Pre-Installation Checklist

EasyMax 102

EasyMax 102 LT

EasyMax 402

EasyMax™ Synthesis Workstations

Site Requirements for Standard Equipment

METTLER TOLEDO

Pre-Installation Checklist
For EasyMax 102, 102 LT and 402

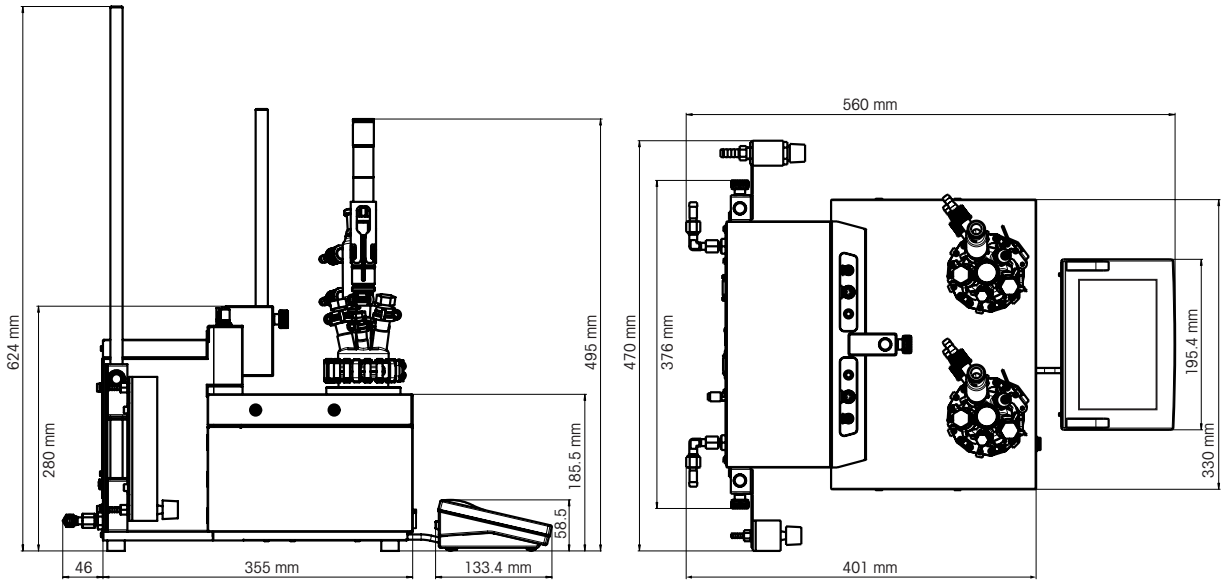
This document outlines the site requirements for a successful installation of the EasyMax system and provides information about technical data, construction materials and standard delivery.

For more detailed information please check the Synthesis Workstations catalog and the Operating Instructions of the EasyMax.

