ALTO-S AAM





Deluxe Control Simple Control

> CMC-H2H CMC-H3H



Structured Air Technology™

For the most current manual, visit alto-shaam.com Die neueste Fassung des Handbuchs finden Sie auf alto-shaam.com Pour la dernière version du manuel, visiter alto-shaam.com Para obtener el manual más actual, visite alto-shaam.com Ga voor de meest recente handleiding naar alto-shaam.com За самой последней версией руководства обращайтесь на сайт alto-shaam.com 要查看当前最新手册,请访问 alto-shaam.com



MN-47241-EN

REV.03 07/23

Manufacturer's Information

Copyright	© Copyright 7/23 by Alto-Shaam, Inc.			
	All rights reserved.			
	This manual or any portion thereof may not be reproduced or used in any manner whatsoever without the express written permission of Alto-Shaam, Inc.			
Trademarks	All trademarks referenced in this documentation are the property of their respective owners.			
Manufacturer	Alto-Shaam, Inc.			
	P.O. Box 450			
	W164 N9221 Water Street			
	Menomonee Falls, WI 53052			
Original instructions	The content in this manual is written in American English.			



Alto-Shaam 24/7 Emergency Repair Service

Call	Call 800-558-8744 to reach our 24-hour emergency service call center for immediate access to local authorized service agencies outside standard business hours. The emergency service access is provided exclusively for Alto-Shaam equipment and is available throughout the United States through Alto-Shaam's toll free number.
Availability	Emergency service access is available seven days a week, including holidays.

FOREWORD



This page is intentionally left blank.



Manufacturer's Information
Foreword 3
Alto-Shaam 24/7 Emergency Repair Service
Table of Contents5
Safety 9
The Meaning of Signal Words
Safety Precautions
Operation 13
How to Turn On and Turn Off the Oven (Deluxe Control)
How to Lock and Unlock the Screen (Deluxe Control)
How to Cool Down the Oven (Deluxe Control)............15
How to View Oven Information (Deluxe Control)
How to Calibrate the Temperature Probe (Deluxe Control)17
How to Turn On and Turn Off the Oven (Simple Control)
How to Lock and Unlock the Screen (Simple Control)
How to Cool Down the Oven (Simple Control)
How to View Oven Information (Simple Control)
How to Calibrate the Temperature Probe (Simple Control)23
Components 25
Chamber Identification
Service Panels Identification
Front Panel Component Identification
Control Panel Component Identification
Rear Panel Components Identification
Top Panel Components—CMC-H2H
Top Panel Components—CMC-H2H...................34
Top Panel Components—CMC-H2H....................35
Top Panel Components—CMC-H3H

ALTO-SHAAM

Top Panel Components—CMC-H3H	. 37
Top Panel Components—All	. 38
Main Disconnect Switch	.38
Check Fans Indicator Light Switch 1 of 2	.38
Terminal Blocks, Relays	.39
Wye Filter (CE Only)	.40
Line Filter (CE Only)	.40
12VDC Power Supply	.41
Steam Element Relays	.42
Terminal Blocks, Drive Relays	.43
Speaker	.44
Circuit breakers	.44
Voltage Monitor	.45
Control Board	.46
Solid State Relay — Duel (SSR)	.47
Solid State Relay — Single (SSR)	.48
CMC-H2H Terminal Blocks & Circuit Breakers	.49
CMC-H3H Terminal Blocks & Circuit Breakers	.50
Variable Frequency Drive (VFD)	.51
Component Identification, Right Service Panel	. 52
Blower Assembly	.53
Wash Pump	.53
Check Fans Indicator Light Switch	.54
Switch. Hose Reel/Hand Shower	.54
Browning Valve	.55
Electric Catalytic Converter	.55
Loft Convice Danal Identification	EC
	. 50
Stoom and Chamber Heating Elements	.57
	. 57
Speaker	. 50
Speaker	. 50
	. 59
Right Service Panel Identification	. 60
Fans	.61
Filter—Cooling Air	.62
Internal Components Identification	. 63
Theory	65
Sequence of Operation	. 65
	<u> </u>
System Diagrams	69
Capacitive Touch Diagram—Ampire	.69
Capacitive Touch Diagram—Tianma	.70



Convection Blower Diagram, Chamber 1
Steam Injection System Diagram, Chamber 1
Browning Valve Diagram 74
Water Valve and Hand Shower Diagram
Cleaning System Diagram76
Maintenance 77
Maintenance Schedule
Troubleshooting 79
Error Codes
The Fan Indicator Light is On
Cavity Light does not Illuminate
Chamber will not Heat
Convection Fan is not Operating
Axial Cooling Fan not Functioning
Oven will not Turn On
Steam System Doesn't Work
How to View the Service Screen
What to do if the High Limit Screen Displays
Schematics 93

TABLE OF CONTENTS

This page is intentionally left blank.



The Meaning of Signal Words

This manual contains signal words where needed. These signal words must be obeyed to reduce the risk of death, personal injury, or equipment damage. The meaning of these signal words is explained below.



DANGER

Danger indicates a hazardous situation which, if not avoided, will result in serious injury or death.



WARNING

Warning indicates a hazardous situation which, if not avoided, could result in serious injury or death.



CAUTION

Caution indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



Notice indicates a situation which, if not avoided, could result in property damage.



NOTE: Note indicates additional information that is important to a concept or procedure.



