



Advanced Master Controller 3.2 Setting Quick Reference Guide

(MB P/N: 19-14282 with Pressure Transducer. Revised December 2017)

NOTE: If you are replacing an Advanced Master Controller 2.0 control board in a walk-in cooler or freezer with either air, electric or reverse cycle defrost, please see the list of typical set points on page 4. The chart shows the correct settings to follow for each defrost type.

Setting the Advanced Master Controller 3.2 by On-Board Pushbuttons: Up arrow, Down arrow, Left arrow, Right arrow, Enter, Back.

CHANGING ALL SET POINTS

Press the Left arrow or Right arrow until the display reads 'STPT'. Press Enter. If the display shows 'PSWD' you need to enter the password. Press Enter. Use the Up and Down arrows to increment or decrement the blinking digit. Use the Right and Left arrows to move the blinking digit to the right or left. Enter the password '0002'. Press and hold the Enter button until the display shows one of the set points (about 3 seconds). Press the Enter and Back to toggle between the set point name and the set point value. Press the Up or Down arrows to scroll through the list of set points. To change a set point, have the display show the value of the set point. Hold Enter until one of the digits starts blinking (about 3 seconds). Use the Up and Down arrows to increment and decrement the digit. Use the Right and Left arrows to move the blinking digit right or left. When the new value is displayed, press and hold Enter until all digits stop blinking (about 3 seconds). Press Back, 3 times at any time to leave set point mode

CLEARING AN ALARM

Press the Left arrow or Right arrow until the display reads 'MNMD'. Press Enter. If the display shows 'PSWD' you need to enter the password. Press Enter. Use the Up and Down arrows to increment or decrement the blinking digit. Use the Right and Left arrows to move the blinking digit to the right or left. Enter the password '0002'. Press and hold the Enter button until the display shows one of the manual modes (about 3 seconds). Press the Up or Down arrows to scroll through the list of manual modes until the display shows 'ALST'. Press Enter. Display shows 'CLAL'. Press and hold Enter until the display changes (about 3 seconds). Press Back, 3 times at any time to leave manual mode.

MANUAL DEFROST

Press the Left arrow or Right arrow until the display reads 'MNMD'. Press Enter. If the display shows 'PSWD' you need to enter the password. Press Enter. Use the Up and Down arrows to increment or decrement the blinking digit. Use the Right and Left arrows to move the blinking digit to the right or left. Enter the password '0002'. Press and hold the Enter button until the display shows one of the manual modes (about 3 seconds). Press the Up or Down arrows to scroll through the list of manual modes until the display shows 'MCTL'. Press Enter. Display shows current system mode (REFR, OFF, DEFR, DRAN, FN DL). Press and hold Enter until the display changes to next system mode (about 3 seconds). System needs to be in REFR or OFF mode to go to DEFR or defrost mode. Press Back, 3 times at any time to leave manual mode.

STATUS, DEFAULT AND READING DISPLAY

The status and the digital data can be displayed on the onboard display. Below is a list of the parameters of the operational status.

Onboard Display

Description

STUP	Indicates the status of Start Up Mode
CKFN	Check fan working status. The fans run than stop during start-up mode
CKP1	Check pressure transducer
OKP1	Indicates the pressure transducer is working as it should
CKT1	Check sensor TS1, sensor the evaporator suction outlet/fan cut-in temperature sensor
OKT1	Indicates the TS1 is working as it should
CKT2	Check sensor TS2, the refrigerated room temperature
OKT2	Indicates the TS2 is working
CKT3	Check sensor TS3, the evaporator inlet/defrost termination temperature sensor

OKT3	Indicates the TS3 is working
CKFH	Indicates all sensors are OK
FNDL	Indicates FAN DELAY MODE
FDTP	Actual TS1 value in FAN DELAY
COOL	Indicates COOL MODE
OFF	Indicates OFF MODE
PMDN	Indicates PUMPDOWN MODE before an electric defrost
DEFR	Indicates DEFROST MODE
DRAN	Indicates COIL DRAIN MODE
DFTP	Inlet sensor TS3 value in DEFROST MODE

CHANGING PARAMETERS

A list of the parameters that can be displayed and/or changed is shown below when access to the default settings is needed. This access is usually done by a trained technician.

