and no longer than 2 hours above 250°C. If you wish to heat the mixture for a longer time, do not exceed 200°C.
- » Use only new microwave reaction vials, caps, and septa supplied by Biotage. If a microwave reaction vial is accidentally scratched or damaged prior to heating, it is strongly recommended that this vial be discarded. Because of the rapid heating rate, vapor pressure can build up rapidly. Pressure seals may break or vials may crack due to scratches and contents may erupt, possibly resulting in personal injury and loss of materials.

Peptide Synthesis (Only on Biotage® Initiator+ Alstra™ and Biotage® Initiator+ SP Wave Systems)

- » Ensure that the quantity of resin is within the recommended reactor vial scale range. This is also dependent on the resin type and loading, e.g. polystyrene or PEG-based resin.
- » Check that the resin is adequately solvated for the particular type of resin used to enable efficient mixing.
- » Use only vial extensions and new reactor vials supplied by Biotage.
- » Use the vial loading tool and the vial eject lever when inserting or removing reactor vials from the microwave cavity. Never remove the vial by only using the vial eject lever.

Warning Summary

The following conventions are employed throughout the system:

1. **Warning** – Warns against potential hazards or cautions against unsafe practices.
2. **Notice** – Used where there is a need for general instructions and suggestions with respect to safety measures.

Warning

- » Read and follow the specific precautions to avoid possible exposure to excessive microwave energy on page 10.
- » Read and follow the specific precautions to take when planning and preparing reactions on page 10.

Installation

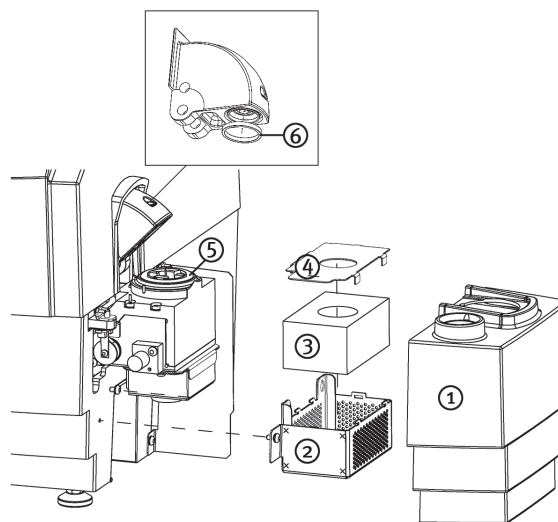
- » Follow regional safety practices when handling and moving shipping boxes and containers, and moving the system.
- » The system must be electrically grounded (earthed). Connect only to a grounded outlet. Keep the mains plug easily accessible in case the system needs to be disconnected quickly from mains power.
- » Ensure that the power cord and any cables, hoses, and tubing connected to the system cannot come in contact with water or chemicals. Corrosives and solvents can degrade the cord/cable insulation and dissolve the hoses and tubing. There is a risk of electric shock, fire, and/or equipment damage.
- » External fire protection should be installed according to local regulations for equipment operating unattended.
- » The system must be placed in a well-ventilated fume hood or an equivalent enclosure to reduce the risk of exposure to harmful gases from the reaction in progress e.g. in case of a vial breakage or leakage.
- » Ensure that the system is connected to a supply of dry pressurized air (applicable only for organic synthesis). If the air contains liquids, the vial may break during cooling and contents may erupt, possibly resulting in personal injury and loss of materials.

In Case of Emergency and Maintenance

- » If materials inside the system should ignite, keep the cavity lid closed, switch off the system, and disconnect the power cord or shut off the power at the fuse or circuit breaker panel.
- » Sharp corners may exist at the rear of the system. Exercise caution when working with the system.
- » When it is required that the system is switched off, check that the mains switch is switched off or that the power cord is disconnected.
- » Covers and safety shields may only be removed by an authorized Biotage service engineer. Potential electrical hazard exists due to high voltage circuits inside the system.
- » The system uses double pole fusing. Use only exact replacement fuses specified by Biotage. Incorrect fuses create a potential fire hazard. See the label(s) at the rear of the system.

