Household Ice Machine

Service Manual

This manual is to be used by qualified technicians only. Parts Connect does not assume any responsibility for property damage or personal injury for improper service procedures by an unqualified person.

Model # IM70

Made in China

c UL US LISTED

Parts Connect®

Indianapolis, Indiana, USA
www.parts-connect.com

This page intentionally left blank

Control Board

This section identifies the main control board connections.

code	function	socket color	plug color	wire color	wire label	remark
SWS	water level switch	white	white	white x2	SWS	
ZFS	evaporator temperature sensor	red	red	white+black	ZFS	
LNS	condenser temperature sensor	purple	purple	white+red	LNS	
HP	refrigerant pressure sensor	black				not in use
SEN1	ice cube flap switch	red	red	white x2	SEN1	
CZ1	front control panel	white	white	white x6	CZ1	
CZ3	secondary coil transformer	white	white	blue x2	CZ3	
CZ5	primary coil transformer	white	white	red x2	CZ5	
N1	neutral of reversing valve	1/4” male	white	blue	N1	
N2	neutral of pump & discharge valve	1/4” male	white	white x2	N2	
N3	neutral of compressor	1/4” male	white	white	N3	
COM	line (general power)	1/4” male on relay	brown	black	COM	
NO	line of compressor	1/4” male on relay	brown	orange	NO	
PSF1	line of discharge valve	1/4” male	white	blue	PSF1	
FJ1	line of fan motor	1/4” male	white	brown	FJ1	
SF1	line of inlet valve	1/4” male	white	grey	SF1	
SB1	line of pump	1/4” male	white	red	SB1	
RF1	line of reversing valve	1/4” male	white	blue	RF1	
FUSE1	fuse for transformer				1A 250V	marked on board
FUSE2	fuse (general exclude compressor)				6.3A 250V	marked on board

The main control board is located on the back of the ice machine, within the metal box. This list is made available for reference to help a serviceman in the replacement of a main control board.

Button Operation

The status and time lapse are dependent when pressing buttons.

status	main power off	ice machine power is unplugged or main power switch is turned off
	SMG off	ice machine is plugged in and main power switch is on but SMG shows OFF
	setting	ice machine is in setting mode. While SMG shows OFF long press "mode" button enters setting mode.
	ice making cycle	include following status: ice making, harvest, pre-chill
press	short	press the button more than 1 second, less than 3 seconds and then release
	medium	press the button more than 3 seconds, less than 10 seconds and then release
	long	press the button more than 10 seconds and then release

	status	**operation**	**lights and SMG shown**	**details**
1	main power off	turn on the main power switch at front lower right side of ice machine	power light：on SMG：OFF	main switch controls the general power of the ice machine. Suggest to turn it off if ice machine is not for use for a long time.
2	SMG: OFF	long press "set" button	SMG: shows number between 001 to 180 filter light: flash	the number shows the days the filter has been in use. When the number is larger than 180 days the filter light will stay on. Advice to the homeowner is to change the filter. After home owner changes the filter a medium press of the reset button resets the days to zero.
		short press "reset" button, before release, short press "on/off" button	SMG: shows 888 for 1 second then shows PPP for 3 seconds all other lights: on for 1 second and then off	this operation is to reset all settings to "default factory" settings.
		short press "on/off" button	SMG: shows 888 for 1 second then shows COO all other lights: on for 1 second and then off	this operation turns on the ice machine and starts the ice making process.
3	setting	long press "reset" button	SMG: shows XXX for 10 seconds and then shows UUU for 3 seconds all other lights: on for 1 second and then off	XXX means the last number shows in SMG during setting, after setting, do this operation, can upload the last setting to ice machine as default. (don't show house owner this operation, this will cause problems if they change the default. This is only for serviceman if the ice machine use for extremely hot or cold place, change default can help house owner minimum the problems.)
4	ice making	medium press "clean" button	SMG: shows current number for 3 seconds	the fixed number in SMG is the harvest time during last ice making

	status	operation	lights and SMG shown	details
			and then changes to a fixed number. ice making light: on	cycle. This operation is to help serviceman to find problems of last harvest.
5	harvest	medium press "clean" button	SMG: shows current number for 3 seconds and then changes to a fixed number. ice making light: on	the fixed number in SMG is the ice making time during last ice making cycle. This operation is to help serviceman find problems of last ice making.
6	all except SMG showing OFF	short press "clean" button	SMG: CLE ice making and harvest lights: flash	operation will force ice machine to enter into a clean cycle. This cycle is 30 minutes. Short press clean or mode button will terminate the clean process and enter into new ice making cycle.