Safety Precautions

Before you begin	Read and understand all instructions in this manual.				
Electrical precautions	Obey these electrical precautions when using the appliance:				
	Connect the appliance to a properly grounded outlet. Do not use the appliance if it is not properly grounded. Consult an electrician if there is any doubt that the outlet used is properly grounded.				
	Keep the cord away from hot surfaces.				
	Do not attempt to service the appliance or its cord and plug.				
	Do not operate the appliance if it has a damaged cord or plug.				
	Do not immerse the cord or plug in water.				
	Do not let the cord hang over the edge of a table or counter.				
	Do not use an extension cord.				
Usage precautions	Obey these usage precautions when using the appliance:				
	Only use this appliance for its intended use of heating or cooking.				
	 Always keep liquids, or foods that can become liquid when heated, level and at or below eye level where they can be seen. 				
	Use utensils and protective clothing such as dry oven mitts when loading and unloading the appliance.				
	Use caution when using the appliance. Floors adjacent to the appliance may become slippery.				
	Do not cover or block any of the openings of this appliance.				
	Do not cover racks or any other part of this appliance with metal foil.				
	Do not use this appliance near water such as a sink, in a wet location, near a swimming pool, or similar locations.				
	Do not unplug or disconnect the appliance immediately after cooking. The cooling fans must stay on to protect electrical components.				
Maintenance	Obey these maintenance precautions when maintaining the appliance:				
precautions	 Obey precautions in the manual, on tags, and on labels attached to or shipped with the appliance. 				
	Only clean the appliance when oven is OFF.				
	Do not store the appliance outdoors.				
	Do not clean the appliance with metal scouring pads.				
	Do not use corrosive chemicals when cleaning the appliance.				
	Do not use a hose or water jet to clean the appliance.				
	Do not use the appliance cavity for storage.				
	Do not leave flammable materials, cooking utensils, or food inside the appliance when it is not in use.				
	Do not remove the top cover or side panels. There are no user-serviceable components inside.				



Operator training	All personnel using the appliance must have proper operator training. Before using the appliance:			
	Read and understand the operating instructions contained in all the documentation delivered with the appliance.			
	Know the location and proper use of all controls.			
	Keep this manual and all supplied instructions, diagrams, schematics, parts lists, notices, and labels with the appliance if the appliance is sold or moved to another location.			
	Contact Alto-Shaam for additional training if needed.			
Operator qualifications	Only trained personnel with the following operator qualifications are permitted to use the appliance:			
	Have received proper instruction on how to use the appliance.			
	 Have demonstrated their ability with commercial kitchens and commercial appliances. 			
	The appliance must not be used by:			
	Persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision concerning use of the appliance by person responsible for their safety.			
	People impaired by drugs or alcohol.			
	Children should be supervised to ensure that they do not play with the appliance.			
	Children shall neither clean nor maintain the appliance.			
Condition of	Only use the appliance when:			
appliance	 All controls operate correctly. 			
	The appliance is installed correctly.			
	The appliance is clean.			
	The appliance labels are legible.			
Servicing the appliance	Only trained personnel are permitted to service or repair the appliance. Repairs that are not performed by an authorized service partner or trained technician will void the warranty and relieve Alto-Shaam of all liability. Original manufacturer's replacement parts may be substituted; however, these parts must be of equal quality and specifications as those provided by Alto-Shaam.			
	To prevent serious injury, death or property damage, have the appliance inspected and serviced at least every twelve (12) months by an authorized service partner or trained technician.			
	Contact Alto-Shaam for the authorized service partner in your area.			
Sound power	The A-weighted sound pressure level is below 70 dB(A).			

ALTO-SHAAM

SAFETY

Personal Protective Equipment (PPE)	Wear the following Personal Protective Equipment (PPE) while cleaning the appliance:		
	Protective gloves		
	Protective clothing		
	Eye protection		

Face protection

Service Technician Training

Only trained personnel are permitted to service or repair the appliance. Service technicians must be knowledgeable in current codes and standards as stated by the appropriate agencies, such as:

- The National Fire Protection Association (NFPA)
- National Electrical Code (NEC)
- The Service Technician's employer



How to Turn On and Turn Off the Oven (Deluxe Control)

Before you begin	The oven must be connected to electric power. To turn on the oven, do the following.				
Turning on the oven					
	Step	Action			
	1.	Set the main disconnect switch ① to the ON position.			
		Touch the ON/OFF button 2.			
		NOTE: The main disconnect switch is meant to be used during service operations. For every day operation, it may be left in the ON position.			
		CT-TS-011206			

The oven is now on.

The oven is now off.

Turning off the oven

To turn off the oven, do the following.

2. **Touch** and hold the ON/OFF button ② until the "Shut Down Options" screen displays. **Touch** "Shut down" ③. The oven activates the blowers for the cool-down process. The cool-down process is complete when the oven deactivates the blowers and the display screen turns off.



CT-TS-014018



Converge® Service Manual MN-47241 Rev 3 7/23

OPERATION

How to Lock and Unlock the Screen (Deluxe Control)



Result

The screen is now locked or unlocked.



How to Cool Down the Oven (Deluxe Control)

Procedure

To cool down the oven, do the following.



Cooling down progress bars

Above each chamber on the screen, progress bars indicate each chamber's progress towards reaching its cool down temperature.



Result

The oven is now cooled down.



How to View Oven Information (Deluxe Control)

Background This procedure is to be done through the touchscreen on the Deluxe control, not through the ChefLinc[™] oven management system.

The oven information screen shows the system info, serial number, network status, and connection settings.

Procedure

To view oven information, do the following.



2. **Touch** the "Info" icon (2). The "System Info" screen displays.

Scroll to view the oven model, serial number, system software, network status, and cleaning timer.



Result

The oven's information has been viewed.



