

Datasheet

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



Best conditions for your success

Model FP 400 | Drying and heating chambers Classic.Line with forced convection and program functions

A BINDER material test chamber with mechanical convection of the FP series provides reliably short drying times and particularly fast heating – even for chambers under full loads.

BENEFITS

- Uniform drying conditions thanks to APT.line™ technology
- Identical test conditions throughout the chamber interior independent of sample size and quantity
- Outstanding thermal insulation saves operation costs
- Advanced programming options



Model 400



Model 400

MAIN FEATURES

- Temperature range: room temperature plus 5 °C to 300 °C
- APT.line™ preheating chamber technology
- Adjustable fan speed
- Adjustable exhaust air flap
- Controller with time-segment and real-time programming
- 2 chrome-plated racks
- Class 2 independent adjustable temperature safety device (DIN 12880) with visual alarm
- Computer interface: RS 422

ORDERING INFORMATION

| Interior volume [cu.ft.] | Voltage | Option model | Version | Art.-No. |
|--------------------------|---------------------|--------------|--------------|-----------|
| Model FP 400 | | | | |
| 14.1 | 400 V 3 ph 50/60 Hz | Standard | FP400-400V | 9010-0265 |
| | 208 V 3 ph 60 Hz | Standard | FP400UL-208V | 9010-0266 |

TECHNICAL DATA

| Description | FP400-400V ¹ | FP400UL-208V ¹ |
|--|-------------------------|---------------------------|
| Article Number | 9010-0265 | 9010-0266 |
| Performance Data Temperature | | |
| Temperature range 5 °C above ambient temperature to [°C] | 300 | 300 |
| Temperature variation at 150 °C [± K] | 2.5 | 2.5 |
| Temperature fluctuation at 150 °C [± K] | 0.3 | 0.3 |
| Heating-up time to 150 °C [min] | 35 | 35 |
| Recovery time after 30 seconds door open at 150 °C [min] | 17 | 17 |
| Air change data | | |
| Air change (approx.) at 150 °C [x/h] | 18 | 18 |
| Electrical data | | |
| Rated Voltage [V] | 400 | 208 |
| Power frequency [Hz] | 50/60 | 60 |
| Nominal power [kW] | 3.4 | 3.4 |
| Unit fuse [A] | 3 x 16 | 3 x 16 |
| Phase (Nominal voltage) [ph] | 3 | 3 |
| Outer dimensions | | |
| Width net [mm] | 1235 | 1235 |
| Height net [mm] | 1025 | 1025 |
| Depth net [mm] | 765 | 765 |
| Wall clearance back [mm] | 160 | 160 |
| Wall clearance sidewise [mm] | 100 | 100 |
| Internal Dimensions | | |
| Width [mm] | 1000 | 1000 |
| Height [mm] | 800 | 800 |
| Depth [mm] | 510 | 510 |
| Measures | | |
| Interior volume [L] | 400 | 400 |
| Net weight of the unit (empty) [kg] | 145 | 145 |
| permitted load [kg] | 90 | 90 |
| Load per rack [kg] | 35 | 35 |
| Environment-specific data | | |
| Energy consumption at 150 °C [Wh/h] | 1200 | 1200 |
| Fixtures | | |
| Number of shelves (std./max.) | 2/10 | 2/10 |

¹ 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. Technical data refers to 100 % fan speed. 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. |
|---|--|--------|-----------|
| | back | | |
| | 10 mm | 01 | 8012-1286 |
| | 30 mm | 01 | 8012-1370 |
| | 50 mm | 01 | 8012-1386 |
| | left | | |
| | 10 mm | 01 | 8012-1279 |
| | 30 mm | 01 | 8012-1362 |
| | 50 mm | 01 | 8012-1378 |
| | 100 mm | 01, 11 | 8012-1510 |
| Access port with silicone plug | right | | |
| | 10 mm | 01 | 8012-1272 |
| | 30 mm | 01 | 8012-1357 |
| | 50 mm | 01 | 8012-1374 |
| | 100 mm | 01, 11 | 8012-1507 |
| | top | | |
| | 10 mm | 01 | 8012-1265 |
| | 30 mm | 01 | 8012-1366 |
| | 50 mm | 01 | 8012-1382 |
| | 100 mm | 01, 10 | 8012-1389 |
| Analog output, 4 – 20 mA | for temperature values (output not adjustable) | 02 | 8012-0481 |
| Calibration certificate, expanded | for temperature; for extending the measurement in center of chamber to include another test temperature | – | 8012-1119 |
| | for temperature, measurement in center of chamber at specified temperature | – | 8012-1138 |
| Calibration certificate, temperature | temperature measurement incl. certificate and 27 measuring points at specified temperature | – | 8012-1597 |
| | temperature measurement incl. certificate, 15- 18 measuring points at specified temperature | – | 8012-1576 |
| | temperature measurement incl. certificate, 9 measuring points at specified temperature | – | 8012-1555 |
| Cart | Cart – stable cart, casters with locking brakes, dimensions: W 1,300 x D 800 x H 780 mm | – | 9051-0019 |
| Class 3.1 independent temperature safety device | with visual alarm (DIN 12880) | 04, 12 | 8012-1149 |
| Data Logger Kit | T 350: For continuous temperature logging from 0 °C to 350 °C; kit includes 1 data logger, Pt 100 sensor with 2 m extension cable and 1 magnetic fixture for mounting to the BINDER unit | 19 | 8012-0714 |
| Data Logger Software | LOG ANALYZE software kit, configuration and evaluation software for all BINDER Data Logger Kits (incl. USB data cable) | 19 | 8012-0821 |
| Door gasket | made of FKM, silicone-free | 03 | 8012-1311 |
| Door lock | lockable door handle | – | 8012-1255 |
| Fan, reinforced | to increase air change rates 400 V option model | – | 8012-1200 |
| HEPA air filter | On fresh air supply for unit; filter classification H14 (acc. to. EN 1822-1:2009, > 99.995% at 0.3 µm) | – | 8012-1169 |
| Inner chamber, reinforced | including 2 reinforced racks (max. total load 250 kg, max. load per rack 70 kg) | – | 8012-1257 |
| | with lid made from 18/8 stainless steel, stackable, dimensions: 230 x 133 x 45 mm | | |
| Instrument tray | small | – | 4022-0123 |
| | with lid made from 18/8 stainless steel, stackable, dimensions: 315 x 215 x 60 mm | | |
| | large | – | 4022-0124 |