Onboard Display

Description

RMTD	Refrigerated room temperature from TS3 (-60°F to +150°F), displayed value
VALV	Percentage the valve is open (0 to 99%)
SUPH	Actual superheat in COOL MODE (TOUT-TSAT)
TSAT	Saturated suction temperature calculated from suction pressure PRES
TSUC	Evaporator suction outlet temperature from TS1
TCOI	Temperature read from the evaporator defrost termination sensor TS3
PRES	Suction pressure read from the pressure transducer (-14.6 to 135.5 PSIG)

Note: the above parameters are status variables that allow you to check the system operations; the below parameters are set points that can be changed to fit the applications

MEVM	Multi Evaporator Mode options are synchronous mode or alternating mode
ALTN	Indicates controller is in alternating mode after bonding
SYNC	Indicates controller is in synchronous mode after bonding
<i>Note: If no bonding is made, the controller works as stand alone</i>	
SHSP	Superheat set point (5 to 30 °F) .
RMSP	Room temperature set point or cut-out (-50 to +90 °F)
MXDT	Maximum defrost duration (0 to 90 minutes)
DTSP	Defrost termination temperature (35 to 90°F)
PMDN	Pump down timeout duration (0 to 5 minutes)
DRAN	Drip time duration (0 to 15 minutes)
DFPD	Number of defrosts per day (0 to 8) . When DFPD = 0, demand defrost, when DFPD = 1 to 8, the controller uses scheduled defrost
HITA	High temperature alarm offset from room set point RMSP (0 to +99°F)
HIDL	Temperature alarm delay (0 to 120 minutes)
LOTA	Low temperature alarm offset from room set point RMSP (0 to +20°F)
MOTM	Minimum time the valve is close (0 to 15 minutes)
MRTM	Minimum time the valve is open (0 to 15 minutes)
ADIF	Cut-in temperature differential (0 to +25 °F)
MOP	Maximum suction pressure set point (-10 to 135 PSIG)
MNPR	Minimum pressure set point (-14 to 100 PSIG)
INTV	When in demand defrost and temperature set point is below 35°F, maximum amount of time between defrosts (480 to 4320 minutes)
DFMD	Defrost type (electric, air or reverse cycle, ELEC, AIRD and HGDF)
REFT	Refrigerant type, R404 (404A) or R22 (R22)
ALSP	If in alternating mode, number of degrees above cut-in (cut-out + ALSP) set point to override and both controllers to go into cool mode (0-25°F)

ALARM DISPLAY

Any alarm will cause relay #3 to switch. All alarms have a distinct display on the controller. The red LED will be on for a pressure sensor alarm or TS1, suction temperature sensor alarm. The amber LED will be on for all other alarms. Multiple alarms can exist. There is a priority as to which alarm will be displayed before another.

Onboard Display	Description	PRIORITY
NOAL	Displays when there are no alarms. The onboard display will display status and temperature readings	
PRSA	Pressure transducer	1
STSA	Evaporator outlet temperature sensor TS1 alarm	2
ATSA	Room temperature sensor TS2 alarm	3
LOSH	Low superheat alarm	4
HITA	High room temperature alarm	5
LOTA	Low room temperature alarm	6
CTSA	Defrost termination sensor TS3 alarm	7
LPRA	Low pressure alarm	8
COMA	Communication alarm	9