How to Calibrate the Temperature Probe (Deluxe Control)

Before you begin	Make s	ure:				
	TheYouYou	oven is on, but not in c have a thermometer. have a container filled	cooking or holding m with ice and water.	iode.		
Procedure	To calib	rate the probe, do the	e following.			
	Step	Action				
	1.	Insert the probe and the thermometer in a container of ice water and allow the temperature to settle to 32°F (0°C).				
	2.	Touch the menu icon	1). The menu screen	displays.		
		inactive		Manual Cooking	E My Recipe Library	Cleaning
		E 2 □ 2	8 Ē 6 G	Network	? Help	i) Info CT-TS-013849
	3.	Touch the "Settings" id	con ②. The "General :	Settings" so	reen displ	ays.
		HACCP Data	rary Cleaning	General Settin Home Screen Language Temperature S Temperature Units	gs Manu Settings Fahre	al Cook > English >
		Network Help		Auto Preheat		CT-TS-013852

Continued on next page



Continued from previous page

4.	Scroll ③ until "Probe Offsets" displays. Touch the "Calibrate Probes" ④ setting.
5.	Compare the probe temperature reading against $32^{\circ}F$ (0°C). Touch the "+" or "-" symbols until the temperature displayed is $32^{\circ}F$ (0°C) (5). Touch the check mark (6). The calibration $x^{\circ} + y^{\circ}$ $f = f + y^{\circ}$
6.	Remove the probe from the ice water.
7.	If the oven has multiple probes, repeat this procedure until all probes are calibrated.

Result

The probe is now calibrated.



How to Turn On and Turn Off the Oven (Simple Control)

Before you begin The oven must be connected to electric power. Turning on the oven To turn on the oven, do the following. Step Action **Set** the main disconnect switch (1) to the ON position. 1. **Press** the ON/OFF button (2). The LED on the button illuminates green. NOTE: The main disconnect switch is meant to be used i) during service operations. For every day operation, it may be left in the ON position. (1)LED $\langle | \rangle$ Ð CT-TS-011206

The oven is now on.

Turning off the oven

To turn off the oven, do the following.

2. **Press and hold** the ON/OFF button until the LED above the ON/OFF button illuminates red.

The oven activates the blowers for the cool-down process. The screen displays a cool-down prompt and asks for the door to be opened. The oven will deactivate the blowers when the cool-down process is complete.

The oven is now off.



How to Lock and Unlock the Screen (Simple Control)

Before you begin	The oven is turned on.				
Background	The screen can be locked to prevent changes being made during the cooking process.				
Procedure	To lock and unlock the screen, do the following.				
	Step Action				
	1.	Touch the lock icon ①. The screen is now locked.			
		Ready Chamber 1 : Chamber 1 :			
	2.	To unlock the screen, touch and hold the lock icon and drag it to the top or bottom of the screen.			
		Ready Chamber 1 Ready Chamber 1 Ready Chamber 1 Ready Chamber 1 Chamber 1			

Result

The screen is now locked or unlocked.



How to Cool Down the Oven (Simple Control)

Procedure

To cool down the oven, do the following.



Cooling down progress bars Above each chamber on the screen, blue progress bars indicate each chamber's progress towards reaching its cool down temperature.

N 🕚 00:05:00



Result

The oven is now cooled down.

8

a 275°



How to View Oven Information (Simple Control)



Result

The oven's information has been viewed.



How to Calibrate the Temperature Probe (Simple Control)

Before you begin	ore you begin Make sure:							
	 The oven is on, but not in cooking or holding mode. You have a thermometer. You have a container filled with ice and water. 							
Procedure	To calib	prate the probe, do the following.						
	Step	Action						
	1.	Place the probe and the thermometer in a container of ice water and allow the temperature to settle to 32°F (0°C).						
	2.	Touch the menu icon ①. The menu screen displays.						
	3.	Couch the "Settings" icon ②. The "General Settings" screen displays. Image: Settings (Sectional Cooking My Recipe Library Cleaning HACCP Data Sectional Cooking Sectional						

Continued on next page



Continued from previous page



Result

The probe is now calibrated.



Chamber Identification



Components will be identified in accordance with the chamber numbering illustrated here.



Service Panels Identification



Ref.	Description	Ref.	Description
1	Control panel	5	Convection heating elements panel
2	Right side panel	6	Circuit breakers 4 and 5 panel
3	Cleaning pump panel	7	Top panel
4	Left side panel	—	-

ALTO-SHAAM.

Front Panel Component Identification



Ref.	Description
1	Check fans indicator light
2	ON/OFF button
3	USB port
4	Control panel display



Control Panel Component Identification



VMC-PHD-007596

Ref.	Description
1	WIFI antenna
2	Capacitive touch controller board (Not serviceable)
3	Interface board
4	Liquid Crystal Display (LCD) (Not serviceable)
5	ON/OFF board
6	USB port

ALTO-SHAAM

Interface Board



Ref.	Description	Product	Screen Orientation	SW 6	SW 5	SW 4	SW 3	SW 2	SW 1
BATT	Clock battery	Vector H	Landscape	OFF	OFF	OFF	OFF	OFF	OFF
120		Cook & Hold	Landscape	OFF	OFF	ON	OFF	OFF	OFF
120	Capacitive touch cable	Vector F	Deuturait	055				055	
J1	USB connections	Electric	Portrait						
12	Display back light	Vector F Gas	Portrait						
J2		Converge DX	Landscape		OFF				
J4	LCD interface	Converge SX	Landscape	ON	OFF	OFF	OFF	ON	OFF
J10	Speaker	Prodigi Pro	Dertroit	0	0	055	011		0.1
J12	12 VDC power	Electric Dradiai Dra	Portrait	UFF	UFF	UFF	UN	UFF	
 J13	Ethernet	Gas	Portrait	ON	OFF	ON	ON	OFF	ON
J16	8 GB micro SD card	Prodigi Classic Elect	Portrait	OFF	OFF	OFF	ON	ON	ON
J21	ON/OFF board	Prodigi Classic Gas	Portrait	ON	OFF	ON	ON	ON	ON
J38	Speaker			-		_			
J54	RS 485/232 LVIO								
S1	DIP switches (see table)								
SW1	DIP switch (off)								
SW2	DIP switch (off)							AS-PHD-	-014227