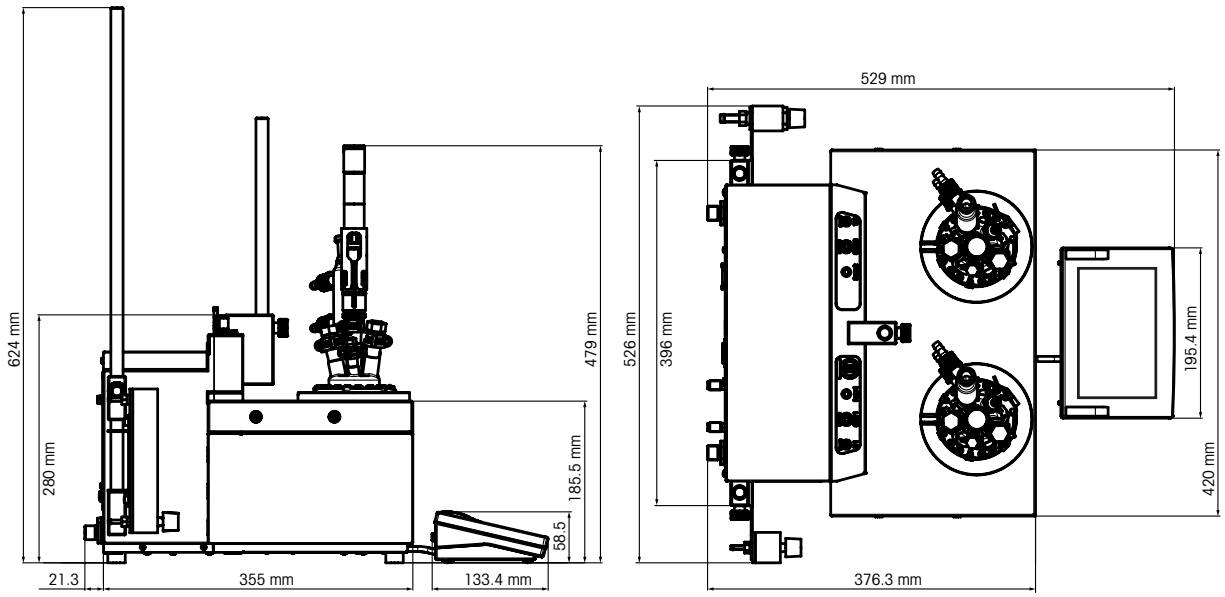
Advance preparation of the installation area should be completed before receipt of the instrument. Take the time now to do the site preparation necessary to allow for a smooth transition from instrument delivery to installation completion. Make sure that there is available power supply, purge gas (for the instrument and for the reaction) and external cooling capacities.

☐ **Space Requirements**

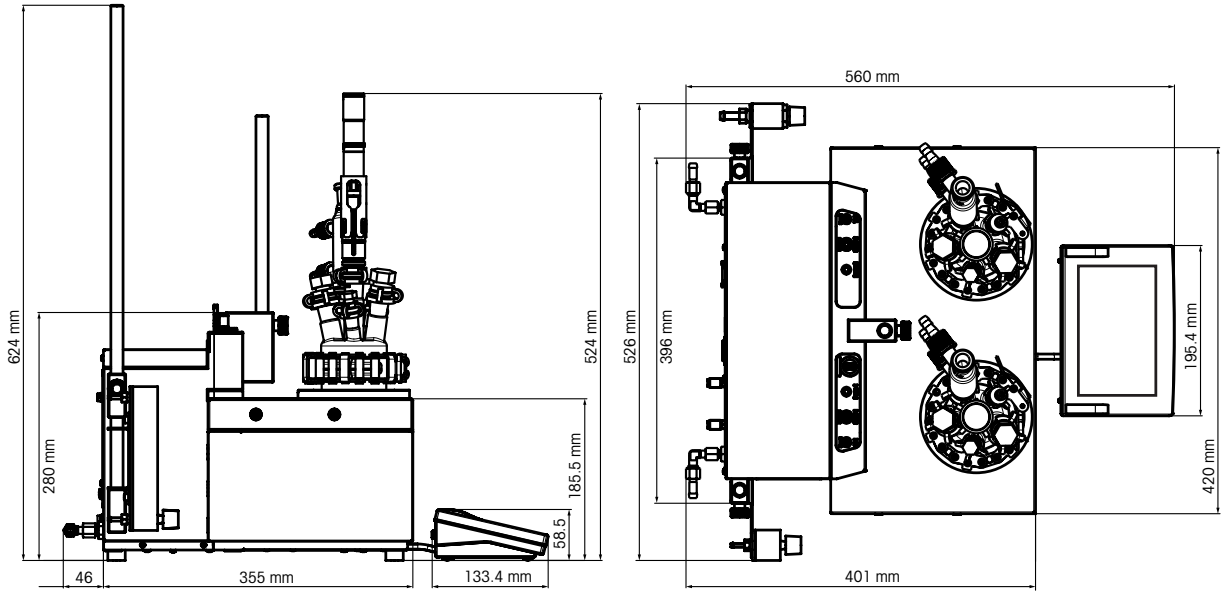
The space requirements take into account only the physical size of the EasyMax including cooling connector and touchscreen. Additional space is needed for accessories (lab bars, stirrer, pH meter, flowmeter, cryostat, etc.).



