Blue M®

Batch Series

Mechanical Convection Ovens

Blue M industrial batch ovens provide customers with reliable, superior performance. Available in six (6) standard sizes, these batch ovens are ideal for a variety of testing and industrial applications. The Blue M batch oven utilizes a high volume, horizontal air recirculation system which maximizes temperature uniformity and performance. Built to be compatible with shelves or roll-in racks, these ovens offer the flexibility to meet your loading needs.

Oven Features

- Adjustable air intake and exhaust dampers
- Multiple 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, 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
- Three phase operation available in 50 Hz or 60 Hz
- Can be built as roll-in rack style or reach-in Cabinet style

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

Designed to satisfy the most challenging applications.

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

TPS™ Thermal Product Solutions

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

»Blue M »Gruenberg »Lindberg/MPH
»Lunaire »Tenney »Wisconsin Oven

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INDUSTRY SOLUTIONS

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

Applications

- Aging
- Annealing
- Curing
- Drying
- Solvents, Coatings, and Paint Curing
- Stress-Relief

Industries

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

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OVEN SPECIFICATIONS

Temperature	
Standard Temperature Range	15°C (27°F) above ambient to 316°C (600°F)
Heat up time	316°C (600°F) 60 minutes or less depending on model and voltage, empty chamber
Alternate High Temperature Rating (Optional)	15°C (27°F) above ambient to 399°C (750°F) is achieved with high power heaters, heat shields on the oven door(s), and reinforced front cabinet construction to enable safe operation at the higher temperature range
Controller Accuracy	+/- 1.0°C (+/- 1.8°F)
Controller Resolution	+/- 0.1°C (+/- 0.1°F)
Uniformity	Blue M can provide varying levels of uniformity; if you have a specific tolerance or specification that must be met, please contact us with your requirements so we can ensure the equipment is designed, tested, and adjusted to meet those requirements

Electrical Service – Standard Power						
Model	DC – 166 (Floor Model)	DC – 246 (Floor Model)	DC – 326 (Floor Model)	DC – 366 (Floor Model)	DC-606 (Floor Model)	DC – 966 (Floor Model)
208 VAC 3Ph 60 Hz Heater KW	9	10.5	13.5	13.5	18	24
Line Current (Amps)	(29)	(33)	(42)	(42)	(60)	(76)
240 VAC 3Ph 60 Hz Heater KW	12	14	18	18	24	32
Line Current (Amps)	(33)	(38)	(47)	(47)	(68)	(86)
480 VAC 3Ph 60 Hz Heater KW	12	14	18	18	24	32
Line Current (Amps)	(17)	(19)	(24)	(24)	(34)	(43)
Electrical Service – High Power						
Model	DC – 166 (Floor Model)	DC – 246 (Floor Model)	DC – 326 (Floor Model)	DC – 366 (Floor Model)	DC-606 (Floor Model)	DC – 966 (Floor Model)
208 VAC 3Ph 60 Hz Heater KW	13.5	16	20	20	26	N/A
Line Current (Amps)	(46)	(53)	(64)	(64)	(85)	N/A
240 VAC 3Ph 60 Hz Heater KW	18	21	27	27	34.5	N/A
Line Current (Amps)	(50)	(58)	(72)	(72)	(95)	N/A
480 VAC 3Ph 60 Hz Heater KW	18	21	27	27	36	48
Line Current (Amps)	(25)	(29)	(36)	(36)	(49)	(62)