Rear Panel Components Identification



Ref. Description Ref. Description 1 Electric power cord connection Untreated water connection 6 Y2 Condensate water Y5 Hose reel Main disconnect switch 2 N7 Chamber 1 reset switch Manual drain Chamber 2 reset switch 3 N9 Chamber 3 reset switch 4 Oven drain N10 5 Treated water connection ----Y1 Steam injection



High Limit Switch

Resettable

Contacts open at 572°F (300°C)



Ref.	Description
1	Reset button
2	Temperature bulb

Fans

- Impedance protected
- 240V
- 581 Ohm





Water Solenoid — Steam

Y1 Water Solenoid



Water Solenoid — Clean/Rinse and Hand Shower

- Y2 Water
- Y5 Hand shower





Top Panel Components—CMC-H2H



Ref.	Description	Ref.	Description
1	Disconnect switch	10	Relay
2	Terminal blocks	11	Speaker
3	Relays	12	Terminal blocks
4	DC Power supply	13	Circuit breakers
5	Terminal blocks	14	Voltage monitor
6	Relays	15	Solid State Relay (SSR)
7	Check fans switch	16	Circuit breakers
8	Control board	17	Terminal block
9	Terminal blocks	18	Variable Frequency Drive (VFD)



Top Panel Components—CMC-H2H



Ref.	Description	Ref.	Description
1	Disconnect switch	10	Relay
2	Terminal blocks	11	Speaker
3	Relays	12	Terminal blocks
4	DC Power supply	13	Circuit breakers
5	Terminal blocks	14	Voltage monitor
6	Relays	15	Solid State Relay (SSR)
7	Check fans switch	16	Circuit breakers
8	Control board	17	Terminal block
9	Terminal blocks	18	Variable Frequency Drive (VFD)

208-240V, 3PH



Top Panel Components—CMC-H2H



Ref.	Description	Ref.	Description
1	Disconnect switch	11	Speaker
2	Terminal blocks	12	Terminal blocks
3	Relays	13	Circuit breakers
4	DC Power supply	14	Voltage monitor
5	Terminal blocks	15	Solid State Relay (SSR)
6	Relays	16	Circuit breakers
7	Check fans switch	17	Terminal block
8	Control board	18	Variable Frequency Drive (VFD)
9	Terminal blocks	19	Line filter
10	Relay	20	WYE filter

Top Panel Components—CMC-H3H



Ref.	Description	Ref.	Description
1	Disconnect switch	10	Relay
2	Terminal blocks	11	Speaker
3	Relays	12	Terminal blocks
4	DC Power supply	13	Circuit breakers
5	Terminal blocks	14	Voltage monitor
6	Relays	15	Solid State Relay (SSR)
7	Check fans switch	16	Circuit breakers
8	Control board	17	Terminal block
9	Terminal blocks	18	Variable Frequency Drive (VFD)

208-240V, 3PH


Top Panel Components—CMC-H3H



Ref.	Description	Ref.	Description
1	Disconnect switch	11	Speaker
2	Terminal blocks	12	Terminal blocks
3	Relays	13	Circuit breakers
4	DC Power supply	14	Circuit breakers
5	Terminal blocks	15	Voltage monitor
6	Relays	16	Solid State Relay (SSR)
7	Check fans switch	17	Terminal block
8	Control board	18	Variable Frequency Drive (VFD)
9	Terminal blocks	19	Line filter
10	Relay	20	WYE filter



Top Panel Components—All

Main Disconnect Switch



Check Fans Indicator Light Switch 1 of 2

Contacts close at or above 130°F (54°C)



VMC-PHD-001903



Terminal Blocks, Relays



Ref.	Description	Ref.	Description
1	TB61 — Check fans circuit	6	Steam valve relay (SV 2)
2	TB 60 — Check fans circuit	7	Steam valve relay (SV 3)
3	Check fans alarm	8	Cleaning pump relay
4	Catalytic converter relay (CC)	9	Water relay (H ₂ O)
5	Steam valve relay (SV 1)	10	Hand shower relay



COMPONENTS

Wye Filter (CE Only)



VMC-PHD-010734

Line Filter (CE Only)



VMC-PHD-010737



12VDC Power Supply

Supplies DC voltage to the control board and the ON/OFF switch.



Ref.Description112VDC terminals212VDC adjustment3240VAC terminals



COMPONENTS

Steam Element Relays

VMC-H2H

VMC-H3H



Ref.	Description
1	TB32 — DC -
2	TB 34 — DC +
3	Steam element relay (LWS 1)
4	Steam element relay (LWS 2)
5	Steam element relay (LWS 3)

Terminal Blocks, Drive Relays

VMC-H2H

VMC-H3H



Ref.	Description	
1	TB 16 — L1 after circuit breaker	
2	TB 22 — L2/N after circuit	
3	CV (VFDs) drive relay	
4	TB 26 — L2/N CV drive relay	
5	TB GND — ground	