EasyMax 102



EasyMax 102 LT



EasyMax 402

☐ **Weight**

- **EasyMax 102:** 15 kg, including touchscreen
- **EasyMax 102 LT:** 21 kg, including touchscreen
- **EasyMax 402:** 20 kg, including touchscreen

☐ **Power Supply**

- **Voltage:** 100 V to 240 V AC
- **Max. voltage fluctuation:** ± 15%
- **Frequency:** 50/60 Hz
- **Power consumption:** max. 1000 VA

☐ **Required Instrument Purge Gas**

In order to prevent internal corrosion from corrosive gases or moisture, the EasyMax has to be purged with non-corrosive dry gas (e.g. dry air, nitrogen, argon). The dew point of the gas must be lower than the temperature of the coolant.

- **Ideal pressure of purge gas:** 0.05 bar/0.73 psi
- **Max. inlet pressure of purge gas:** 7 bar/100 psi
- **Min. gas flow of purge gas:** EasyMax 102: 3 L/min for instrument purge (inlet combined with reactor purge)
  EasyMax 402 and EasyMax 102 LT: 4 L/min
- **Gas connections:** Quick connect coupling for tubing with inner Ø 4 mm (included in delivery)

Notice: Operation without purge will damage the thermostat.

☐ **Required Reaction Purge Gas**

Reaction purge gas can be optionally used to flush the reaction vessel. This reduces the concentration of humidity and oxygen as they might impact the chemical process.

- **Ideal pressure of purge gas:** As required by experiment
- **Max. inlet pressure of purge gas:** 7 bar/100 psi

Notice: Easymax 102 purge inlet is combined with reaction and instrument purge. The EasyMax 102 LT and 402 have two gas inlets. They can be attached to the same gas source or different gasses can be used (reaction vs. instrument purge).

☐ **External Cooling**

The EasyMax requires a constant flow of coolant liquid. Operation without any will trigger an emergency program. If the water is not free of solids, a filter should be installed in the inlet line.

Use 103298 antistatic additive when silicone oil is used as coolant for EasyMax 102, 102 LT and 402 (in scope of delivery for EasyMax 102 LT).

Notice: Ensure chemical compatibility between cooling liquid and all wetted materials. Do not use DW-Therm or solutions of high chlorine concentration like NaCl or $CaCl_2$.

- **Coolant type:** Water, water and ethylene glycol mixtures, water and propylene glycol mixtures, silicone oil
- **Min. flow of cooling medium:** 2 L/min
- **Max. pressure of cooling media:** Without flowmeter: 3.5 bar; with flowmeter: 2 bar
- **Wetted materials in cooling circuit:** EasyMax 102 LT: PVC, PTFE, PVDF, copper, stainless steel
  EasyMax 102 and EasyMax 402: PVC, PTFE, PVDF, copper
- **Coolant connections on thermostat:** EasyMax 102 LT: M16 x 1
  EasyMax 102 and EasyMax 402: hose barbs for tubing with inner Ø 8 mm

- **EasyMax 102 LT**

Required cooling capacity:	**Min. temperature (jacket temperature, Tj)**
Tap water or ethylene glycol at 15 °C (3 L/min)	Approx. –50 °C
Cryostat with a capacity of 150 W at –20 °C	Approx. –65 °C
Cryostat with a capacity of 390 W at –60 °C	Approx. –80 °C

- **EasyMax 102 and EasyMax 402**

Required cooling capacity:	**Min. temperature (jacket temperature, Tj)**
Tap water or ethylene glycol at 15 °C (3 L/min)	Approx. –10 °C
Cryostat with a capacity of 720 W at 20 °C	Approx. –10 °C
Cryostat with a capacity of 450 W at –10 °C	Approx. –40 °C

☐ **Ambient Conditions**

According to EN 61010-1, the following requirements must be fulfilled for safe operation of the EasyMax system.