Organic Synthesis

- » In the event of a microwave reaction vial breakage inside the microwave cavity, the cavity and the waste tray may contain harmful residues and broken glass. Clean as described in the getting started guide supplied with the system.
- » Ensure that the cavity cover (1), waste tray (2), waste tray insert (3), waste lid (4), and cavity lid seals (5 and 6) are in position when the system is processing. If a microwave reaction vial should break or leak inside the microwave cavity, and the cavity cover, waste tray, waste tray insert, waste lid, or a cavity lid seal is not in its position, there is a risk of personal injury.



Peptide Synthesis (Only on Biotage® Initiator+ Alstra™ and Biotage® Initiator+ SP Wave Systems)

- » In the event of a leakage inside the microwave cavity, the cavity and the mixing unit (oscillating mixer or vortex) may contain harmful residues.

- » Place the system solvent bottle(s) next to the system, inside the fume hood. If leakage is observed, shut down the system, disconnect the power cord, and follow the instructions for cleaning the exterior of the system in the getting started guide supplied with the system.
- » Ensure that the cavity cover, cavity lid seals, and mixing unit (oscillating mixer or vortex) are in position when the system is processing. If a reactor vial should be damaged or leak inside the microwave cavity, and the cavity cover, cavity lid seals, or mixing unit is not in its position, there is a risk of personal injury.
- » Always empty the vial before removing it from the microwave cavity. If a vial cannot be emptied, place the vial loading tool over the reactor vial with one hand and then gently press the vial eject lever to release the vial from the microwave cavity with the other hand. Never remove the vial by only using the vial eject lever.

Cavity Lid

- » Keep your hands out of the range of the cavity lid when the system is processing. In the unlikely event of your hand getting trapped by the lid, wait until the lid pressure is automatically released (takes a few seconds) and then pull the lid open manually and remove your hand. Do not pull out your hand while it is trapped as this may result in personal injury.

Organic Synthesis

- » If the **Warning High Pressure and/or Temperature** dialog appears due to remaining high pressure and/or temperature inside the microwave reaction vial, it is strongly recommended to cool the reaction mixture, i.e. press **Start Cooling**. This is likely to reduce the pressure and temperature to safe levels. If you have cooled the reaction mixture repeatedly and the pressure is still too high, you may release the pressure manually by pressing the **Vent** button and carefully following the instructions appearing on the screen. If you would open the cavity lid without cooling, i.e. press **Open Lid** in the **Warning High Pressure and/or Temperature** dialog, ensure to take the necessary precautions:
 - » High pressure: Take the necessary precautions to avoid exposure to harmful gases, and contact with liquid and solid chemicals splashing out of the microwave reaction vial.
 - » High temperature: Do not touch the microwave reaction vial until the temperature has been reduced to a safe level.

Peptide Synthesis (Only on Biotage® Initiator+ Alstra™ and Biotage® Initiator+ SP Wave Systems)

- » Do not unload a reactor vial if the temperature is above 59°C, which is indicated by the system status “Warning, hot vial!” is displayed in the software.

Release Pressure Manually in the Warning High Pressure and/or Temperature Dialog (Only in Organic Synthesis Mode)

- » Only use the vent feature in the **Warning High Pressure and/or Temperature** dialog to release remaining high pressure. Any other use is highly unsafe and strongly advised against since there is a risk of personal injury.
- » Ensure that the vent screw and the red plug are in their positions when the system is processing, i.e. do not release pressure manually when the system is processing. There is a risk of personal injury and microwave leakage.
- » Do not release pressure manually if the temperature exceeds 60°C. There is a risk of personal injury.
- » Only release remaining pressure inside the microwave reaction vial manually by pressing the **Vent** button in the **Warning High Pressure and/or Temperature** dialog that appears due to remaining high pressure and/or temperature inside the microwave reaction vial. Carefully follow the instructions appearing on the screen.
- » If there is a risk of emission of harmful gases, take the necessary precautions to avoid exposure, e.g. collect the gases in a balloon. There is a risk of personal injury.
- » When releasing remaining pressure manually, ensure not to insert the needle tip into the reaction mixture. The mixture may be ejected through the syringe with a risk of personal injury.

