Blue M®

146 Series

Standard Mechanical Convection Ovens

The Blue M Standard Mechanical Convection Oven is ideal for a number of laboratory and light industrial oven applications, including ASTM testing, epoxy curing, moisture drying, UL testing, aging of electronic components and devices, as well as many other processes or testing requirements.

Oven Features

- Adjustable air intake and exhaust dampers
- Adjustable shelf levels
- Fiberglass insulation to ensure safe cabinet skin temperature
- Heavy-duty door - double-wall, insulated construction
- Independent, over-temperature protection (high limit controller) included
- Corrosion resistant, fully welded, stainless steel (type 304) interior
- All-welded, heavy-duty exterior with heavy-gauge, reinforced, cold-rolled steel
- Baked on white powder-coated enamel finish on exterior for long-lasting corrosion protection
- Every oven is fully assembled and individually factory tested
- Circuit breaker provided for ground fault protection as standard
- Single or three phase operation available in 50 Hz or 60 Hz

Uniform, Accurate and Reliable Temperature Control

- Available with profiling or single setpoint temperature controls, Ethernet and USB communications
- Horizontal airflow assures uniform thermal performance under most loading conditions
- Exclusive Blue M Eterna heating elements - the most reliable available, with heavy-gauge high temperature nickel chromium wire and low-watt density for longer service life
- Airflow switch provided as standard to protect oven and product
- Adjustable one-pass airflow system - tempered air passes over heater(s) and through chamber only once if necessary, readily adjusted to suit a broad range of product loads and operating requirements
- Motorized damper available for automatic control of fresh air intake or exhaust
- Direct drive, multi-blade, centrifugal blower with high-volume air delivery and dynamically balanced or noise reduction

Design to satisfy the most challenging applications.

Our engineered-to-order skills can accommodate your unique requirements.
INDUSTRY SOLUTIONS

Blue M's experienced engineers are able to meet even the most stringent requirements when designing customer equipment.

Applications
- Aging
- Annealing
- ASTM Testing
- Curing
- Drying
- Photo Resist
- Solvents, Coatings, and Paint Curing
- Stress-Relief

Industries
- Aerospace
- Agriculture
- Automotive
- Defense
- Education
- Electronics
- Energy
- Government
- Medical
- Oil & Gas
- Pharmaceutical
- Research & Development
- Rubbers & Plastics
- Semiconductors
- Telecom
- Textiles

www.bluem.com

Blue M is a brand of Thermal Product Solutions, LLC.
# Services Include:
- Installation Supervision
- Start-up & Training
- Turn-key Installation
- Preventative Maintenance
- Temperature Uniformity
- Instrument Calibration
- GAMP Documentation
- Water Quality Analysis

##温控规格

<table>
<thead>
<tr>
<th>温度</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>标准温度范围</td>
<td>15°C (59°F) 至350°C (662°F)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>控制精度</td>
<td>±1.0°C (±1.8°F)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>解度</td>
<td>±0.1°C (±0.1°F)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>加热时间</td>
<td>60 分钟或更少，取决于型号和电压</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>统一性</td>
<td>Blue M 可根据您的特定需求提供不同的可调精度</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

## Model Dimensions

<table>
<thead>
<tr>
<th>模型</th>
<th>DC – 206 (Bench Model)</th>
<th>DC – 256 (Bench Model)</th>
<th>DC – 256 (Floor Model)</th>
<th>DC – 306 (Floor Model)</th>
<th>DC – 1406 (Floor Model)</th>
</tr>
</thead>
<tbody>
<tr>
<td>立方英尺 (Liter)</td>
<td>4.2 (119)</td>
<td>5.8 (164)</td>
<td>9 (255)</td>
<td>11 (312)</td>
<td>24 (660)</td>
</tr>
<tr>
<td>工作空间尺寸 (mm)</td>
<td>25 x 10 x 25</td>
<td>25 x 20 x 25</td>
<td>25 x 25 x 25</td>
<td>25 x 25 x 25</td>
<td>50 x 20 x 25</td>
</tr>
<tr>
<td>(W x D x H)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>外部尺寸 (mm)</td>
<td>40 x 34 x 40</td>
<td>45 x 36 x 40</td>
<td>45 x 40 x 40</td>
<td>45 x 40 x 40</td>
<td>45 x 36 x 35</td>
</tr>
<tr>
<td>(W x D x H)</td>
<td>(1016 x 864 x 1020)</td>
<td>(1143 x 814 x 1245)</td>
<td>(1143 x 1016 x 1000)</td>
<td>(1143 x 814 x 1900)</td>
<td>(1143 x 914 x 1193)</td>
</tr>
<tr>
<td>机壳尺寸 (sq. ft.)</td>
<td>9.4</td>
<td>11.3</td>
<td>12.5</td>
<td>11.3</td>
<td>10</td>
</tr>
<tr>
<td>约定重量 (lbs)</td>
<td>600</td>
<td>700</td>
<td>850</td>
<td>900</td>
<td>1350</td>
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</table>