TROUBLESHOOTING GUIDE

Trouble, Alarm Codes	Causes	Corrective Actions
Pressure transducer alarm PRSA	<ul style="list-style-type: none"> • Bad transducer • Out of range • Loose wire • Wrong hook-up 	<ul style="list-style-type: none"> • Replace the pressure transducer • Turn off power for a few seconds, turn back on • Tighten the connections • Wire correctly
Outlet sensor TS2 fails SCSA	<ul style="list-style-type: none"> • Mechanical damage • Connection wire loose • Overheated • Out of range 	<ul style="list-style-type: none"> • Replace the sensor • Tighten the connection wires • When brazing suction line, take out the sensor • Install the sensor after brazing
Room sensor TS3 fails ATSA	<ul style="list-style-type: none"> • Mechanical damage • Connection wire loose • Overheated • Out of range 	<ul style="list-style-type: none"> • Tighten the connection wires on the controller terminal • The room sensor can be replaced by surface sensor
Low superheat LOSH	<ul style="list-style-type: none"> • Superheat setting too low • Wrong locations of TS2 • Sensors may be loose • Uneven feeding of coil circuits • Overcharge of refrigerant • Defective electric expansion valve (EEV) • Compressor stops 	<ul style="list-style-type: none"> • Change to correct set point • Make sure the distributor is feeding each circuit evenly • Insulate the sensors with foam tape • Use correct refrigerant charge • Check EEV wiring • Replace defective EEV • Check compressor
High room temperature HITA	<ul style="list-style-type: none"> • Insufficient refrigeration • Heat load too large • Compressor fails or high pressure cuts out • Evaporator fans may not run • Door open for too long • Coil iced-up 	<ul style="list-style-type: none"> • Check system design to select a sufficient system • Replace failed compressor • Fix the evaporator fans • Keep the cold room door closed during refrigeration • Check possible air leak through the walls of cold room
Low room temperature LOTA	<ul style="list-style-type: none"> • Improper low temp setpoint • Over designed system 	<ul style="list-style-type: none"> • Change low temp set point • Re-select the system
Defrost termination sensor TS1 fails CTSA	<ul style="list-style-type: none"> • Mechanical damage • Loose connection wire • Overheated • Out of range 	<ul style="list-style-type: none"> • Tighten the connection wires on the controller terminal • Let the sensor cool down to application temperature range: -50°F to +103°F • Replace failed sensor
Low pressure alarm LPAL	<ul style="list-style-type: none"> • Refrigerant leak • Bad transducer 	<ul style="list-style-type: none"> • Fix leak • Replace pressure transducer
Communication COMA	<ul style="list-style-type: none"> • Loose RJ-45 connection • Failed communication port 	<ul style="list-style-type: none"> • Replace connector • Change a new controller board

Temperature Sensor The resistance of the temperature sensor at 32°F ice water is 5,122 ohms.

Pressure Transducer RED --- +5VC, Green --- Signal Voltage, Black --- Ground; Compare gauge pressure and the “PRES” suction pressure on-board reading to make sure they both read the same (PSIG)

Electric Expansion Valve

- 1) The resistance between the black and white leads should be around 90 ohms. The resistance between the black and red leads should be an open.
- 2) The resistance between the red and green leads should be around 90 ohms. The resistance between the white and green leads should be an open.
- 3) The resistance between each lead and the brass housing of the valve should be an open
- 4) Read the AC, not DC, voltage across the black and white leads while the valve is moving. The AC voltage should be 11 to 13 VAC. The voltage will be close to 0 VAC when the valve is not moving.
- 5) Repeat step 4 across the red and green leads

TYPICAL SET POINTS FOR CONTROLLER

	Air/Electric Defrost		Reversing Cycle Defrost	
	Low Temp	High Temp	Low Temp	High Temp
RMSP	-10	35	-10	35
ADIF	5	3	5	3
MRTM	2	2	2	2
MOTM	2	2	2	2
MNPR	0	0	0	0
MOP	55	80	55	80
DFPD	0	0	0	0
DFMD	ELEC	ELEC	RCD	RCD
INTV	720	1440	720	1440
DTSP	75	45	60	60
MXDT	35	35	20	20
DRAN	2	2	5	2
MEVM	ALTN	ALTN	ALTN	ALTN
ALSP	5	5	5	5
HITA	25	15	25	15
HITD	59	59	59	59
LOTA	10	15	10	15
REFR	449A	449A	449A	449A
SHSP	10	10	10	10

Please check with factory for actual set points on individual controllers.

For complete information, please refer to the *Master Controller 3.2 Installation & Operations Manual* or contact:

Master-Bilt Products
Technical Service Department
Highway 15 North
New Albany, MS 38652
Phone: 800-684-8988
Fax: 800-882-7629
Email: service@master-bilt.com