Speaker



VMC-PHD-001995

Circuit breakers





Voltage Monitor



Input (J1–J2)	DC Range (J5)
190	3.725
200	3.921
208	4.078
230	4.509
250	4.902

Ref.	Description	
1	J5 DC output	
2	J1 AC input	
3	J2 AC input	



Control Board



Ref.	Pin(s)	Description	Ref.	Pin(s)	Description
D1	-	Green / Red LED 5V	X5	-	N7, N9, N10 High Limits
D15-D28	-	Yellow LEDs – Function Outputs	X6	-	CB – IB Communication
D36-D42	-	Yellow LEDs – Function Outputs	X7	-	Not Used
D52	-	Amber LED 12V at 5V Converter	X8	1-2	Voltage Monitor
D66	-	White Led - Heart Beat Blinking	X9	-	Not Used
D67-68	-	Blue LEDs – Blinking	X10	1-2	B3 – Water Temp Probe
D69-D70	-	Blue LEDs – Not Used	-	3-8	Not Used
D74	-	Green LED 3.3V	X11	1-6	P1, P2, P3 Product Temp Probes
J1-J8	-	RTD Input Jumpers 100W, 1000W	-	7-8	Not Used
X1	1-6	Steam Valve Relays (SV)	X12	1-6	C1, C2, C3 Chamber Temp Probes
-	7-8	Catalytic Converter Relay	-	7-8	Not Used
-	9–14	Solid State Relays (SSR)	X13	-	RGB Door Handle Lights
X2	1-2	CV (VFD) Drive Relay	X14	-	Not Used
-	3-4	Not Used	X15	1-2	Door Switch
-	5–10	Steam Element Relays (LWS)	-	3-4	Check Fans Relay
-	11-12	Cleaning Pump Relay	-	5-10	Steam Relief Valve Switches (SWT)
-	13-14	Water (H ₂ O) Relay	X16-X19	-	VFD Communication
Х3	1-6	Chamber Lights	X20-X26	-	Not Used
-	7-8	Not Used	S1	-	DIP Switches – Option Select (All Off)
-	9–14	Steam Relief Valves (RV)	S2	-	DIP Switches – Product Select (All Off)
X4	-	12 VDC Supply	S3	-	DIP Switches – Address Select (All Off)



Solid State Relay — Duel (SSR)



VMC-PHD-010722

Ref.	Description
A1	A1 terminal, AC line voltage into the SSR
A2	A2 terminal, AC load voltage to the heating element A
B1	B1 terminal, AC line voltage into the SSR
B2	B2 terminal, AC load voltage to heating element B
A+	A+ terminal, DC control voltage from the control board to the SSR
A-	A- terminal, DC control voltage from the control board to the SSR
B+	B+ terminal, DC control voltage from the control board to the SSR
B-	B+ terminal, DC control voltage from the control board to the SSR
1	Call for heat indicator



Solid State Relay — Single (SSR)

Heater element control. One SSR for each chamber.



Ref.	Description
1	L1 terminal, AC line voltage into the SSR
2	T1 terminal, AC load voltage to the heating element
3	Call for heat indicator light
4	A2 (-) terminal, DC control voltage from the control board to the SSR
5	A2 (+) terminal, DC control voltage from the control board to the SSR



CMC-H2H Terminal Blocks & Circuit Breakers



Ref.	Description
1	Terminal block 1
2	Circuit breaker 1
3	Terminal block 2
4	Circuit breaker 2
5	Terminal block 3
6	Circuit breaker 3
7	Terminal block 4



CMC-H3H Terminal Blocks & Circuit Breakers



3 Ph Ê Ē 1 **B** 2 ц® 3 4 ®1 Ľ® 5 (2) 6 @) Ц® 7 (7) K-|Æ 0 œ T 0

CMC-H3H 208-240V

Ref.	Description
1	Terminal block 1
2	Circuit breaker 1
3	Terminal block 2
4	Circuit breaker 2
5	Terminal block 3
6	Circuit breaker 3
7	Terminal block 4



Variable Frequency Drive (VFD)



WARNING: Electric shock hazard. Do not disassemble the VFD.



VMC-H2H

٢

2

1

C





Component Identification, Right Service Panel



Ref.	Description	Ref.	Description
1	Check fans switch (FTT)	7	Condensate tank
2	Chamber convection fan motors	8	Hose reel, hand shower
3	Chamber drain hoses	9	Browning valve (RV)
4	Cleaning water manifold	10	Cleaning water nozzle
5	Cleaning pump	11	Catalytic converter
6	Y2/Y5 solenoid valves	_	—



Blower Assembly



Ref.	Description
1	Catalyst
2	Fan wheel
3	Plate
4	Spacer
5	Spring assembly
6	Motor

Wash Pump





Check Fans Indicator Light Switch

Contacts close at or above 130F (54C)



VMC-PHD-001903

Switch, Hose Reel/Hand Shower





Browning Valve



CT-PHD-014188

Electric Catalytic Converter

1A, 212 Ohm





Left Service Panel Identification



Ref.	Description
1	USB Port
2	Chamber temperature sensor
3	Drain hose
4	Y1 Solenoid valves (treated)
5	Water hose — steam
6	High temperature sensor bulb
7	Steam heat element
8	Convection heating element
9	Chamber vent hoses



Chamber Temperature Probe

Type K thermocouple



100°C = 4.096 mV	100°F = 1.521 mV
200°C = 8.138 mV	100°F = 3.820 mV
300°C = 12.209 mV	100°F = 6.094 mV

Steam and Chamber Heating Elements



1.5 Amps 165 Ohms



17 Amps 14 Ohms



COMPONENTS

High Limit Switch

Resettable

Contacts open at 572°F (300°C)



Ref.	Description
1	Reset button
2	Temperature bulb

Speaker





Door Switch

- Door closed 0 Ohms; 0 VDC across terminals 1 and 2 of connector P3 on the control board.
- Door open Infinite Ohms; 8 VDC across terminals 1 and 2 of connector P3 on the control board.



VMC-PHD-001999



Right Service Panel Identification



Ref.	Description
1	Chamber blower motor
2	Cooling fans



Fans

- Impedance protected
- 240 Volt
- 581 Ohm





Filter—Cooling Air





Internal Components Identification



VMC-PHD-007580

Ref.	Description
1	Chamber light
2	Filters (optional)



This page is intentionally left blank.



