

# Datasheet

This product datasheet has been provided by  
John Godrich & SJ Electronics in Partnership  
with BINDER



Best conditions for your success

# Model VD 23 | Vacuum drying chambers for non-flammable solvents

A BINDER vacuum drying oven VD series gently dries materials with homogeneous temperature distribution. The patented expansion shelf technology from BINDER ensures optimal heat transfer. The shelves are easy to position where required and the inner chamber of the vacuum drying oven is easy to clean.

## BENEFITS

- Fast and gentle drying
- Direct heat transfer through large thermal conducting plates
- Safe work with one-of-a-kind safety concept
- Coordinated, modular system with vacuum pump and vacuum module



Model 23



Model 23

## MAIN FEATURES

- Temperature range: room temperature plus 15 °C to 200 °C
- APT.line™ preheating chamber technology
- Controller with time-segment and real-time programming
- 2 aluminum expansion racks
- Inert gas connection
- Shatterproof, spring-mounted safety glass panel
- Class 2 independent adjustable temperature safety device (DIN 12880) with visual alarm
- Computer interface: RS 422
- 2 relay outputs, 24 V DC (max. 0.4 A)

## ORDERING INFORMATION

| Interior volume [cu.ft.] | Voltage             | Option model | Version      | Art.-No.  |
|--------------------------|---------------------|--------------|--------------|-----------|
| Model VD 23              |                     |              |              |           |
| 0.8                      | 230 V 1 ph 50/60 Hz | Standard     | VD023-230V   | 9030-0029 |
|                          | 120 V 1 ph 60 Hz    | Standard     | VD023UL-120V | 9030-0035 |

## TECHNICAL DATA

| Description   | VD023-230V <sup>1</sup> | VD023UL-120V <sup>1</sup> |
|---|-------------------------|---------------------------|
| Article Number  | 9030-0029               | 9030-0035                 |
| <b>Performance Data Temperature</b>                       |                         |                           |
| Temperature range 15 °C above ambient temperature to [°C] | 200                     | 200                       |
| Temperature variation at 100 °C [± K]                     | 1.5                     | 1.5                       |
| Temperature fluctuation [± K]                             | 0.1                     | 0.1                       |
| Heating-up time to 100 °C [min]                           | 65                      | 65                        |
| <b>Vacuum Data</b>  |                         |                           |
| Permitted end vacuum [mbar]                               | 0.01                    | 0.01                      |
| Leak rate [bar/h]   | 0.01                    | 0.01                      |
| <b>Electrical data</b>                                    |                         |                           |
| Rated Voltage [V]   | 230                     | 120                       |
| Power frequency [Hz]                                      | 50/60                   | 60                        |
| Nominal power [kW]  | 0.8                     | 0.8                       |
| Unit fuse [A]   | 10                      | 12.5                      |
| Phase (Nominal voltage) [ph]                              | 1                       | 1                         |
| <b>Connections</b>  |                         |                           |
| Vacuum connection with small flange [DN mm]               | 16                      | 16                        |
| Measuring access port with small flange [DN mm]           | 16                      | 16                        |
| Inert gas connection with flow limiter (RP <sup>®</sup> ) | 3/8                     | 3/8                       |
| <b>Outer dimensions</b>                                   |                         |                           |
| Width net [mm]  | 515                     | 515                       |
| Height net [mm]   | 665                     | 665                       |
| Depth net [mm]  | 500                     | 500                       |
| Wall clearance back [mm]                                  | 100                     | 100                       |
| Wall clearance sidewise [mm]                              | 135                     | 135                       |
| Viewing window width [mm]                                 | 250                     | 250                       |
| Viewing window height [mm]                                | 207                     | 207                       |
| <b>Doors</b>  |                         |                           |
| Unit doors  | 1                       | 1                         |
| <b>Internal Dimensions</b>                                |                         |                           |
| Width [mm]  | 285                     | 285                       |
| Height [mm]   | 285                     | 285                       |
| Depth [mm]  | 295                     | 295                       |
| <b>Measures</b>   |                         |                           |
| Interior volume [L]                                       | 23                      | 23                        |
| Net weight of the unit (empty) [kg]                       | 63                      | 63                        |
| permitted load [kg]                                       | 35                      | 35                        |
| Load per rack [kg]  | 20                      | 20                        |
| <b>Fixtures</b>   |                         |                           |
| Number of shelves (std./max.)                             | 2/4                     | 2/4                       |

<sup>1</sup> All technical data is specified for unloaded units with standard equipment at an ambient temperature of +22 °C ±3 °C and a power supply voltage fluctuation of ±10%. The temperature data is determined in accordance to BINDER factory standard following DIN 12880, observing the recommended wall clearances of 10 % of the height, width, and depth of the inner chamber. All indications are average values, typical for units produced in series. We reserve the right to change technical specifications at any time.

