



INDUSTRY F421

3DGence  
**INDUSTRY F421**

rev.2/2022

# 3DGence INDUSTRY F421

## Main features:

1. Interchangeable printing modules – wide use of technical materials
2. High-temperature printing chamber – accurate and durable parts
3. PEEK and ULTEM™ 3D printing, composite materials– the highest performing polymers
4. Soluble materials – support structures made of ESM-10
5. High-quality components – dedicated electronics, fast and rigid kinematic system, robust design
6. 3DGence CLOUD – remote control over printing proces
7. Air filter, signal tower, emergency stop and power backup – operator safety, and industrial standards
8. **3 years warranty**– 3DGence sets up new industrial standard for 3D printers reliability

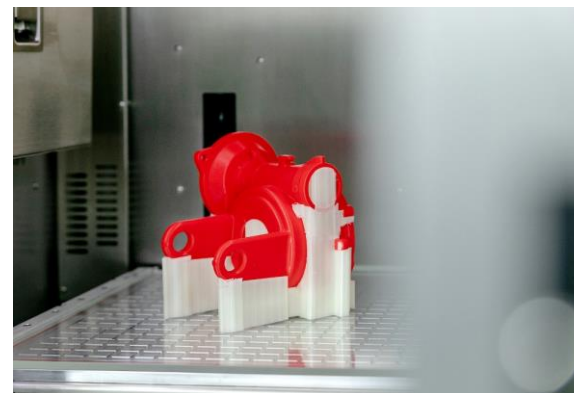
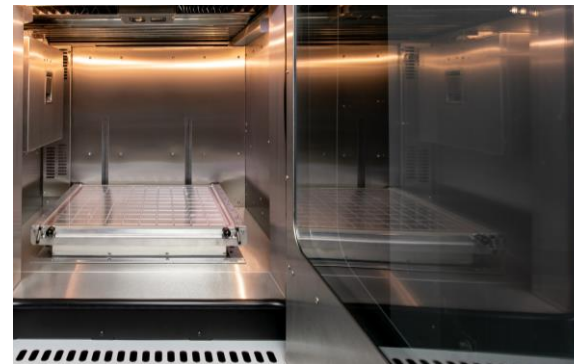


# 3DGence INDUSTRY F421

Dual extruder 3D printer designed for industrial applications where accuracy, speed, comfort and safety of the entire 3D printing process are crucial.

This 3D printer is suitable for working with a wide range of technical materials including the high-performance thermoplastics and composites.

SPECIFICATION	
<b>Build volume</b> (w × d × h)	380 × 380 × 420 mm
<b>Printing nozzles</b>	2 per module
<b>Hotend temp.</b> (max)	500°C
<b>Table temp.</b> (max)	180°C
<b>Chamber temp.</b> (max)	195°C
<b>Filament chamber temp.</b> (max)	50°C
<b>Software</b>	3DGence SLICER 4.0, 3DGence CLOUD



# INDUSTRY F421

## UNIQUE SELLING POINTS

- Speed
- Modular printing system
- Ultra-polymers (ULTEM, PEEK) and composites
- Price to build volume ratio
- Best in class Total Cost of Ownership
- 3DGence CLOUD
- Brand new kinematic system
- Built-in SMM system for material recognition
- Dedicated buildplates



# INDUSTRY F421

## KEY FEATURE: SPEED

Key aspect of the new industrial platform from 3DGence is its high focus on speed.

By implementing several innovative solutions, the platform's performance has increased greatly, making F421 not only a great rapid prototyping tool, but a full-fledged additive manufacturing system.

Achieving high travel and print speeds and reaching high quality at the same time is possible thanks to improved kinematic system. The system is able to monitor its current position and correct itself should an error be detected.

