



PRODUCT DATASHEET

MAS III Magic Angle Spinning Unit

The MAS III unit controls the gas flow to the drive turbine and the gas bearings in MAS NMR probes. It also performs the spin rate measurement and manages several other important functions such as rotor insertion and eject.

The MAS III unit integrates seamlessly into Bruker's spectrometer environment. Depending on which type of probe is connected to the spectrometer, the correct drive and bearing pressure profiles are automatically selected to ensure smooth spin-up and stable rotation.

In addition, the MAS III unit is equipped with a range of features which enhance reliability. External gas and power supplies are monitored and in case of an outage, the MAS rotation is safely stopped such that rotor damage is avoided. To ensure sufficiently long autonomy, an external gas buffer and an internal battery are included in the scope of supply.



Model:

MAS III Magic Angle Spinning Unit, AH1220_01

H139288	MAS3 PNEUMATIC CONTROL UNIT
H152591	MAS3 AIR HOSE ACCESSORY
H152777	MAS SPINNING RATE CABLE, 2 m, 3 pins
H1884590	MAS SPINNING RATE CABLE, 4 m, 8 pins
H138874	PNEUMATIC TANK

Specifications and Requirements:

General Features:

Length × Width × Height:	35.5 cm × 27 cm × 24 cm
Weight:	17 kg

Electrical Interface:

Supply Voltage:	110 – 230 VDC
Frequency:	50 / 60 Hz
Apparent Power Consumption	max. 75 VA





Gas Supply Requirements:

Gas Type:	Nitrogen (recommended) or dry air
Supply Pressure to the Gas Tank:	Max.: 1 MPa (10 bar / 145 psi) Ideal: 0.7 - 0.8 MPa (7 - 8 bar / 100 - 115 psi)
Supply Pressure to the MAS III Unit:	Max.: 0.7 MPa (7 bar / 100 psi)
Particulates:	Oil free air with particle size not greater than 0.01 microns
Supply Flow Rate:	Typically, a flow of 300 l/min flowing at greater than 0.6 MPa (6 bar / 90 psi) suffices (depending on spin rate, etc).

Pneumatic Output Specifications*:

Drive:	0 - 0.5 MPa / maximum flow rate: 100 NI/min
Bearing:	0 - 0.5 MPa / maximum flow rate: 100 NI/min
Option:	0 - 0.7 MPa / maximum flow rate: 150 NI/min
Insert:	0 - 0.7 MPa / maximum flow rate: 150 NI/min
Eject:	0 - 0.7 MPa / maximum flow rate: 150 NI/min
Frame Cooling:	0 - 0.7 MPa / maximum flow rate: 150 NI/min
Vertical:	On-Off / maximum flow rate: 150 NI/min
Magic Angle:	On-Off / maximum flow rate: 150 NI/min

* Peak flow rates cannot be achieved on all ports simultaneously. Specifications valid for serial number 1000 and higher.

Spin Rate Detection:

Port A	<ul style="list-style-type: none"> BINDER Subminiature circular connector series 712, 3 pins / male Spinrate signal input: single ended, approximate square wave signal, max. 200 kHz, max. amplitude 5 V_{pp} with a 2.5 V DC offset 5 V power supply for spinrate assy (max. 100 mA)
Port B	<ul style="list-style-type: none"> BINDER Subminiature circular connector series 712, 8 pins / male I²C communication bus Spinrate signal input: differential, approximate square wave signal, max. 200 kHz, max. amplitude 1 V_{pp} with a 1.5 V DC offset 6 V power supply for spinrate assy (max. 100 mA) Adjustable constant current source as LED driver (0 - 50 mA)

Specifications are valid as of June 13, 2024. Technical data and specifications subject to change without notice. The MAS3 is designed for the operation with Bruker MAS NMR probes. Probes from third parties can often be driven satisfactorily with the MAS3 unit, but compatibility and performance specifications are then not guaranteed unless explicitly stated by Bruker. Technical data and specifications subject to change without notice.