## OPTIONS AND ACCESSORIES

| Designation                                      | Description  | *  | Art.-No.  |
|--|--|----|-----------|
| Calibration certificate, expanded                | for temperature; for extending the measurement in center of chamber to include another test temperature  | -  | 8012-1127 |
| Calibration certificate, pressure                | for digital pressure display, measurement at 100 mbar or at specified pressure (range 30 – 900 mbar)   | -  | 8012-0440 |
| Calibration certificate, temperature             | for temperature, measurement in center of chamber at specified temperature   | -  | 8012-1145 |
|  | temperature measurement incl. certificate, 15- 18 measuring points at specified temperature  | -  | 8012-0919 |
|  | temperature measurement incl. certificate, 9 measuring points at specified temperature   | -  | 8012-0916 |
| Digital pressure display                         | Measuring range from 1 mbar to atmospheric pressure, display accuracy 1 mbar   | -  | 8012-0805 |
| Door gasket                                      | made of FKM, silicone-free   | 03 | 8012-0500 |
| Electric access port                             | 9-pin, vacuum-tight access port for transmitting electrical currents, voltages, or signals (max. 50 V / 2 A per pin; vacuum connection DN 16 ISO-KF)   | -  | 8012-0262 |
| Expansion rack                                   | aluminum   | -  | 8009-0370 |
|  | stainless steel 1.4571 (V4A)   | 06 | 8009-0101 |
|  | stainless steel expansion rack instead of standard aluminum expansion rack, incl. calibration  | -  | 8012-0616 |
| Interface converter                              | RS 422 cable set and RS 232 / RS 422 interface converter for connection to 10-way plug distributor or for connection to a unit   |    |           |
|  | 120 V, 60 Hz option model  | -  | 8012-0557 |
|  | 230 V, 50/60 Hz option model   | -  | 8012-0556 |
|  | RS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit   |    |           |
| Interface converter, USB / RS422                 | 120 V, 60 Hz option model  | -  | 8012-0405 |
|  | 230 V, 50/60 Hz option model   | -  | 8012-0380 |
| Interface converter, USB / RS422                 | RS 422 cable set and RS 422 / USB interface converter for connection to 10-way plug distributor or for connection to a unit (USB-powered converter)  | -  | 8012-0665 |
| pH-neutral detergent                             | concentrated, for gentle remove of residual contaminants; 1 kg   | -  | 1002-0016 |
| RS 422 interface                                 | modular plug distributor for 10 RS 422 interfaces  | -  | 8012-0295 |
| RS 422 interface, cable (15 m)                   | RS 422 connection cable (15 m) between plug distributor and RS 422 interface   | -  | 5023-0036 |
| RS 422 interface, cable (50 m)                   | RS 422 extension cable (50 m) between interface converter and unit or RS 232 / RS 422 plug distributor   | -  | 5023-0117 |
| Software   | APT-COM™ communications software   |    |           |
|  | version 2 to 3, GLP edition  | 19 | 9053-0016 |
|  | version 3, BASIC edition   | 19 | 9053-0014 |
|  | version 3, GLP edition   | 19 | 9053-0015 |
|  | version 3, STANDARD edition  | 19 | 9053-0013 |
| Software   | APT-COM™ communications software, price: for free  |    |           |
|  | version 3, GLP DEMO Edition  | 19 | 9053-0008 |
| Temperature measurement of the specimen          | with flexible Pt 100 sensor and digital specimen temperature display   | -  | 8012-0551 |
| Vacuum module                                    | to receive vacuum pumps, with switchable power socket  |    |           |
|  | 120 V, 13 A option model   | -  | 8012-0273 |
|  | 230 V, 16 A option model   | -  | 8012-0130 |
| Vacuum module with chemical membrane pump VP 1.1 | nominal pumping speed 2.0 m³/h, final pressure 7 mbar, including all necessary parts for vacuum connection, ATEX conformity: II 3G IIC T3 X (only for inner chamber, areas coming in contact with media) |    |           |
|  | 120 V option model   | -  | 8012-0726 |
|  | 230 V option model   | -  | 8012-0723 |
| Vacuum module with chemical membrane pump VP 2.1 | nominal pumping speed 3.4 m³/h, final pressure 1.5 mbar,   |    |           |
|  | 120 V option model   | -  | 8012-0727 |
|  | 230 V option model   | -  | 8012-0724 |