Parameter Setting

	status	operation	lights and SMG shown	details
1	ice making cycle	short press mode button	SMG: show current number for 2 seconds and then show 1xx ice making light: on	Parameter 1 is used to modify the thickness of ice cubes. xx will flash during setting. Short press set button can change the 1xx, from 100 to 119, 100 is thinnest. after setting, leave it no-operation for 10 seconds and system will automatically remember the setting and go back to ice making cycle. Default number is 111.
2	SMG: OFF	long press mode button	SMG: show OFF for 10 seconds and then show 2xx	Parameter 2 used to set the ice making time. Short press the set button will change the 2xx from 200 to 209, see ice making time table.
		long press mode button, release and then short press mode button 1 time	SMG: show OFF for 10 seconds and then show 2xx->3xx	Parameter 3 used to set the harvest time. Short press the set button will change the 3xx from 300 to 309, see harvest time table.
		long press mode button, release and then short press mode button 2 time	SMG: show OFF for 10 seconds and then show 2xx->3xx->4xx	Parameter 4 used to set the pre-chill time. Short press the set button will change the 4xx from 400 to 490, see pre-chill time table.
		long press mode button, release and then short press mode button 3 time	SMG: show OFF for 10 seconds and then show 2xx->3xx->4xx->5xx	Parameter 5 used to set the gap between 2 self-clean procedures. Short press set button can change the 5xx from 500 to 590, see self-clean frequency table.
		long press mode button, release and then short press mode button 4 time	SMG: show OFF for 10 seconds and then show 2xx->3xx->4xx->5xx->6xx	Parameter 6 used to set the maximum lack-of-water alarm time. Short press set button can change the 6xx from 600 to 609, see maximum lack-of-water table.
		long press mode button, release and then short press mode button 5 time	SMG: show OFF for 10 seconds and then show 2xx->3xx->4xx->5xx->6xx->7xx	Parameter 7 is used to set the maximum water inlet time. Short press set button can change the 7xx from 700 to 709, see maximum water inlet table.
		long press mode button, release and then short press mode button 6 time	SMG: show OFF for 10 seconds and then show 2xx->3xx->4xx->5xx->6xx->7xx->8xx	Parameter 8 is used to set the ice making lapse time. Short press set button can change the 8xx from 800 to 809, see ice making lapse table.
		long press mode button, release and then short press mode button 7 time	SMG: show OFF for 10 seconds and then show 2xx->3xx->4xx->5xx->6xx->7xx->8xx->9xx	Parameter 9 is used to set the maximum condenser temperature. Short press set button can change the 9xx from 900 to 909, see maximum condenser temperature table.
		long press mode button, release and then short press mode button 8 time	SMG: show OFF for 10 seconds and then show 2xx->3xx->4xx->5xx-	Parameter P is used to set the water discharge frequency. Short press set button can change the Pxx from P00 to

	status	operation	lights and SMG shown	details
			>6xx->7xx->8xx->9xx->Pxx	P09, see water discharge frequency table.
		long press mode button, release and then short press mode button 9 time	SMG: show OFF for 10 seconds and then show 2xx->3xx->4xx->5xx->6xx->7xx->8xx->9xx->Pxx->Axx	Parameter A is used to set the water discharge time. Short press set button can change the Axx from A00 to A09, see water discharge time table.
		long press mode button, release and then short press mode button 10 time	SMG: show OFF for 10 seconds and then show 2xx->3xx->4xx->5xx->6xx->7xx->8xx->9xx->Pxx->Axx-CLx	Parameter CL is used to turn on/off the startup clean feature. CL0 is no startup clean, CL1 means have startup clean. Short press set button changes between CL0 and CL1.

Parameter Info Tables

Ice Cube Thickness

parameter	refer to	unit	
100	0	Celsius	
101	-1	Celsius	
102	-2	Celsius	
103	-3	Celsius	
104	-4	Celsius	
105	-5	Celsius	
106	-6	Celsius	
107	-7	Celsius	
108	-8	Celsius	
109	-9	Celsius	
110	-10	Celsius	
111	**-11**	Celsius	← **FACTORY DEFAULT SETTING**
112	-12	Celsius	
113	-13	Celsius	
114	-14	Celsius	
115	-15	Celsius	
116	-16	Celsius	
117	-17	Celsius	
118	-18	Celsius	
119	-19	Celsius	

Ice cube thickness is controlled by the evaporator temperature. The parameter actually refers to the evaporator temperature. The colder you set, the thicker you get.

