



## Multiple Controllers in One Pre-programmed Cooking Computer Handle All Cooking Applications

MINICHEF® 2000 is an industry first in on-off or PID configurable temperature/time and machine-function controllers. This cooking computer is pre-programmed for multiple applications and ready to be installed. The food equipment industry can now rely on one product to provide control for many cooking devices including cook and hold ovens, convection ovens, deep-fat fryers, griddles and rotisseries. OEMs can easily switch the controller from one application to another or customize it to fit different applications by pressing a combination of keys.

Because the MINICHEF 2000 can operate various types of equipment, it can affordably replace other controllers, therefore simplifying inventory, manufacturing and reducing your supplier base. Faceplate overlays for the MINICHEF 2000 can be sized to fit excess cut-out space when replacing other controls. With a compact electrical case of 82.55 mm x 82.55 mm x 50.8 mm deep (3.25 in. x 3.25 in. x 2 in. deep), MINICHEF 2000 enables new opportunities for space-efficient equipment designs.

MINICHEF 2000 withstands the rigorous conditions of a kitchen environment with an 80°C (176°F) ambient rating and superior immunity to electrical interference. This cooking computer/ controller is tested to CE, UL®, C-UL®, CSA, NSF and AGA standards and is backed by Watlow's exclusive three-year warranty—the most comprehensive in the industry.

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### Features and Benefits

#### Configurable cooking controller

- Standardizes applications on one controller simplifying inventory, manufacturing and reducing multiple suppliers

#### Multiple inputs/outputs

- Control temperatures, times and machine functions

#### Programmable menus

- Simplifies repetitive tasks

#### Compact design

- Provides options for designing space-efficient equipment

#### Economical

- Offers more features at a lower cost than other units

#### MINICHEF 2000 software diagnostics

- Simplifies operation and troubleshooting

#### “Smart Control” feature

- Optimizes system performance by calculating PID parameters automatically

#### Mid-point alarms

- Enables even cooking by alerting the user to an action such as stir or turn

#### Preheat option

- Prevents menu start until equipment is pre-heated

#### Meets CE, UL®, C-UL®, CSA, NSF and AGA standards

- Helps obtain international and local code compliance



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WIN-MC20-1102

**ISO 9001**



## Applications

MINICHEF 2000 cooking computers can be used in the following applications:

- Convection Ovens
- Cook & Hold Ovens
- Deck Ovens
- Deep-Fat Fryers
- Griddles
- Holding Cabinets
- Pasta Cookers
- Pressure Fryers
- Proofing Cabinets
- Rethermalizers
- Steamers
- and many more

## Enhance End-User Appeal

MINICHEF 2000 is an effective, easy-to-install, easy-to-use, reliable cooking computer that adds value to your equipment. It delivers stable, repeatable cooking to assure end-users of high food quality and safety.

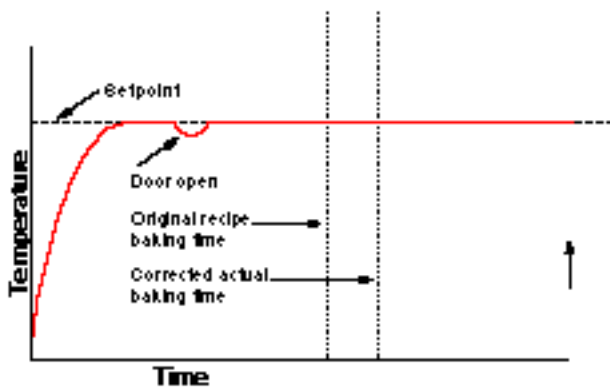
MINICHEF 2000 produces outstanding food consistency, reducing waste and increasing restaurant profits. This controller is easily adapted to the cooking environment, whether it's one restaurant or a large chain.

Large displays with sensible prompts and keys with tactile feedback allow for ease of use. The MINICHEF 2000 software feature offers on-board diagnostics and makes it easy to troubleshoot on-site or over the phone.

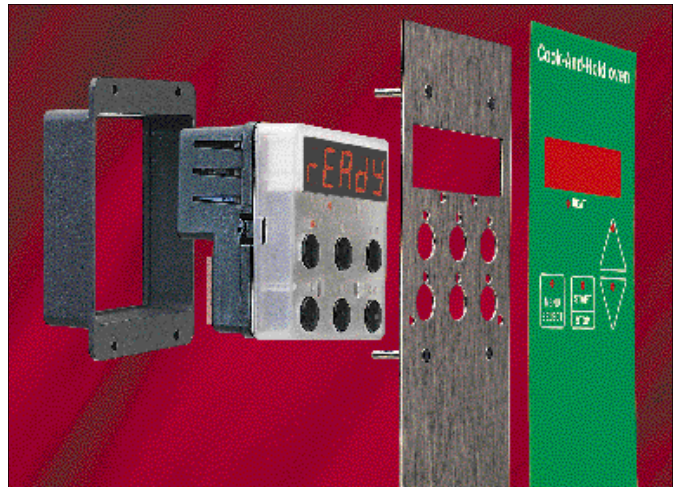
Finally, Watlow's exclusive three-year warranty is testament to the intensive development invested in MINICHEF 2000. You can depend on the MINICHEF 2000 cooking computer for reliable, long-term control.