Sequence of Operation

AC Power to the oven	1. Electrical power comes into the oven at the disconnect switch located in the back right corner of the electrical chassis. The load side of the disconnect switch is connected to the terminal blocks TB 1 TB 2 and TB 3, mounted on the DIN rail at the left side of the electrical chassis.
	2. Mounted on the DIN rail next to the terminal blocks are circuit breakers CB 1, CB 2, and CB. Line voltage from terminal blocks TB 1,2, and 3 is supplied to circuit breakers CB 1, 2, and 3. One leg of line voltage is supplied from the circuit breakers to the high limits N7, N9, and N10 and then to the convection heat elements.
	3. Terminal blocks TB 1 TB 2 and TB 3 supply the second of line voltage for the convection heat elements to the solid-state relay (SSR). The oven may have a single SSR for each chamber or dual SSRs with one SSR controlling the heating elements of two chambers. Terminal blocks TB 1 TB 2 and TB 3 also supply line voltage to circuit breakers CB 4 and CB 5. CB 4 and CB 5 supply line voltage to terminal blocks TB 16 and TB 22.
	4. The voltage from the terminal blocks is then supplied to the voltage monitor, the check fans thermo switches, the check fan LED, the check fans relay, the electric catalytic converter, the catalytic converter relay, the CV drive relay, and the DC power supply.
	5. The voltage monitor converts the AC input voltage to a DC output voltage that is used by the oven control to determine the input line voltage.
	6. There are two check fan switches installed in the oven, one switch is mounted in the electrical chassis and the other switch is mounted near the convection fans. The switches are wired in parallel. When either switch is exposed to a temperature of 130°F the switch contacts will close, the check fan LED on the control panel will illuminate and the check fans relay will be energized.
	7. When the contacts in the check fans relay close, a signal is sent to the oven control and the oven control will display the E108 error message on the control panel display.
	8. The electric catalytic converter relay is energized by the control board, when the relay contacts close, line voltage is supplied to the catalytic converter heating element.
	9. On the first call for heat the CV Drive Relay is energized by the control board. When the relay contacts close, line voltage is supplied to terminal block TB 26, the cooling fans are energized, and the Variable Frequency Drives (VFDs) are enabled.
DC Power to the oven	1. The DC power supply converts line voltage to 12 volts DC output.
	2. DC voltage is supplied to the interface board.
	3. The DC voltage is also supplied to terminal blocks TB 32 and TB 34, the voltage from the terminal blocks is then supplied to the control board and the hand shower relay.
	4. The initial Alto-Shaam logo screen is displayed.
	5. The humidity valves perform a self-test.
Screen 'ON' Pre heat	1. The oven preheats in convection mode only, not in steam mode.
	2. The preheat can be set in the settings screen to auto preheat or be started manually.
	3. The door must be closed for preheat to function.
	4. The convection fan motor starts rotation and provides a speed feedback signal to prove motor operation.
	5. The Hall Effect Sensor (HES) in the motor provides the feedback signal to the oven control. The motor operation must be verified before the heating elements will be energized.
	6. The N6 chamber temperature probe provides a signal to the oven control indicating the chamber air temperature.



THEORY

	7. The convection heating element will be energized when the N6 signal indicates an actual chamber temperature that is below the preheat set point.
	8. On a call for heat the control board sends 12Vdc to the solid-state relay (SSR).
	9. The green LED on the SSR will illuminate when the SSR is energized.
	10. When the SSR is energized, it completes the second leg of line voltage to the heating element.
	11. As the oven chamber heats up and approaches the preheat set point temperature. The green LED may begin flashing or switch off.
Convection mode 85–525°F	1. When a convection cook mode is activated the electric Catalytic Converter element is energized, the convection fan starts rotation and provides a speed feedback signal to prove motor operation.
	2. The Hall Effect Sensor (HES) installed in the motor provides the feedback signal to the oven control, the motor operation must be verified by the oven control before the convection heating element will be energized.
	3. The N6 chamber temperature probe provides a signal to the oven control indicating the chamber air temperature. The heating element is energized when the N6 signal indicates an actual chamber temperature that is below the recipe set point.
	4. On a call for heat the control board sends 12Vdc to the SSR. The green LED on the SSR will be illuminated when the SSR is energized. When the SSR is energized it completes the circuit to the heating element. As the oven chamber heats up and approaches the recipe set point temperature the green LED may begin flashing or switch off to maintain the correct chamber temperature.
Steam mode 85–250°F	1. When a steam cook mode is activated the electric Catalytic Converter element is energized, the steam system is energized, the convection fan starts rotation and provides a speed feedback signal to prove motor operation.
	2. The Hall Effect Sensor (HES), installed in the motor, provides the feedback signal to the oven control, the motor operation must be verified by the oven control before the convection heating element will be energized.
	3. The N6 chamber temperature probe provides a signal to the oven control indicating the chamber air temperature. The heating element will be energized when the N6 signal indicates an actual chamber temperature that is below the recipe set point.
	4. On a call for heat the control board sends 12Vdc to the SSR. The green LED on the SSR is illuminated when the SSR is energized. When the SSR is energized it completes the circuit to the heating element. As the oven chamber heats up and approaches the recipe set point temperature, the green LED may begin flashing or switch off to maintain the correct chamber temperature.



Steam Generation	1. The steam mode utilizes an individual heating element to supply the heat needed for steam generation.
	2. On a call for steam the control board sends 12Vdc to the steam element relay. The relay contacts close and complete the circuit to the steam element.
	3. The steam element is energized and after a few seconds the water is supplied.
	4. During a steam program the control board will send 12Vdc to the steam valve relay. When the steam valve relay is energized it completes the circuit to the Y1 steam valve.
	5. The Y1 steam valve opens and supplies water to the steam element for the steam generation in the corresponding chamber.
	6. The steam generation cycles at 150-second increments until the end of a cook cycle.
	7. The chamber humidity valve will also cycle open and closed in accordance with the recipe until the end of a cook cycle.
Combi Mode 85–525°F	1. Same as steam mode except the temperature range is higher.
Cleaning mode	1. The oven must be at the required temperature before the cleaning cycle starts.
-	2. Use only Alto-Shaam cleaner CE-47853 when running a cleaning cycle. For a catalyst cleaning cycle, use only catalyst wash descaler CE-47859. The use of any other cleaning chemical may damage the catalyst and void the warranty.
	3. The oven has five different cleaning modes.
	4. The rinse cycle is a mid-day rinse to reduce the grease.
	5. The light clean cycle is for light debris.
	6. The medium clean is for heavy debris (10 full loads of chicken) in one chamber.
	7. The heavy clean is for heavy debris (10 full loads of chicken) in all chambers.
	8. The catalyst wash reminder screen displays after 18 hours of cumulative cleaning (example: after five heavy cleaning cycles).
	9. The cleaning pump circulates the cleaning solution from the condensate tank to the cleaning manifold where it is distributed through hoses and injected into each chamber.