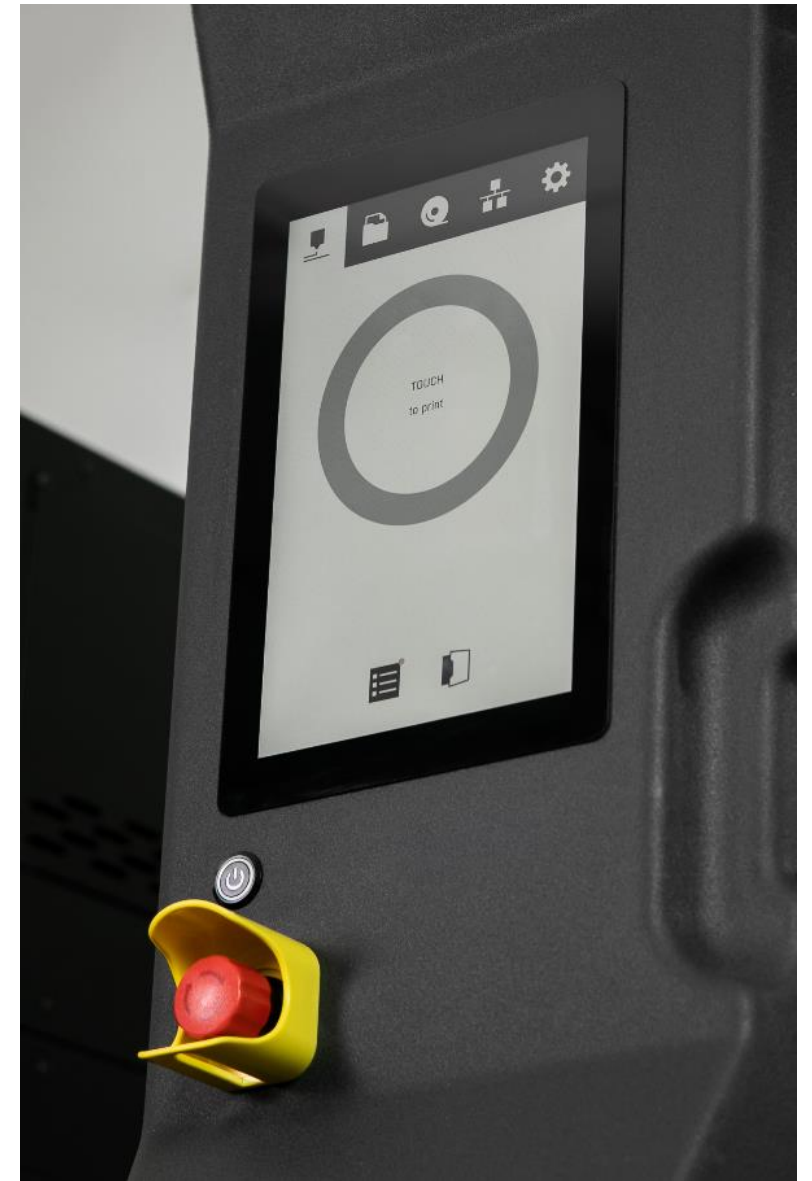
XY kinematic system based on a steel beam and the Z axis built around a ball screw results in smooth actuation and the printer rigidity.

travel move

1 m/s

printing speed

up to 400 mm/s





# INDUSTRY F421

## KEY FEATURE: MODULARITY

Module **M280**



**Temperature:**  
up to 280°C

**Nozzle diameter:**  
0.5 mm

**Model materials:**  
PLA, ABS, ABS-ESD, ASA,  
PA6, PA-CF

**Support materials:**  
ESM-10 (soluble),  
HIPS (break-away)

Module **M360**



**Temperature:**  
up to 360°C

**Nozzle diameter:**  
0.4 mm

**Model materials:**  
LEXAN, PC, PC-ABS, PEKK-CF,  
ULTEM 9085

**Support materials:**  
ESM-10 (soluble)

Module **M500**



**Temperature:**  
up to 500°C

**Nozzle diameter:**  
0.4 mm

**Model material:**  
PEEK, PEKK, AM™200 FIL

**Support materials:**  
ESM-10 (soluble)



# INDUSTRY F421

## KEY FEATURE: SMART MATERIAL MANAGER

NFC antenna that belongs to Smart Material Manager (SMM) is housed within the material bay. When a spool is placed in the bay, it is automatically detected and read - no additional action is required.

Apart from containing information about material weight, type and producer, the NFC system can write new data to the NFC tag. This gives the possibility to update the material weight as the spool is being used. Every time, prior to a print job, available material and required material values are compared. The user is informed about possible need to load the second bay.

Cloud based service also draws information from the tags, building usage statistics for the user.



# INDUSTRY F421

## KEY FEATURE: LARGE HEATED CHAMBER

F421 is equipped with a powerful, actively heated build chamber, capable of reaching 180°C. With a patent pending solution regarding variable chamber volume, time required for the working temperature to be reached remains minimal. Walls of the chamber are lined with satin stainless steel, preventing damage and oxidation.