Model Dimensions						
Model	DC – 166 (Floor Model)	DC – 246 (Floor Model)	DC – 326 (Floor Model)	DC – 366 (Floor Model)	DC-606 (Floor Model)	DC – 966 (Floor Model)
Cubic Feet (Liters)	16 (453.1)	24 (679.6)	32 (906.1)	36 (1019.4)	60 (1699.0)	96 (2718.4)
Work Space Inches (mm) (W x D x H)	24 x 24 x 48 (610 x 610 x 1219)	36 x 24 x 48 (914 x 610 x 1219)	48 x 24 x 48 (1219 x 610 x 1219)	36 x 36 x 48 (914 x 914 x 1219)	36 x 48 x 60 (914 x 1219 x 1524)	48 x 48 x 72 (1219 x 1219 x 1829)
Exterior Inches (mm) (W x D x H)	45 x 39 x 85 (1143 x 991 x 2159)	57 x 39 x 85 1448 x 991 x 2159	65 x 39 x 85 1651 x 991 x 2159	57 x 51 x 85 1448 x 1296 x 2159	75 x 63 x 93 1905 x 1600 x 2362	87 x 63 x 105 2210 x 1600 x 2667
Machine Footprint (sq. ft.)	12.2	15.4	17.6	20.2	32.8	38.1
Approx Unit Weight (lbs)	1288	1375	1686	1537	2100	2738
Load / Capacity						
Max Number of Shelves†	10	10	10	10	9	11
Shelf Spacing (inches)	4	4	4	4	6	6
Shelf Weight Capacity (lbs)††	350	300	250	300	200	200
Chamber Capacity (lbs)††	400	400	400	400	400	400
Floor Load Rating (lbs)††	75	75	100	75	100	100
Door(s)	Single Door Right-Hinged	Single Door Right-Hinged	Dual-Leaf Double Door	Single Door Right-Hinged	Single Door Right-Hinged	Dual-Leaf Double Door
Performance						
Airflow SCFM @ 0.5"WC	1730	1730	1730	1730	3100	3100
Airflow SFPM	216	216	216	144	155	129
Max Exhaust SCFM at Ambient†††	360	420	420	420	320	320
Exhaust Port Diameter (inches)	4	4	4	4	8	8
Heat Rejection††† (BTUH)††††	8415	10253	11994	12768	17991	23310

†Shelves not included with the unit
††Distributed Load
†††Approximate
††††Estimated values at unit's max temperature with the oven ducted outside of the room

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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.

Stainless Steel Options

- The Stainless steel exterior option includes a door latch handle and hinges stainless steel chrome finish.
- The Stainless steel wall flange (Bioseal) surrounds the oven cabinet for through-wall installation. The wall flange is installed close to the front area of the oven.

****Note that the cabinet oven design does not allow for a flush front installation.*

24-hour, 7-day digital process timer

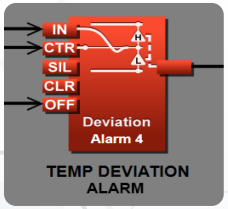
Stainless steel slotted shelves

Maintenance Lockout

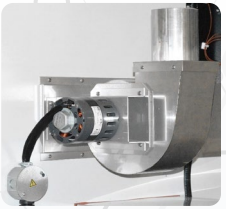
Light tower with audible alarm

Swivel casters with levelling feet

Pneumatic or Electro-Mechanical door lock



Temperature deviation alarm with visual and audible alerts



Powered Exhaust System

Emergency Stop Pushbutton

Scan for more options

Motorized Dampers

Fused Disconnect with Lock Out / Tag Out System

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CONTROL SYSTEMS

Scan for additional F4T specifications and options

Scan for additional PM Plus specifications and options

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

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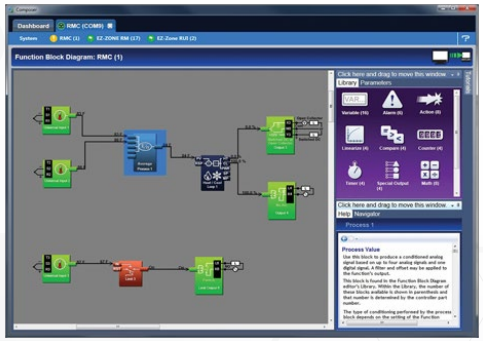
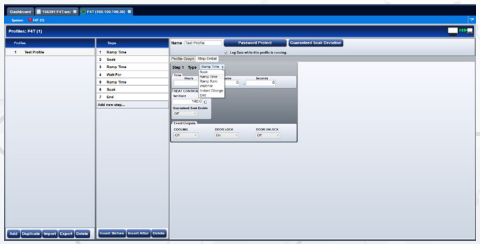
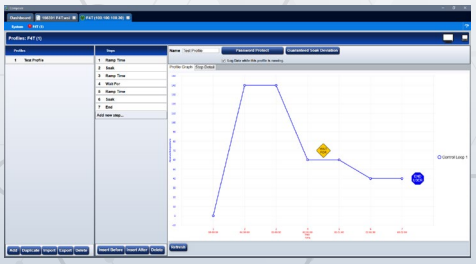
SOFTWARE PACKAGES

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.