This page is intentionally left blank.





Capacitive Touch Diagram—Ampire

DIAGRAMS

SYSTE



Capacitive Touch Diagram—Tianma









Convection Heat Diagram, Chamber 1






ok(go



Steam Injection System Diagram, Chamber 1



Browning Valve Diagram









Water Valve and Hand Shower Diagram





Cleaning System Diagram







Maintenance Schedule

Requirements	 See topic <i>How to Clean the Oven</i>. Make sure the oven is cooled down and off—inside of chamber 140°F (60°C) less. 	
Daily	For daily maintenance, do the following.	
	Remove any spills with disposable paper wipes or a damp cloth.	
	 Wipe the outside of the oven with a damp cloth. 	
	Wipe the oven gaskets with soap and water.	
	Inspect the oven gaskets for damage.	
	Wipe the front door glass.	
	Check the screen for cracking or peeling. Contact Technical Service if needed.	
Weekly	For weekly maintenance, do the following.	
	Clean the entire oven. Make sure to use a non-abrasive nylon scrub pad.	
	Do not spray the cleaner directly into the fan openings located in the rear of the oven.	
Monthly	For monthly maintenance, do the following.	
	Inspect and clean the air filters.	
	Clean out the drip tray line.	
	Check the supplied water filtration and change as needed.	
	Check for software updates.	
	Check lighting.	
	De-scale as needed.	
Yearly	For yearly maintenance, do the following.	
	NOTE: Must be performed by a qualified professional.	
	Inspect and test the humidity control.	
	Inspect and test the catalytic converter element.	
	Inspect the catalytic converter.	
	 Inspect the air intake. Check the length of the tubing for debris clean out or replace as needed. 	

Continued on next page



MAINTENANCE

Continued from previous page

- **Inspect** all drain hoses and clamps.
- **Inspect** all steam water injection lines and clamps for leaks or potential issues.
- Inspect wiring to heating elements. Re-tighten or secure as needed. Record the amp draw.
- Inspect wiring to the steam element. Re-tighten or secure as needed. Record the amp draw.
- **Inspect** the cleaning system pump and hoses for leaks and proper operation.
- For ovens shipped to New Zealand or Australia, inspect the back flow preventer check valve per AS/NZ3500.1 and AS/NZ3500.2
- **Check** operation of all electrical cooling fans.
- Check all electrical connections are properly connected and secure to the boards.
- **Check** door hinges and handles. Tighten, secure, or adjust as needed.
- Check door gaskets for damage and seal.
- **Test** steam injection solenoid.
- **Test** condensate solenoid.
- **Run** each chamber in convection mode and test operation.
- **Run** each chamber in steam mode and test operation.



Error Codes

Code	Description	Parameters that trigger the error	Possible Cause(s)
E-3	Motor error	No chamber motor rotation detected for greater than 30 seconds.	 Power down the control using the ON/OFF button. Cycle power to the oven either by unplugging the oven or setting the main disconnect switch OFF and ON. Continue operation of the oven. If the error reoccurs, contact Technical Service.
E-10	Sensor short	Control board detects that the chamber sensor is shorted.	 Power down the control using the ON/OFF button. Cycle power to the oven either by unplugging the oven or setting the main disconnect switch OFF and ON. Continue operation of the oven. If the error reoccurs, contact Technical Service.
E-10	Sensor short	Control board detects that the probe in the chamber is shorted.	 Investigate the food probe for damage. Replace if damaged. Power down the control using the ON/OFF button. Cycle power to the oven either by unplugging the oven or setting the main disconnect switch OFF and ON. Continue operation of the oven. If the error reoccurs, contact Technical Service.
E-11	Sensor open	Cavity air sensor reading > 650°F (343°C).	 Power down the control using the ON/OFF button. Cycle power to the oven either by unplugging the oven or setting the main disconnect switch OFF and ON. Continue operation of the oven. If the error reoccurs, contact Technical Service.
E-30	Unit under temperature	Cavity temperature remains 25°F (14°C) below target for more than 90 minutes.	 Was the oven preheated before loading the food? Was the oven loaded with frozen food? Press the high limit reset buttons. Power down the control using the ON/OFF button. Turn the oven back ON and start a cook.
E-31	Electronics over temperature	Control board temperature exceeds 158°F (70°C).	 Make sure the cooling fan(s) are operating. Make sure the exhaust vents are clean and free of debris. Make sure the oven clearances are met. Ambient temperature greater than 105°F (41°C). Check the door gasket for damage and proper seal.