The combination of heated build chamber, appropriate extrusion temperatures, and heated material chamber, ensures that the prints made of high-performance polymers like PEEK or ULTEM™ filament are always of best possible quality and reach the expected nominal mechanical properties, without warping or any other printing failures.

There is also a nozzle priming sector housed within the chamber. F421 no longer relies on mechanical nozzle blocking, using printhead purging instead.





# INDUSTRY F421

## KEY FEATURE: BUILDPLATES

F421 heatbed, reaching 180°C, is dual function.

highly versatile  
mechanically resilient  
easy, tool-less removal/replacement  
mounted by metal clamps  
sensor for detecting buildplate presence

### BOROSILICATE GLASS

specific use  
very effective in certain material combinations  
easy, tool-less removal/replacement  
mounted by vacuum

### HEATBED SHEETS

User can choose and switch between used buildplate material with no additional tools or changes to the machine. Pressurized air connection on printer installation site is required for vacuum functionality.



# INDUSTRY F421

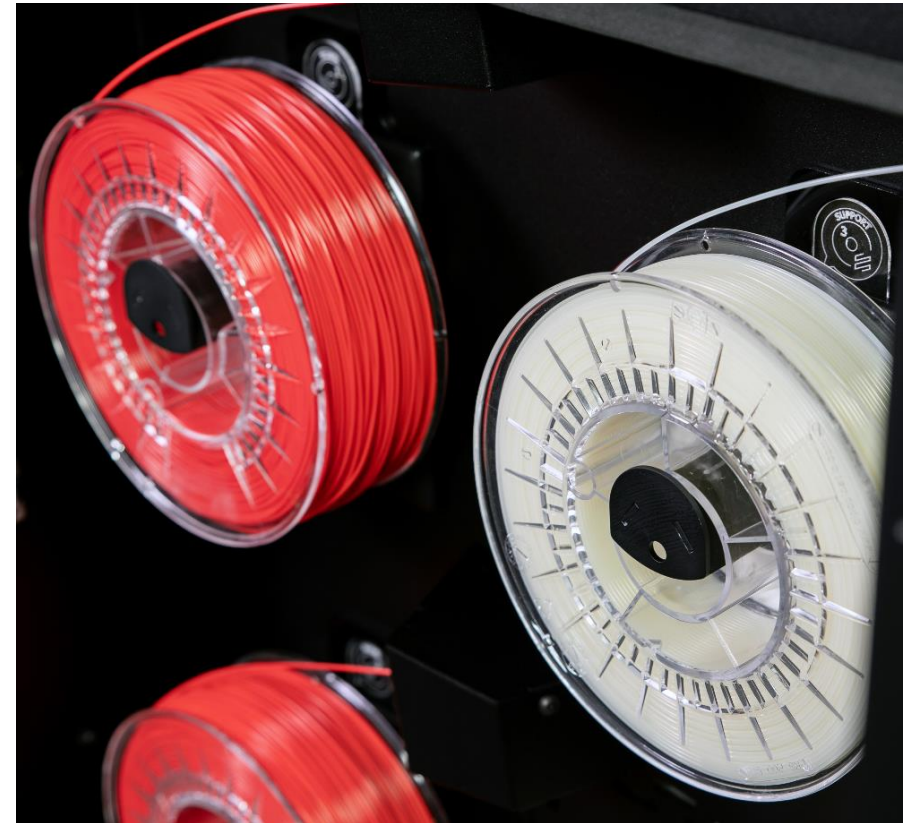
## KEY FEATURE: AUTOMATIC SPOOL CHANGE

INDUSTRY F421 has four material bays, storing four 1kg spools of material. By default, two are dedicated to model material and remaining two house support material. When the material of any spool is running out it will be automatically replaced in the extruder with the material from another bay.

F421 is capable of automatic spool change mid-print. Once filament end is detected, the machine will load material from the second bay without any user intervention and resume printing seamlessly.

Material bays are continuously heated up to 50°C. With specific spool geometry, mounting four 2kg spools is possible with all functionalities retained.

