

**Product: MAS3 Magic Angle Spinning Unit**

**Description:** The MAS3 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.

**Technical Data****General Information**

Length × Width × Height: 35.5 × 27 × 24 cm<sup>3</sup>  
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)<br>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 (depedning on spin rate, etc). |

**Pneumatic Output Specifications** (Serial number 1000 and higher)

|                |   |
|----------------|---|
| 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.

**Spin Rate Detection**

- |        |  |
|--------|--|
| Port A | <ul style="list-style-type: none"> <li>● BINDER Subminiature circular connector series 712, 3 pins / male</li> <li>● Spinrate signal input: single ended, approximate square wave signal, max. 200 kHz, max. amplitude 5 Vpp with a 2.5 V DC offset</li> <li>● 5 V power supply for spinrate assy (max. 100 mA)</li> </ul>   |
| Port B | <ul style="list-style-type: none"> <li>● BINDER Subminiature circular connector series 712, 8 pins / male</li> <li>● I<sup>2</sup>C communication bus</li> <li>● Spinrate signal input: differential, approximate square wave signal, max. 200 kHz, max. amplitude 1 Vpp with a 1.5 V DC offset</li> <li>● 6 V power supply for spinrate assy (max. 100 mA)</li> <li>● Adjustable constant current source as LED driver (0 - 50 mA)</li> </ul> |

**Material**

|          |                                      |
|----------|--------------------------------------|
| 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                       |

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.