Open Reactor Access Mode (Applies to Biotage® Initiator+ Systems in Organic Synthesis Mode)

- » Do not use capped microwave reaction vials when running in open reactor access mode.
- » Do not introduce electrical conductive materials through the open reactor access port. There is a risk of microwave leakage.
- » To avoid vapor leaking out through the open reactor access port, ensure that the target temperature is at least 20°C below the lowest boiling point of the solvents being used in the reaction (i.e. with a boiling point of 80°C, set the target temperature to a maximum of 60°C).

Robot Arm (Applies to Systems Equipped with a Robot)

- » Keep your hands out of range of the robot arm and the needle(s) (if using an Initiator+ Alstra or Initiator+ SP Wave system) when the system is in use, and when pausing or stopping the processing, until the robot arm has stopped moving. The robot arm operates without a warning signal. There is a risk of personal injury.

Notice

- » All Initiator systems must be unpacked and installed by an authorized Biotage service engineer. Prepare the installation site as described on page 1.
- » Read all instructions before using the system.
- » Use the system only for its intended purpose, as described in the user documentation delivered with the system and user documentation available at www.biotage.com.

- » Only genuine Biotage consumables and accessories must be used in the system.
- » If spillage inside the system has occurred, clean the microwave cavity as described in the getting started guide supplied with the system.
- » It is each user's responsibility to study the Safety Data Sheet (SDS) for each chemical used. Handle chemical and liquid waste according to the SDS and to local/national guidelines on laboratory safety procedures. In case of spillage, the SDS contains instructions for decontamination, including what decontamination agent to use for safe operation as well as information about any protective equipment required.
- » Before operating the system, ensure that all connections are properly connected (see the "Connections" on page 5) and, if using an Initiator+ Alstra or Initiator+ SP Wave system, that the waste reservoir is not full.
- » The system must be located in an area where the ambient air is clean and dry. No emission of solid particles or smoke in the air by adjacent equipment is allowed. The level of dust and humidity should be comparable to that of normal laboratory spaces.

Restriction of Hazardous Substances (RoHS) Directive

The RoHS directive is a European Union-derived initiative in which the elimination of certain hazardous substances is the key objective. The elimination of these substances will contribute to the protection of human health and the environmentally sound recovery and disposal of equipment.

WEEE Compliance Statement

Valid for customers in EU countries



We are committed to being a good corporate citizen. As part of that commitment, we strive to maintain an environmentally conscious manufacturing operation. The European Union (EU) has enacted a directive on product recycling (Waste Electrical and Electronic Equipment, WEEE).

Products falling under the scope of the WEEE Directive are identified with a crossed over "wheelie bin" symbol on the product label, as indicated to the left. To forward a product for recycling or proper disposal, use an authorized collection system or return it to Biotage Sweden AB. Before forwarding a product for recycling or disposal, it should be emptied of liquid and cleaned from harmful residues. When returning a product to Biotage, this should be done in accordance with the material return procedures supplied separately by Biotage.

Safety in Other Languages

Translated versions of the Safety section can be downloaded at www.biotage.com. If you have problem downloading the safety translations ("Biotage® Initiator+ Safety Translations"), please contact your local Biotage representative. See contact information on the back of this document or visit our website www.biotage.com.

General Information

Consumables and Accessories

Only genuine Biotage consumables and accessories must be used in the system. To order consumables and accessories, see contact information on the back of this document or visit our website www.biotage.com.

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