## Optional Utilities

- **Audible alarm** - offers up to six different alarm formats to notify users of control conditions
- **Battery back-up** - a six-year lithium battery provides backup in case of power failure
- **Real-time clock** - displays time of day when idling



WATCURVE enables stable, repeatable cooking by compensating for temperature disturbances during the cooking cycle. It automatically recalculates and adjusts menu cooking time as a result of the disturbance.



Create sleek designs with your faceplate and Watlow's compact, flush-mounted controller. The unit above is shown with the mounting collar in a vertical orientation. The collar can also be positioned in a horizontal orientation (see photo on front page). In addition, the controller's construction and use of standard wiring connectors enable easy installation or removal with no special tools.

## RTD Sensors

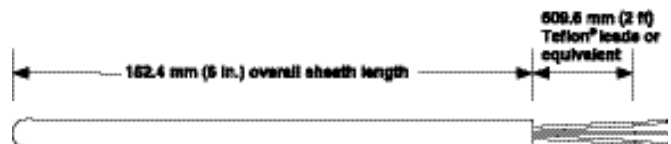
Even though the MINICHEF 2000 is configured for use with a wide range of sensor types, Watlow recommends the use of 1000 RTD sensors. There are numerous advantages to using Watlow's RTD sensors.

### RTD Features

- Safe operation
- High accuracy
- Linear over a wide temperature range
- Interchangeable
- Special food service designs

### RTD Benefits

- In the event of a shorted sensor outside the cooking area, unlike a thermocouple, an RTD will not result in a runaway condition in your equipment
- More precise, repeatable cooking
- The standard MINICHEF 2000 with a Watlow RTD sensor can be used over a wide range of cooking temperatures with no loss in accuracy
- The accuracy of a Watlow RTD will allow a sensor to be replaced in the field without replacing or recalibrating the control
- Watlow RTDs are designed for your most demanding food service requirements, including 260°C (500°F) to prevent contamination



### Code No. RBHBOTA030JB020

Watlow recommended sensor design. Other designs available by request.

## Specifications—WMC2-XSPN Rev. A00

### Control Mode

- Single and dual heat channels, PID or on-off<sup>①</sup>
- Microprocessor-based, programmable, direct-acting control outputs
- User-selectable embedded application software defines operation of display, keys, inputs, outputs, timing action
- One-step auto-tuning, MINICHEF 2000 software diagnostics and temperature compensation

### Agency

- CE approved:
  - 89/336/EEC Electromagnetic Compatibility Directive
  - EN 50081-1: Emissions
  - EN 50082-1: Immunity
  - 73/23/EEC Low-Voltage Directive
  - EN 60730-1 and EN 60730-2-9
- NSF Listed, Criteria 2<sup>⑤</sup>
- AGA: UL<sup>®</sup> tested to AGA standard Z21.23, (UL<sup>®</sup> File # E43684)
- UL<sup>®</sup> and C-UL<sup>®</sup> recognized, UL<sup>®</sup> 197, 873, 991 and CSA standard C22.2-24, (UL<sup>®</sup> File # E43684)

### Operator Interface

- Membrane overlay, contamination and water resistant, (supplied by customer)
- LED display, 5 digit, 14.22 mm (0.56 in.) high, red
- Displays times, temperatures, user prompts and diagnostic codes
- User-selectable time and temperature display formats
- Temperature display formats —°F or °C
- Time display formats—H:MM:SS, HH:MM or MMM:SS
- Audible alarms
- Eight red indicator lights
- Six tactile feedback keys
- Menu-driven operation and manual modes available
- Real-time clock option displays time of day
- MINICHEF 2000 software diagnostics

### Accuracy

- Calibration accuracy and sensor conformity<sup>②</sup>:
  - ± -16.6°C (2.0°F) for Type J thermocouple and RTD,
  - ± 0.35 percent of span for Type K and E thermocouples,
  - ±1 LSD, 25°C ± -15°C (77°F ± 5°F) ambient and rated line voltage of ±10 percent
- Accuracy span: 540°C (1000°F) minimum
- Temperature stability: ±0.15°C/°C (0.15°F/°F) change in ambient typical