- **Ambient temperature:** 5 °C to 40 °C
- **Max. relative atmospheric humidity:** 80% for temperatures up to 31 °C decreasing linearly to 50% relative humidity at 40 °C, non-condensing
- **Altitude:** Up to 2000 m above sea level
- **Pollution degree:** 2

☐ **Temperature Range – requires appropriate external cooling**

- **EasyMax 102 LT:** –90 °C to 80 °C (jacket temperature, Tj)
- **EasyMax 102 and EasyMax 402:** –40 °C to 180 °C (jacket temperature, Tj)

Notice: The maximum and minimum reactor temperature (Tr) depends on heat transfer through the jacket and heat generated by the reaction.

☐ **Connectivity**

CAN bus to connect to METTLER TOLEDO accessories, USB port and Ethernet connection.

☐ **User Interface**

- **TFT touchscreen dimensions:** 135 mm x 195 mm (5.3" x 7.7"), protected by a replaceable cover
- **Supported languages:** English, German, French, Spanish, Japanese, Chinese

☐ **Material Used for Construction**

- **Cover plate:** Stainless steel, PFA/FEP-coated
- **Housing material:** Powder coated stainless steel
- **Reactor windows:** Borosilicate glass
- **Receptacles for thermostat block:** Anodized aluminum
- **Sealing rings for thermostat block:** PTFE/25% carbon
- **Holder for lab bars:** Aluminum
- **Connectors for purge gas:** Stainless steel, nickel-plated brass
- **Purge gas lines:** PVC, FEP, PP, PVDF, PTFE, aluminum
- **Coolant tubings:** EasyMax 102 LT: PVC, PTFE, PVDF, copper, stainless steel
  EasyMax 102 and EasyMax 402: PVC, PTFE, PVDF, copper
- **Coolant connectors:** EasyMax 102 and EasyMax 402: nickel-plated brass
  Easymax 102 LT: stainless steel
- **Touchscreen:** PA12, aluminum; Protective cover: Barex® resin
- **Glass reactors:** Borosilicate glass
- **Magnetic stirrer:** PTFE-coated
- **Overhead stirrer:** Borosilicate glass or Alloy C-22
- **LEMO connectors for Tr sensors and overhead stirrers:** Chrome-plated brass with protection cap in POM
- **USB connector:** Stainless steel with protection cap in POM
- **On/Off switch:** Stainless steel

☐ **Scope of Delivery**

The EasyMax 102, 102 LT and 402 are shipped with*:

– TFT touchscreen with protective cover, cable length 1 m
– PVC hose for reflux condenser, Ø 8/12 mm, length 5 m
– PVC industrial hose for purge gas, 18 bar, Ø 4/10 mm, length 2 m
– 2 PVC hoses for purge gas, Ø 4/6 mm, length 2 m
– 2 PVC industrial hoses for coolant, 15 bar, Ø 8/14 mm, length 2.5 m
– Country specific power cable, length 3 m
– 2 Y-piece for purge gas tubing
– 1 reducing connector for purge gas tubing
– Flowmeter set for cooling water and purge gas
– 4 quick connect couplings for purge gas inlet
– 8 hose clamps for PVC tube
– 1 set hose connectors, M16 x 1, for coolant (EasyMax 102 LT only)
– Antistatic additive for coolant (EasyMax 102 LT only)
– Quick Start Guide
– Factory Test Report (EN)

* Glassware and other accessories have to be ordered separately.

Pre-Installation Checklist

For EasyMax 102, 102 LT and 402

www.mt.com/EasyMax

For more information

METTLER TOLEDO Group
Automated Reactors and In-situ Analysis
Local contact: www.mt.com/contacts

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