Code	Description	Parameters that trigger the error	Possible Cause(s)
E-31	Electronics over temperature	Interface board temperature exceeds 184°F (84°C).	 Power down the control using the ON/OFF button. Cycle power to the oven either by unplugging the oven or setting the main disconnect switch OFF and ON. Continue operation of the oven. If the error reoccurs, contact Technical Service.
E-31	Electronics over temperature	Chamber temperature sensor > 600°F (316°C) for Combi or Convection or chamber temperature sensor > 395°F (202°C) for Steam or Cleaning.	 If the oven has experienced an over temperature condition, allow the oven to cool down for a minimum of 30 minutes. Press the high limit reset buttons. Continue operation of the oven. If the error reoccurs, contact Technical Service.
E-31	Electronics over temperature	B3 sensor is higher than 212°F (100°C) for more than 180 seconds.	 Make sure the water supply line(s) is connected to the oven and that the shut off valve for the water connections is in the open position. If connected to water filter(s), make sure the filters are not in need of replacement. Power down the control using the ON/OFF button. Cycle power to the oven either by unplugging the oven or setting the main disconnect switch OFF and ON. Continue operation of the oven. If the error reoccurs, contact Technical Service.
E-50	Control board temperature error	Temperature measurement failure on the control board.	 Make sure the cooling fan(s) are operating. Make sure the exhaust vents are clean and free of debris. Make sure the oven clearances are met. Ambient temperature greater than 105°F (41°C). Check the door gasket for damage and proper seal.
E-55	Vent not open	60 seconds after the chamber venting motor is activated, the chamber vent valve did not open.	 Power down the control using the ON/OFF button. Cycle power to the oven either by unplugging the oven or setting the main disconnect switch OFF and ON. Continue operation of the oven. If the error reoccurs, contact Technical Service.
E-78	Voltage monitor output is too low	Incoming line voltage is too low (<190V) or voltage monitor output is shorted.	 Make sure the oven plug is fully seated in electrical outlet. Reset the main circuit breaker for the oven. If error reoccurs, contact Technical Service.
E-79	Over voltage	Incoming line voltage is too high (>250V) or voltage monitor output is open.	 Make sure the oven plug is fully seated in electrical outlet. Reset the main circuit breaker for the oven. If error reoccurs, contact Technical Service.

Code	Description	Parameters that trigger the error	Possible Cause(s)
E-94	Interface Board - Control Board communication error	No signal transfer for more than 5 seconds between the interface board and the control board.	 Make sure the oven plug is fully seated in electrical outlet. Reset the main circuit breaker for the oven. If error reoccurs, contact Technical Service.
E-108	Cooling fan over temperature	Chassis bi-metal temperature sensor over temperature 130°F (54°C).	 Make sure the cooling fan(s) are operating. Make sure the exhaust vents are clean and free of debris. Make sure the oven clearances are met. Ambient temperature greater than 105°F (41°C). Check the door gasket for damage and proper seal.
E-109	High limit error Note: Contact an authorized Alto-Shaam service partner.	Open circuit detected across high limit switch.	 If the oven has experienced an over temperature condition, allow the oven to cool down for a minimum of 30 minutes. Press the high limit reset buttons. Continue operation of the oven. If the error reoccurs, contact Technical Service.
E-606	Oven cleaning system failure	Convection fan error, high limit error, cavity temperature sensor open or short, or communication for at least 15 seconds during cleaning.	 Contact Technical Service. Manually clean the oven. Manually rinse the oven. Make sure to remove cleaners before operating the oven.



The Fan Indicator Light is On



Replace the bi-metal cooling fan indicator switch.



Cavity Light does not Illuminate



Replace the light bulb.



Chamber will not Heat



The oven is performing as intended.



Convection Fan is not Operating



The oven is performing as intended.



Axial Cooling Fan not Functioning



Replace the axial cooling fan.



Oven will not Turn On



Replace the light bulb.



Steam System Doesn't Work







The oven is performing as intended.



How to View the Service Screen

Procedure

To view the service screen, do the following.

Step Action **Touch** the menu icon (1). The menu screen displays. 1. Inactive ଳ୍ପ F ٥ Manual Cooking My Recipe Libra Cleaning (1)N × හු ⋳ ि HACCP Data Service Settings Inactive ß Ē 3 2 3 ? **(i)** Network Help Info പ്പ A പ്പ CT-TS-0138 2. **Touch** the "Service" icon (2). The enter pass code screen displays. Cooking Manual Cooking Ē ٥ X My Recipe Library Cleaning N X ලා ⋳ HACCP Data Service ettings Ē ? 3 🔒 Enter passcode $\langle \times \rangle$ Network Help ୍ଳ Enter the pass code 6702 (3). 3. **Touch** the check mark (4). The "System Info" screen displays. ∽ System Info X Voltag 85°F 105°F 236 Doo CLOSE Handle Color Handle Light ON **B**3 Y2 Y4 76°F Cooling Fan Check Fan False ON Reset all locks No locks Enter passcode ⚠ CT-TS-0152

Continued on next page

Continued from previous page



Result

The procedure is now complete.



What to do if the High Limit Screen Displays

Procedure

If the high limit screen displays, do the following.



Result

The procedure is now complete.



For the most current schematics, use the QR code or click link.

Converge CMC-H2H 208-240V, 1PH, 60Hz	
Converge CMC-H2H 208-240V, 3PH, 60Hz	
Converge CMC-H2H 380-415V, 3PH, 50Hz	
Converge CMC-H3H, 208-240V, 3Ph, 60Hz	
Converge CMC-H3H 380-415V, 3PH, 50Hz	







Menomonee Falls, WI U.S.A. Phone 800-558-8744 | +1-262-251-3800 | alto-shaam.com

ASIA Shanghai, China Phone +86-21-6173-0336

AUSTRALIA Brisbane, Queensland Phone 800-558-8744

CANADA Concord, Ontario Canada Toll Free Phone 866-577-4484 Phone +1-905-660-6781 FRANCE Aix en Provence, France Phone +33[0]4-88-78-21-73

GMBH Bochum, Germany Phone +49 (0)234 298798-0

ITALY Padua, Italy Phone +39 3476073504

INDIA Pune, India Phone +91 9657516999 **MEXICO** Phone +52 1 477-717-3108

MIDDLE EAST & AFRICA Dubai, UAE Phone +971-4-321-9712

CENTRAL & SOUTH AMERICA Miami, FL USA Phone +1 954-655-5727

> RUSSIA Moscow, Russia Phone +7 903 7932331