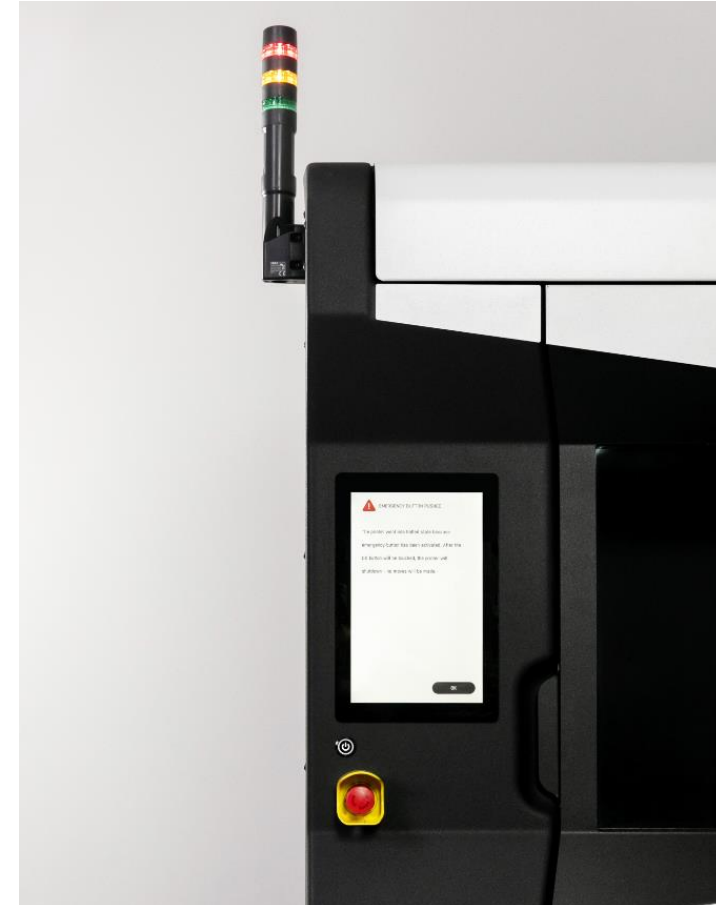
Each bay is equipped with LED status indicator.



# INDUSTRY F421

## KEY FEATURE: SAFETY

- an electronic lock of the main chamber door, also controlled via Cloud service and printers' interface
- sensors for main chamber door and top access hatch
- redundancy for thermal sensors of high-power heating elements
- emergency switch - immediate cut of power to motion and thermal control, now as a standard equipment
- system for emergency shutdown of logic
- software access overdrive - the printer can be remotely shut down



# INDUSTRY F421

## KEY FEATURE: FILTRATION

With focus on high performance thermoplastics it becomes increasingly important to provide adequate emissions control. F421 filters offer unprecedented filtering efficiency among FFF AM platforms.

F421 uses an advanced ULT filtration unit, capable of filtering:

- macro dust
- nano dust (VOC, UFP)
- solvent vapor
- noxious gasses
- foreign particles

Key Optimized Functional Aspects:

- Z-line pre-dust filter
- HEPA H13 filter (filtrating particle up to 0.3 microns)
- Absorption layer (layer of the activated carbon)
- Provides very good adsorption of volatile organic compounds (VOC) and styrene
- Filters nearly 100% PM10 and PM2.5 particles



# INDUSTRY F421

## KEY FEATURE: UPS AND SIGNAL TOWER

F421 can be equipped with an UPS unit. Printer supports all functions during short power outages. UPS is integrated with the system at a deeper level, monitoring UPS battery life. In case the power loss is longer, the printer will switch to idle support mode. Printing will be paused, and only key thermal control and logic functionalities will be maintained. When the power will be restored, printing will continue normally.

This dual approach can yield two results:

- unaffected printer performance during short power outages
- longer battery life in case of longer power issues

Additionally, each 3DGence INDUSTRY F421 is equipped with the signal tower, that indicates the status of the print. Signal tower makes the machine highly visible from distant parts of the production site.