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| Designation   | Description  | * | Art.-No.  |
|---|--|---|-----------|
| Vacuum module with speed-controlled chemical membrane pump VP 3.1 | nominal pumping speed 4.6 m <sup>3</sup> /h, final pressure 1.5 mbar, including all necessary parts for vacuum connection, digital vacuum controller (accurate to ≤1 mbar), ATEX conformity: II 3G IIC T3 X (only for inner chamber, areas coming in contact with media) |   |           |
|   | 120 V option model   | – | 8012-0728 |
|   | 230 V option model   | – | 8012-0725 |
| Vacuum pump connection kit  | for vacuum pump VP 1.1, VP 2.1, VP 3.1; consisting of aluminum clamping ring, universal centering ring, small flange with hose nozzle, (2.5 m) rubber hose and 2 hose clamps   | – | 8012-0146 |
| Vacuum pump VP 1.1  | Chemical membrane pump with nominal pumping speed 2.0 m <sup>3</sup> /h, final pressure 7 mbar, ATEX conformity: II 3G IIC T3 X (only for interior, areas coming in contact with media)  |   |           |
|   | 120 V option model   | – | 5013-0118 |
|   | 230 V option model   | – | 5013-0117 |
| Vacuum pump VP 2.1  | chemical membrane pump with nominal pumping speed 3.4 m <sup>3</sup> /h, final pressure 1.5 mbar, ATEX conformity: II 3G IIC T3 X (only for inner chamber, areas coming in contact with media)   |   |           |
|   | 120 V option model   | – | 5013-0120 |
|   | 230 V option model   | – | 5013-0119 |
| Vacuum pump VP 3.1  | Speed-controlled chemical membrane pump with nominal pumping speed 4.6 m <sup>3</sup> /h, final pressure 1.5 mbar, ATEX conformity: II 3G IIC T3 X (only for interior, areas coming in contact with media)   |   |           |
|   | 120 V option model   | – | 5013-0122 |
|   | 230 V option model   | – | 5013-0121 |

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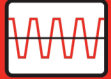
## SERVICES

| Designation                                 | Description   | *              | Art.-No.  |
|---|---|----------------|-----------|
| <b>Installation services</b>                |   |                |           |
| Data Logger Kit installation service        | and set up of unit at operating location, connect to existing connections   | 13, 18         | DL100200  |
|   | unit function instructions for operation and programming of the controller  | 18             | DL100500  |
| <b>Preventive maintenance</b>               |   |                |           |
| Preventive maintenance                      | Executive of equipment inspection according to maintenance plan   | 14, 18         | DL200500  |
| <b>Calibration services</b>                 |   |                |           |
| Calibration digital pressure display        | including certificate, measurement at specified pressure, range 20 – 900 mbar   | 14, 16, 17, 18 | DL320000  |
| Data Logger Kit calibration service         | including certificate, one measuring point in center of chamber at specified temperature  | 14, 16, 17, 18 | DL300201  |
| Temperature measurement 15 measuring points | including certificate, 15 measuring points at specified temperature   | 14, 16, 17, 18 | DL300218  |
| Temperature measurement 9 measuring points  | including certificate, 9 measuring points at specified temperature  | 14, 16, 17, 18 | DL300209  |
| <b>Validation services</b>                  |   |                |           |
| Data Logger Kit validation service          | in accordance with qualification folder   | 15, 18, 20     | DL420300  |
| Execution of IQ/OQ/PQ                       | in accordance with customer's requirement, price: on request  | 15, 18         | DL440500  |
| Qualification folder IQ/OQ                  | supporting documents for validation performed by customer, consisting of: IQ/OQ checklists, unit schematics, QM certificate in accordance with ISO 9001     | 15, 18, 20     | 8012-0859 |
| Qualification folder IQ/OQ/PQ               | supporting documents for validation performed by customer, in accordance with customer's requirement, extension of Qualification folder IQ/OQ by chapter PQ | 15, 18         | 8012-0948 |
| <b>Warranty service</b>                     |   |                |           |
| Extension of the warranty from 2 to 3 years | beginning with the date of delivery, wearing parts are not included   | –              | DL008041  |
| Extension of the warranty from 2 to 5 years | beginning with the date of delivery, wearing parts are not included   | –              | DL008042  |

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## NOTES

- 01 Condensation may occur in the area around the access port. Access ports may be placed in custom locations for an additional charge.
- 02 UL mark is not granted when this option is used.
- 03 Heat resistant only to max. 200 °C.
- 04 Only available on units rated for 230 V.
- 06 Heating-up time may increase as a result of the lower heat conductivity.
- 07 The additional heat input may affect the temperature behavior.
- 09 Not in conjunction with the optional access port, door with window and interior lighting.
- 10 Not available on 23-liter units.
- 11 Not available on 23- or 53-liter units.
- 12 Only available on units rated for 230 V or 400 V.
- 13 Installation and connections take place at unit location; transport within the company only upon consultation.
- 14 We recommend a BINDER service contract (see the chapter on BINDER Service) to cover unit inspections, calibrations and validations.
- 15 OQ according to Yellow Paper = completed factory validation documentation of all OQ checklists.
- 16 Sensor calibration is performed in an accredited calibration laboratory.
- 17 Calibration is performed according to the BINDER factory standard.
- 18 Quoted prices do not include travel costs. Please refer to the chapter on BINDER Service for travel costs for your region. Quoted prices for services performed in Switzerland do not include a country-specific added fee (available on request).
- 19 For additional accessories, refer to the Process documentation chapter.
- 20 When ordering IQ/OQ qualification folders and associated IQ/OQ execution on one order, we offer a 15 % discount for both items.  
When ordering IQ/OQ/PQ qualification folders and associated IQ/OQ/PQ execution on one order, we offer a 15 % discount for the item of the IQ/OQ/PQ folder.



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