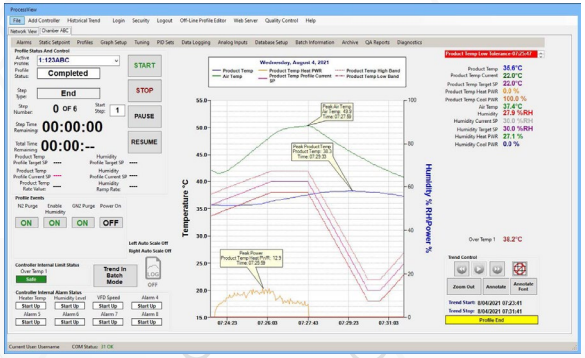


Scan here for additional Watlow Composer specifications, software and demos, and training and education information.

- Function block diagram with live data and error indication
- Depicts the configuration visually making it easy to understand and explain to others
- Multi-language support
- Provides backup of settings to restore if settings are changed or controller is replaced
- Lets users adjust window sizes and positions to work efficiently
- Data trending and batch management configurations are available

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.



- Designed to work with Windows 7/10/11 operating systems allowing the use of newer PC technology
- Supports up to 50 Watlow F4T's, Legacy F4 and or EZ-Zone PM Controllers embedded on a local network
- Enabling the software's security features provides compliance to **21 CFR Part 11** industries such as Pharmaceutical, Medical and Clinical markets

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.

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Blue M Warranty

LIMITED WARRANTY TO ORIGINAL PURCHASERS. Blue M ("Blue M") warrants to the original purchaser that Blue M owns and will convey clear title to each product that it manufactures and delivers. Additionally, and provided the original purchaser has paid the full purchase price for a product or service, Blue M warrants that from the date it ships and, if applicable, installs a product, or finishes performing a service, the product Blue M manufactured shall conform to written specifications that Blue M approved, and the product shall be free from defects in material and workmanship for twenty-four (24) months, (with the exceptions of the Ultra Temp and LO/GO series, which have a 12 month warranty). Blue M further warrants that any service it performs shall conform to written specifications that Blue M approved and be free from defects in workmanship for twenty-four (24) months (with the exceptions of the Ultra Temp series, which are covered for 12 months. No service warranty for LO/GO series). If a purchaser purchases a TPS Preventive Maintenance & Calibration plan at the end of the warranty period, these limited warranties shall each be extended by twelve (12) months, (with the exceptions of the LO/GO series) subject to the exclusions below. If, within that time period, the original purchaser notifies Blue M in writing of an alleged non-conformity, and Blue M determines, to its reasonable satisfaction, that a product or service is, in fact, non-conforming, then Blue M shall, at its option and expense, repair or replace the non-conforming product or correct the non-conforming service, either at the original purchaser's or Blue M's factory. Warranty Exclusions. This limited warranty shall not apply to (i) labor to replace a part in a product located outside of the U.S., (ii) a service Blue M performed outside of the U.S., (iii) any loss or damage resulting from normal wear and tear or alteration, misuse, or abuse, including any loss or damage caused by customer products or processes, (iv) improper installation, operation, maintenance, or repair by the original purchaser or a third party with or without TPS' permission, (v) improper water quality out of range specifications as noted by TPS, (vi) improperly configured customer controllers or customer training issues, (vii) consumable items, including, but not limited to, filters, drive belts, light bulbs, lamps, wear strips/surfaces, gaskets, fuses, conveyor belts, contactors, valves, spark plugs, and other similar items. If on-site warranty work is required for a product located outside of the continental U.S, Blue M will charge the customer on a time and materials basis, plus reasonable expenses for travel, lodging and meals.

THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS, STATUTORY OR IMPLIED, AND STATES BLUE M'S ENTIRE WARRANTY AND THE ORIGINAL PURCHASER'S SOLE AND EXCLUSIVE REMEDY RELATED TO PRODUCTS OR SERVICES BLUE M PROVIDED. BLUE M EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND ANY WARRANTIES IMPOSED BY COURSE OF DEALING OR USAGE OF TRADE.

Scan for Additional Warranty Information

For full details, exclusions, and other information on our warranty please go to: https://www.bluem.com/warranty-information

International Support

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

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

Aftermarket Services

Optimize. Revitalize. Maximize.

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

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