# INDUSTRY F421

## KEY FEATURE: 3DGENCE CLOUD

- remote print start, cancelling and queuing. Full control over job order and execution, even on multiple printers
- real time monitoring of machine and print status
- aggregation and presentation of machine and material usage statistics
- service access module
- file sharing and storage
- access control and administration
- marketing functionalities
- live camera feed
- asymmetric encryption for data transfer (RSA)



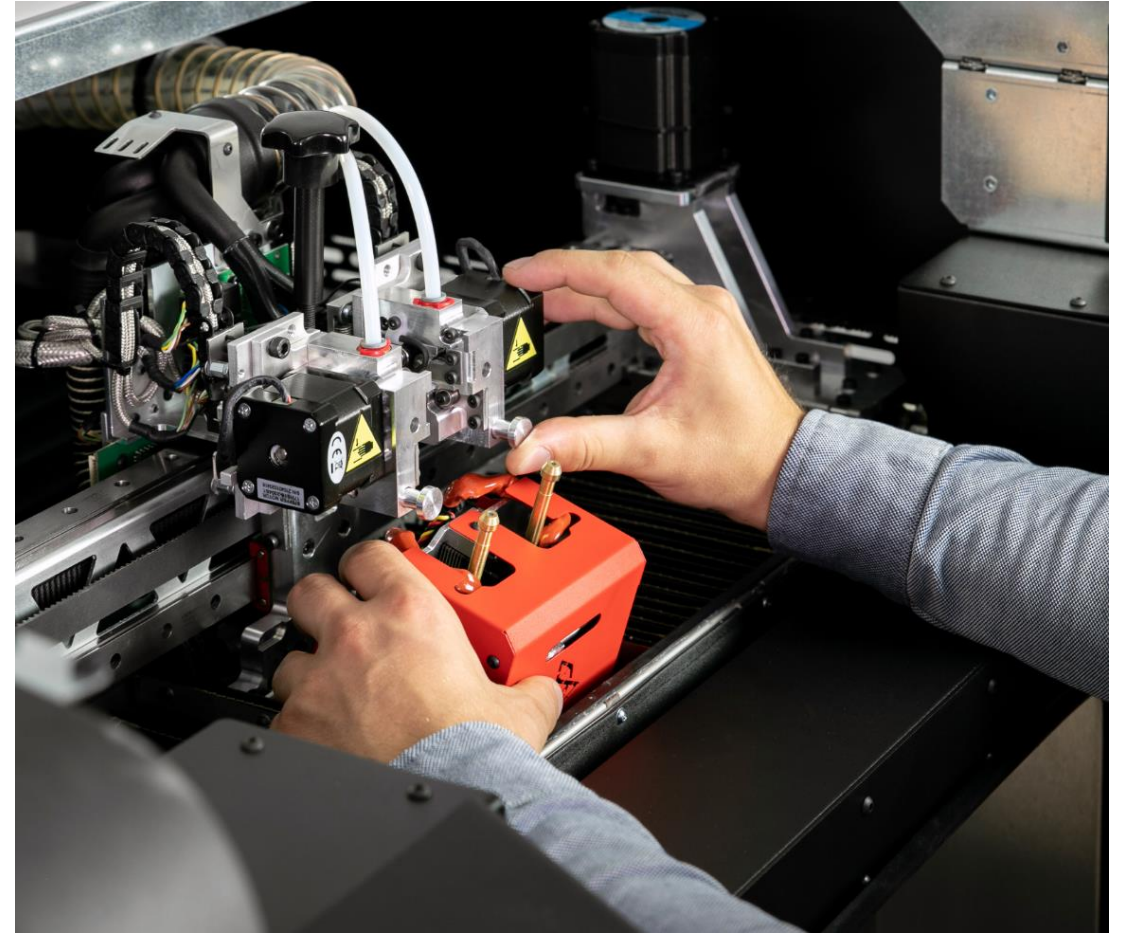
# INDUSTRY F421

## 3 YEARS WARRANTY



3DGence INDUSTRY F421 is an absolute workhorse that allows for continuous rapid production at our customers' sites. Being sure that the reliability of our flagship industrial grade 3D printers is on the top level, we decided to offer **3 years warranty**.