Maximum Ice Making Time

parameter	refer to
200	1 min
201	5 min
202	10 min
203	15 min
204	20 min
205	25 min
206	30 min
207	35 min
208	40 min
209	45 min

← **FACTORY DEFAULT SETTING**

If the ice making procedure is longer than the maximum ice making time the system will give an error code. The reason normally is because the evaporator not cold enough.

Maximum Harvest Time

parameter	refer to
300	0 min
301	1 min
302	2 min
303	3 min
304	4 min
305	5 min
306	6 min
307	7 min
308	8 min
309	9 min

← **FACTORY DEFAULT SETTING**

If harvest procedure is longer than maximum harvest time the system will give an error code. The reason mainly is the ice cubes can't release from the evaporator or flapper/sensor is defective.

Pre-chill Time

parameter	refer to
400	0 sec
410	10 sec

Pre-chill Time (continued)

parameter	refer to
420	20 sec
430	**30 sec** ← **FACTORY DEFAULT SETTING**
440	40 sec
450	50 sec
460	60 sec
470	70 sec
480	80 sec
490	90 sec
4E0	120 sec

Pre-chill procedure is to pre-cool the evaporator and speed up the ice cube making cycle.

Self-Clean Frequency

parameter	refer to
500	no self clean
510	Every 10 ice making cycles
520	every 20 ice making cycles
530	every 30 ice making cycles
540	every 40 ice making cycles
550	every 50 ice making cycles
560	every 60 ice making cycles
570	every 70 ice making cycles
580	every 80 ice making cycles
590	**every 90 ice making cycles** ← **FACTORY DEFAULT SETTING**

Self-clean is a procedure that runs the automatic clean on a certain frequency.

Maximum Lack-of-Water Time

parameter	refer to
600	0 min
601	1 min
602	3 min
603	**5 min** ← **FACTORY DEFAULT SETTING**
604	7 min
605	9 min
606	11 min
607	13 min
608	15 min
609	20 min

The maximum lack-of-water time is used to prevent the pump system from running dry and damaging the pump.

Maximum Water Filling Time

parameter	refer to
700	1 min
701	5 min
702	**10 min** ← **FACTORY DEFAULT SETTING**
703	15 min
704	20 min
705	25 min
706	30 min
707	35 min
708	40 min
709	45 min

The maximum water filling time is used to prevent the inlet water valve from burning out if water filling time is too long. Which is normally caused by water supply pressure too low.

Ice Making Time Lapse

parameter	refer to
800	0 min
801	1 min
802	2 min
803	3 min
804	4 min
805	**5 min** ← **FACTORY DEFAULT SETTING**
806	6 min
807	7 min
808	8 min
809	9 min

The ice making time lapse is the additional time to make the ice cube after evaporator has reached correct temperature. The longer the time you set, the thicker the ice cube you get.

Condenser Temperature Range

parameter	refer to
900	11-13 Celsius
901	13-15 Celsius
902	15-17 Celsius
903	17-19 Celsius
904	19-21 Celsius
905	**21-23 Celsius** ← **FACTORY DEFAULT SETTING**
906	23-25 Celsius
907	25-27 Celsius
908	27-29 Celsius
909	29-31 Celsius

The condenser temperature is the on-off control for the condenser fan. It is suggested to not change the default unless the circumstance temperature is extremely low or high.

Water Discharge Frequency

parameter	refer to
P00	**no discharge** ← **FACTORY DEFAULT SETTING**
P01	every 1 ice making cycle
P02	every 2 ice making cycles
P03	every 3 ice making cycles
P04	every 4 ice making cycles
P05	every 5 ice making cycles
P06	every 6 ice making cycles
P07	every 7 ice making cycles
P08	every 8 ice making cycles
P09	every 9 ice making cycles

The water discharge process is used for situations where the water tank is too cold. Possibly some of the water inside the tank has become ice. The ice can jam the pump system.

Water Discharge Time

parameter	refer to
A00	0 sec
A01	5 sec
A02	10 sec
A03	15 sec
A04	**20 sec** ← **FACTORY DEFAULT SETTING**
A05	25 sec
A06	30 sec
A07	35 sec
A08	40 sec
A09	45 sec

The water discharge time is used in combination with the water discharge frequency.

Startup Clean

parameter	refer to
CL0	no startup clean
CL1	**have startup clean** ← **FACTORY DEFAULT SETTING**

Startup clean is only available during system power on and started.