### Sensors/ Inputs<sup>③</sup>

- Contact inputs, TTL compatible with internal pull-up resistor, two available
- Thermocouple,<sup>③</sup> software selectable Type J, K or E, 0 to 648°C (32 to 1200°F) (Dual channel applications require at least one ungrounded thermocouple)
- RTD,<sup>③</sup> 2 or 3 wire, platinum, 100, 500 or 1000  $\Omega$ , at 0°C (32°F), software selectable DIN or JIS curves, -17 to 648°C (0 to 1200°F) (3 wire will function as 2 wire)
- Input A/ D resolution: 15 bit

### Output Options

- Solid state relay, 0.4A, with or without contact suppression
- Switched dc $\overline{=}$  signal, 4.5V to 5.25V, 30mA maximum output, minimum load resistance > 150  $\Omega$ , non-isolated

### Audible Output Options

- Switched dc $\overline{=}$  signal, 4.5V to 5.25V, 30mA maximum output, minimum load resistance > 150  $\Omega$ , non-isolated
- Internal audible alarm, 75dB at 10 cm

### Connectors

- Sensor Input Terminal Strip<sup>④</sup>: RIACON, 6-position, quick-connect
- Power and Input/ Output Terminal<sup>④</sup>: AMP, 15-position, quick-connect

### Power/ Line Voltage

- 20.4 to 26.4V~(ac), 47 to 63Hz
- 15VA maximum
- For CE applications, input power must be limited to 15W external to the control
- Program retention upon power failure via non-volatile memory
- Battery/ real-time clock option: six-year lithium battery, provides power backup upon power failure, operation resumption after power recovery, ability to display time of day

### Operating Environment

- 0 to 80°C (32 to 176°F), 0 to 90 percent RH, non-condensing

### Storage Temperature

- -40 to 80°C (-40 to 176°F)

### Mechanical

- Case: polycarbonate Lexan<sup>®</sup> with adjustable mounting collar (vertical or horizontal orientation), designed for mounting on 16, 18, 20 and 22 gauge panels
- Internal panel mounting requires a specified panel cutout and four #6-32 studs or equivalent
- Overall width x height x depth: horizontal - 104.90 mm x 82.55 mm x 50.8 mm (4.13 in. x 3.25 in. x 2.00 in.); vertical - 82.55 mm x 104.90 mm x 50.8 mm (3.25 in. x 4.13 in. x 2.00 in.) (Assumes mating connectors are attached. Does not include wire bundle space requirements.)
- Vibration: 2g, 10 to 150Hz, applied in any one of three axes
- Weight: 6.50 oz maximum

### Program Storage

- All non-embedded user and factory programs are stored in non-volatile memory. Can be changed by reprogramming.

### Sample/Update Rates

- 1 input: 4Hz
- 2 inputs: 4Hz
- PID: 1Hz
- Control outputs: 100Hz

- <sup>①</sup> The MINICHEF 2000 controller is to be used in systems with an external high temperature limiting device.
- <sup>②</sup> Thermocouple lead resistance of 200  $\Omega$  causes < 1°C error. RTD, 22 gauge wire will not contribute more than 0.086°F error/ft.
- <sup>③</sup> Dual channel applications require either two thermocouple sensors or two identical RTD sensor types.
- <sup>④</sup> For mating connector information, see Ordering Information Accessory section.
- <sup>⑤</sup> NSF certified for thermometer accuracy (oven and hot food holding applications from 0 to 315°C (32°F to 600°F) when used with an RTD or Type J thermocouple temperature sensor/probe.

## MINICHEF 2000 Accessories

- 0836-0442-0000** Sensor Input Mating Connector, (RIACON # 31007106), six-position, quick-connect terminal, screw connection for 28-14 AWG wires, tighten to 7 in./lb
- A001-0298-0000** Power and I/O Mating Connector Kit Includes:  
– 1 AMP # 1-640523-0, 15-position, quick-connect terminal  
– 15 AMP # 641300-1 crimp pins
- 0238-0679-0000** Prototyping & Training Membrane Overlay, adhesive-backed, 120.65 mm x 120.65 mm (4.75 in. x 4.75 in.)
- 0830-0479-0000** Prototyping EPROM Extraction Tool, AMP # 821980-1
- A001-0249-0001** 120V~(ac) – 24V~(ac), stepdown transformer, class 2, quick-connect terminals included
- A001-0249-0002** 208/ 240V~(ac) – 24V~(ac), stepdown transformer, class 2, quick-connect terminals included