## Load / Capacity

<table>
<thead>
<tr>
<th></th>
<th>8</th>
<th>8</th>
<th>8</th>
<th>17</th>
<th>16</th>
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</thead>
<tbody>
<tr>
<td>架数</td>
<td>125</td>
<td>225</td>
<td>200</td>
<td>225</td>
<td>150</td>
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<tr>
<td>自整定容量 (lbs)</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
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<tr>
<td>载荷率 (lbs)</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>100</td>
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</table>

## Performance

<table>
<thead>
<tr>
<th></th>
<th>785</th>
<th>925</th>
<th>1230</th>
<th>1230</th>
<th>1600</th>
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</thead>
<tbody>
<tr>
<td>单位CFM @ 0.55 °C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Airflow SPM</td>
<td>314</td>
<td>333</td>
<td>263</td>
<td>263</td>
<td>267</td>
</tr>
<tr>
<td>最大耗气量 (CFM) @ Ambient</td>
<td>115</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td>145</td>
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<tr>
<td>排气口尺寸 (inches)</td>
<td>3</td>
<td>3</td>
<td>3</td>
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<td>3</td>
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<tr>
<td>热气流 (BTU/min)</td>
<td>4727</td>
<td>5672</td>
<td>2470</td>
<td>8643</td>
<td>12985</td>
</tr>
</tbody>
</table>

## Electrical Service

<table>
<thead>
<tr>
<th>模型</th>
<th>DC – 206 (Bench Model)</th>
<th>DC – 256 (Bench Model)</th>
<th>DC – 256 (Floor Model)</th>
<th>DC – 306 (Floor Model)</th>
<th>DC – 1406 (Floor Model)</th>
</tr>
</thead>
<tbody>
<tr>
<td>208 VAC</td>
<td>1 Ph 60 Hz</td>
<td>4</td>
<td>4.5</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>线电流 (Amps)</td>
<td>(17)</td>
<td>(26)</td>
<td>(35)</td>
<td>(35)</td>
<td>(38)</td>
</tr>
<tr>
<td>240 VAC</td>
<td>1 Ph 60 Hz</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>线电流 (Amps)</td>
<td>(20)</td>
<td>(26)</td>
<td>(40)</td>
<td>(40)</td>
<td>(44)</td>
</tr>
<tr>
<td>308 VAC</td>
<td>3 Ph 60 Hz</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td>13.5</td>
</tr>
<tr>
<td>线电流 (Amps)</td>
<td>(20)</td>
<td>(27)</td>
<td>(40)</td>
<td>(40)</td>
<td>(40)</td>
</tr>
<tr>
<td>408 VAC</td>
<td>3 Ph 60 Hz</td>
<td>9</td>
<td>12</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>线电流 (Amps)</td>
<td>(23)</td>
<td>(31)</td>
<td>(48)</td>
<td>(48)</td>
<td>(48)</td>
</tr>
<tr>
<td>480 VAC</td>
<td>3 Ph 60 Hz</td>
<td>9</td>
<td>12</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>线电流 (Amps)</td>
<td>(23)</td>
<td>(31)</td>
<td>(48)</td>
<td>(48)</td>
<td>(48)</td>
</tr>
</tbody>
</table>

*1 Shelves not included with the unit
*2 Distributed Load
*3 Approximate
*4 Calculated values at unit's max temperature, at room temp with oven ducted outside of room

Blue M is a brand of Thermal Product Solutions, LLC.
OPTIONS & ACCESSORIES

Blue M industrial and laboratory ovens are available with a variety of options to enhance the capabilities and performance of the unit. Options categories include ergonomics, performance, process control/electrical and safety. Ask your sales representative for additional options and custom solutions.

Ergonomic Options

- Nickel-plated wire rod shelves
- Stainless steel slotted shelves
- Swivel casters with levelling feet

Performance Options

- Semi-pierced duct walls for tuning airflow
- Powered Exhaust System
- Motorized Dampers

Process Control / Electrical Options

- 24-hour, 7-day digital process timer
- Light tower with audible alarm
- Temperature deviation alarm with visual and audible alerts

Safety Options

- Emergency Stop Pushbutton
- Pneumatic or Electro-Mechanical door lock
- Maintenance Lockout

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CONTROL SYSTEMS

The Watlow F4T Temperature Controller with INTUITION™ temperature process controller combines the flexibility of a modular I/O controller with best-in-class ease of use.

**Watlow F4T Controller Features**
- 4.3-inch, color touch panel with high-resolution, graphical user-interface
- 1 to 4 control loops with TRU-TUNE+ adaptive control algorithm for superior controllability
- 40 ramp and soak profiles with real-time clock and battery backup.
- Ethernet Modbus® TCP connectivity
- High-speed USB 2.0 host port
- Modular design, which offers numerous types of field pluggable modules for maximum flexibility and easiest compatibility
- Optional Data Logging capability
- Optional Graphical Trend Chart
- TPS provides panel mounted USB and Ethernet ports located on the front control panel of the equipment
- Temperature stability: Typical ±0.1°F/°F (±0.1°C/°C) rise in ambient max

Watlow’s PM PLUS™, the enhanced EZ-ZONE® PM, is now more intuitive and features an enhanced interface for easier programming and readability with a SMOOTH-TOUCH™ keypad creating an industry leading user experience.