- CARE maintenance packages that have been available in our offer are now being replaced by official **full-fledged warranty**
- Main point to maintain the warranty is to follow **maintenance activities** and perform **warranty checkup** every 12 months
- **Warranty is available all over the world**. The terms for regions may vary, for details please contact your local 3DGence Partner or sales representative



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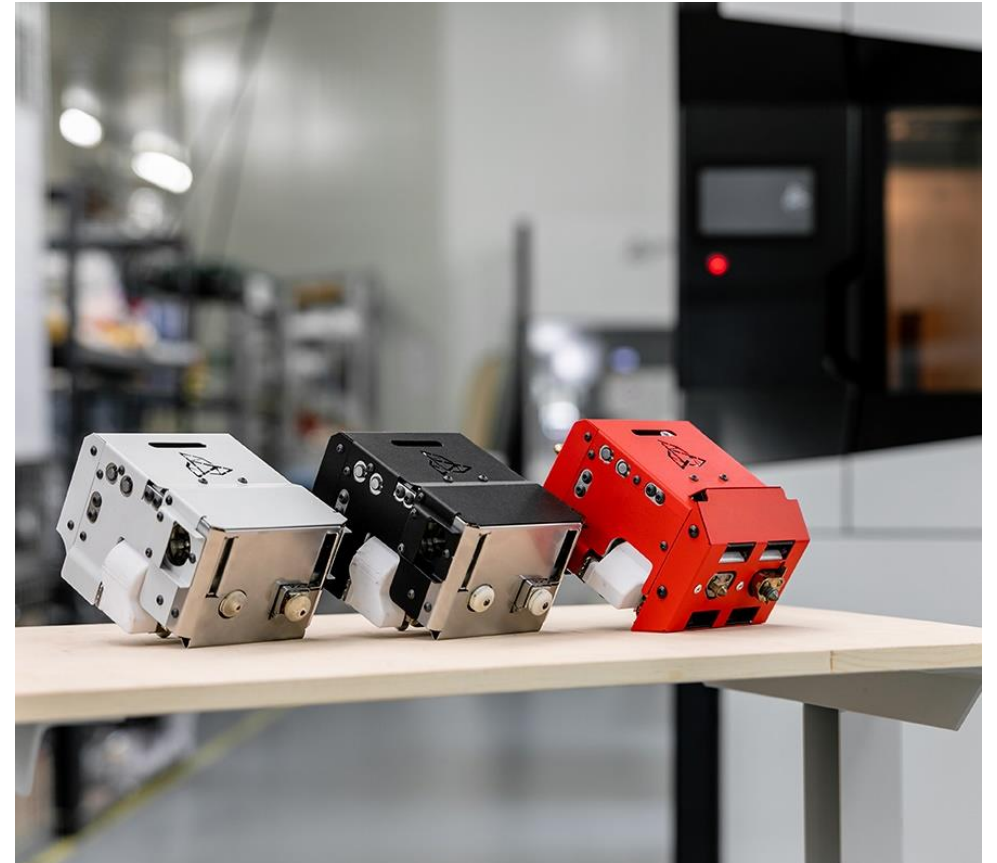
## PACKAGE CONTENT AND OPTIONS

### WHAT IS INCLUDED?

- 3DGence INDUSTRY F421 3D printer
- Set of accessories (Wi-Fi module incl.)
- Signal tower
- Emergency stop circuit

### WHAT IS THE ADDITIONAL EQUIPMENT?

- The M280 dual-extruder printing module (+1 spool ABS, +1 spool ESM-10)
- The M360 dual-extruder printing module (+1 spool PC, +1 spool ESM-10)
- The M500 dual-extruder printing module (+1 spool PEEK, +1 spool ESM-10)
- UPS – emergency power supply
- Advanced filtration unit





# INDUSTRY F421

## SPECIFICATION

### Build volume

380 × 380 × 420 mm (60 648 cm<sup>3</sup>)

### Printing system

Dual extruder equipped with purging station

### Filament diameter

1.75 mm

### Model materials

PLA, ABS, ASA, ABS-ESD, PA6, PA-CF, LEXAN, PC-ABS, PC, PEKK-CF, ULTEM™ 9085\*, PEEK, PEKK, AM™200 FIL

\*For ULTEM printing you need air preparation unit, heatbed sheet and compressor.

### Support materials

Breakaway support material, soluble support material ESM-10\*

\*For ESM-10 removal you need solvent and Support Dissolving System.

### Material chamber

4 bays with automatic filament change

### Nozzle temperature (max.)

500°C

### Buildplate temperature (max.)

180°C

### Chamber temperature (max.)

195°C (active heating)

### Filament chamber temperature (max.)

50°C

### Software

3DGence SLICER 4.0, 3DGence CLOUD

### Additional accessories

Advanced air filtration unit, UPS – emergency power supply





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