## Recommended Sources of Supply

**Watlow** • RTD and Thermocouple Temperature Sensors and Meat Piercing Probes  
Richmond, IL  
(815) 678-2211

**AMP, Inc.** • Prototyping EPROM Extraction Tool Part No. 821980-1  
Harrisburg, PA  
1-800-522-6752  
• Pin Crimping Hand Tools Part No. 90325-1 or 58514-1  
• Pin Extraction Hand Tool

## MINICHEF 2000 Documentation

- WMC2-XUGN-0000** The Complete MINICHEF 2000 User Guide  
**WMC2-XTDN-0000** MINICHEF 2000 Tutorial Diskette (3.5 in.)  
**WMC2-XSGN-0000** General Hardware & Software Setup Guide  
**WMC2-XAGN-0001** Cook & Hold Oven Application Guide  
**WMC2-XAGN-0002** Convection Oven Application Guide  
**WMC2-XAGN-0003** Deep-Fat Fryer Application Guide  
**WMC2-XAGN-0004** Griddle Application Guide  
**WMC2-XAGN-0005** Timer Application Guide  
**WMC2-XAGN-0006** Shelf-Timer Application Guide  
**WMC2-XAGN-0007** Rotisserie Oven Application Guide  
**WMC2-XFSN-0008** Fast Start Guide

## Ordering Information—WMC2-XMNN Rev. A00

**MINICHEF 2000**  
Cooking controller with numerous food equipment application software sets, single and dual channel on-off or PID temperature regulation, timer and machine-function control, microprocessor-based, programmable, auto-tuning, MINICHEF 2000 software diagnostics, 24V~(ac) power input, agency approved, flush mounted (membrane faceplate supplied by customer).

**Inputs**

- 1 = Dual thermocouple, Type J, K or E
- 2 = Dual RTD, platinum, 100  $\Omega$ , curve selectable
- 3 = Dual RTD, platinum, 500  $\Omega$ , curve selectable
- 4 = Dual RTD, platinum, 1000  $\Omega$ , curve selectable

(Note: All models include two event inputs, switched dc logic signal, non-isolated.)

**Output Number 1**

- 1 = Switched dc  $\square$ , 5V nominal, 30mA, non-isolated
- 2 = Solid state relay, Form A, 0.4A, without RC suppression
- 3 = Solid state relay, Form A, 0.4A, with RC suppression

**Output Number 2**

- 1 = Switched dc  $\square$ , 5V nominal, 30mA, non-isolated
- 2 = Solid state relay, Form A, 0.4A, without RC suppression
- 3 = Solid state relay, Form A, 0.4A, with RC suppression

**Output Numbers 3 and 4**

- 1 = 2 event outputs, switched dc  $\square$ , 5V nominal, 30mA, non-isolated

**Battery and Real-time Clock**

- 0 = None
- 1 = Includes battery and real-time clock

**Audible Alarm**

- 0 = Alarm signal available at connector, switched dc  $\square$ , 5V nominal, 30mA, non-isolated
- 1 = Internal alarm included

**Software**

- AA = Standard Food Equipment Application Software Set
- XX = Custom Set-up parameters or Made-To-Order custom software. Consult your local Watlow Sales Engineer. Code number assigned by factory.

**F 2 H A - 1 - AA**

**North American Sales Offices:** Atlanta, (770)972-4948 • Austin, (512)249-1900 • Birmingham, (205)678-2358 • Charlotte, (704)541-3896 • Chicago, (847)458-1500 • Cincinnati, (513)398-5500 • Cleveland, (330)467-1423 • Dallas, (972)620-6030 • Denver, (303)798-7778 • Detroit, (248)651-0500 • Eastern Canada, (450)433-1309 • Houston, (281)440-3074 • Indianapolis, (317)575-8932 • Kansas City, (913)897-3973 • Los Angeles, (714)935-2999 • Louisiana, (318)864-2864 • Maryland/Virginia, (215)345-8130 • Minneapolis/Manitoba, (952)892-9222 • Nashville, (615)264-6148 • New England, (603)882-1330 • New York/New Jersey/Philadelphia, (215)345-8130 • New York, Upstate, (716)438-0454 • Ontario, (716)626-6788 • Orlando, (407)351-0737 • Phoenix, (602)289-6960 • Pittsburgh, (412)322-5004 • Portland, (503)245-9037 • Raleigh/Greensboro, (336)766-9659 • St. Louis, (314)878-4600 • Sacramento, (707)425-1155 • San Diego, (714)935-2999 • San Francisco, (408)434-1894 • Seattle, (425)222-4090 • Tampa/St. Petersburg, (407)647-9052 • Tulsa, (918)496-2826 • Western Canada, (604)444-4881 • Wisconsin, North (920)993-2161 • Wisconsin, South (262)723-5990

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