**Watlow PM Plus Controller**
- Integrated functions and high amperage power control output lower ownership costs
- Current monitoring detects heater current flow and provides alarm indication of a failed output device or heater load
- Features a wide range of serial communications capabilities
- User-selectable heat/cool, on-off, P, PI, PD, PID or alarm action
- Auto-tune with TRU-TUNE+ adaptive control algorithm
- Configuration communications with software saves time and improves reliability of controller setup
- Temperature stability: ±0.1°F/°F (±0.1°C/°C) rise in ambient max

Scan for additional F4T specifications and options
Scan for additional PM Plus specifications and options
SOFTWARE PACKAGES

COMPOSER® Software

COMPOSER® is Watlow’s new, easy-to-use software for configuring and customizing controllers. Use it to optimize Watlow’s F4T, D4T, EZ-ZONE® RM and EZ-ZONE PM products for specific applications. Task-specific views simplify all aspects of commissioning new controllers including managing the inputs and outputs from pluggable flex modules, setting up functions such as control loops and alarms and creating and editing profiles.

ProcessView Software

ProcessView Data Acquisition Software for Watlow’s F4T, Legacy F4, and EZ-Zone® PM Controller Networks. The Software is dedicated to adding value just with Watlow F4T, Legacy F4, and EZ-Zone PM Controllers, which means there is no programming required and it outperforms other more expensive software packages on the market. ProcessView is a great replacement for legacy Watview® Software.

Dedicated Overview Screen:
Each Controller/Chamber on the network shows real-time trend, process data, event output status and current Profile status. Profiles can be started, stopped, paused or resumed from this screen. Profile Events can be manually turned on or off if enabled.

Software Alarm Screen:
Each input sensor (temperature, humidity, etc.) can have a Software Alarm associated with it independent of the alarms hard coded in the controller. Both visual and audible notifications can be enabled in the software.

Security Screen:
All menus and screens can be password protected with 3 different role levels (Supervisor, Technician and Operator) with unique passwords.

Audit Trail Viewer:
All audit trail entries can be viewed with the audit trail viewer screen. Each audit trail entry is time stamped and answer the “How”, “Why”, “Who”, “When” for the change. Audit trails are encrypted and can be printed or exported for auditor inspections in a readable CSV format.

Real-Time Data Log File Viewer Screen:
Displays data as it is being logged to the PC file for peace of mind and to make sure the correct data is being logged. Events are also recorded in the Data Log file along with Batch Information and Min/Max process values for each input. Notes can be added by the operator real-time as the profile or batch is running. Multiple electronic signatures can be added to data log files for tamper-proof security.

Scan here for additional Watlow Composer specifications, software and demos, and training and education information.
Blue M Warranty

Blue M warrants the equipment will be free from defects in material and workmanship for a period of two (2) years from the date of shipment (or from the installation date if this service is provided by TPS or a TPS approved partner and the date is approved by TPS). If a TPS Preventive Maintenance Plan is purchased before the end of the standard warranty period, these limited warranties shall be extended by one (1) additional year. If within the warranty period the original purchaser notifies Blue M in writing of an alleged nonconformity, and Blue M determines to its reasonable satisfaction that the product or service is in fact nonconforming, then Blue M shall, at its option and expense, repair or replace the non-conforming product or correct the nonconforming service, either at the original purchaser’s facility, or Blue M’s. Labor is only included for domestically installed units. Equipment installed outside of the United States (USA) will be one year parts only from date of shipment. For full details, exclusions, and other information on our warranty please go to: https://www.thermalproductsolutions.com/support/blue-m

International Support
- All models available in 50 & 60 Hertz configurations
- CE, cUL, & UL-508A available
- Authorized reps / servicers in most countries

Aftermarket Services
From installation, parts and global support to servicing, testing and yearly maintenance, we are here to ensure your TPS product achieves maximum performance.

GAMP Documentation may include FRS, HDS, SDS, FAT, SAT, and IQ/OQ.

Services Include:
- Installation Supervision
- Start-up & Training
- Preventative Maintenance
- Temperature Uniformity
- Instrument Calibration
- GAMP Documentation

TPS MAX Program

The TPS MAX Program allows the customer to purchase future service and/or parts without the need to have a purchase order approved and released when parts or service are needed. These funds are available to be used on parts or service in the future, saving you and your company costly down-time. Enrollment also entitles you to the many advantages listed below. Enrollment in the TPS MAX Program requires a minimum purchase of $5,000.00. Amounts above $5,000.00 will be accepted. Funds do not expire.

10% Off:
- Service Labor (including: training, installation, preventive maintenance)
- Travel Time
- Calibration Services
- Parts
- Mileage
- Ground Shipping on Parts

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