* Notes › See last page

| Designation | Description | * | Art.-No. |
|--------------------------------------|---|----|-----------|
| 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 | | |
| | 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 |
| Measurement of air exchange rate | in accordance with ASTM D5374, definition and protocol according to ambient temperature | - | 8012-1198 |
| pH-neutral detergent | concentrated, for gentle remove of residual contaminants; 1 kg | - | 1002-0016 |
| Pt 100 temperature sensor | additional flexible Pt 100, interior, for displaying the temperature on the unit display | - | 8012-0504 |
| Rack | chrome plated | - | 6004-0005 |
| | stainless steel | - | 6004-0011 |
| Rack accessories | Rack accessories – fasteners (1 set of 4) for additional security of racks | - | 8012-0531 |
| Rack, reinforced | stainless steel, with 1 set of 4 fasteners, max. load 70 kg | - | 8012-0346 |
| 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 |
| Shelf, perforated | stainless steel | - | 6004-0029 |
| | | - | 6004-0032 |
| 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 |
| | APT-COM™ communications software, price: for free | | |
| | version 3, GLP DEMO Edition | 19 | 9053-0008 |
| Viewing window and interior lighting | viewing window in each door, 470 x 290 mm, and 30 W interior lighting | | |
| | 120 V option model | - | 8012-0240 |
| | 230 V option model | - | 8012-0060 |
| Zero voltage relay contacts | for controlling 3 relay contacts via program regulators, accessible via 6-pin DIN socket (max. 24 V - 2.5 A) | | |
| | 120 V option model | - | 8012-0472 |
| | 230 V option model | - | 8012-0471 |

* Notes › See last page

SERVICES

| Designation | Description | * | Art.-No. |
|--------------------------------------|--|----------------|----------|
| Installation services | | | |
| Data Logger Kit installation service | unit function instructions for operation and programming of the controller | 18 | DL100500 |
| Installation | and set up of unit at operating location, connect to existing connections | 13, 18 | DL100100 |
| Preventive maintenance | | | |
| Preventive maintenance | Execution of equipment inspection according to maintenance plan | 14, 18 | DL200200 |
| Calibration services | | | |
| Data Logger Kit calibration service | including certificate, one measuring point in center of chamber at specified temperature | 14, 16, 17, 18 | DL300101 |
| Measurement of air exchange rate | including certificate (in accordance with ASTM D5374) | 14, 16, 17, 18 | DL330000 |

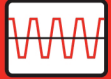
* Notes › See last page

| Designation | Description | * | Art.-No. |
|---|---|----------------|-----------|
| Temperature measurement 18 measuring points | including certificate, 18 measuring points at specified temperature | 14, 16, 17, 18 | DL300118 |
| Temperature measurement 27 measuring points | including certificate, 27 measuring points at specified temperature | 14, 16, 17, 18 | DL300127 |
| Temperature measurement 9 measuring points | including certificate, 9 measuring points at specified temperature | 14, 16, 17, 18 | DL300109 |
| Validation services | | | |
| Execution of IQ/OQ | in accordance with qualification folder | 15, 18, 20 | DL410200 |
| 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 | 8012-0856 |
| 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 | 8012-0945 |
| Warranty service | | | |
| Extension of the warranty from 2 to 3 years | beginning with the date of delivery, wearing parts are not included | - | DL005041 |
| Extension of the warranty from 2 to 5 years | beginning with the date of delivery, wearing parts are not included | - | DL005042 |

* Notes › See last page

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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