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HEAT MISER TOUCHSCREEN V2
INSTALLATION & MAINTENANCE INSTRUCTIONS

WARNING: It is important to follow good start-up practices to avoid operational complications and potential system damage. Starting a steam system too quickly or using an improper sequence may lead to a potentially hazardous working environment. Lack of system maintenance over time can also contribute to this situation. It is imperative to develop proper start-up and maintenance procedures and train personnel on the importance of following them at all times. Consult a Watson McDaniel representative if questions arise.

CAUTION – All parts must be cool before assembly/disassembly. Piping depressurized.

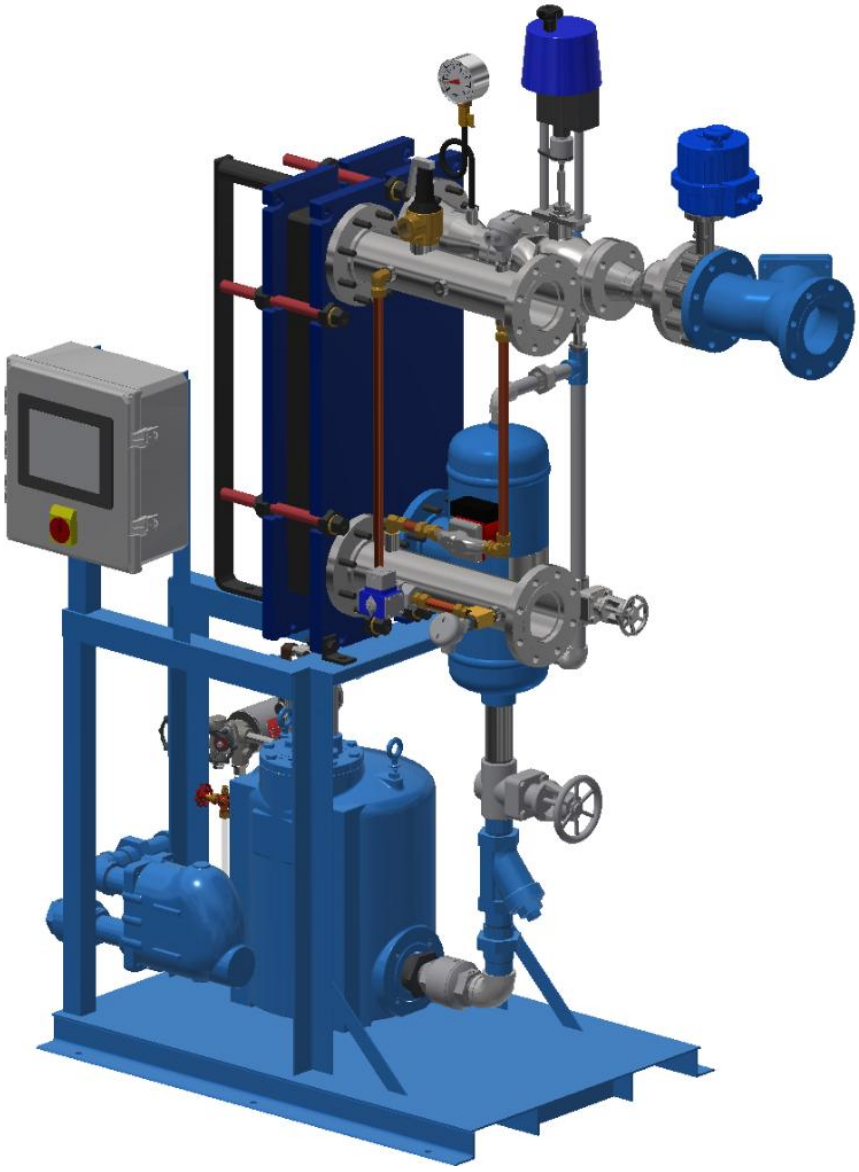

Figure 1

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TOUCH SCREEN PANEL

The touchscreen panel provides simplified end user commands for interfacing and operating the Watson McDaniel Heat Miser system. The touchscreen replaces the need for a separate high limit controller as shown in sections of the main Heat Miser manual.

Main Screen

The touch screen main menu contains live temperature values of the hot water outlet and the return water inlet. The system set point is also accessible for user input on the upper right of the screen and can be adjusted by selecting setpoint and entering the preferred temperature. The control valve is selectable and can be adjusted from manual control to automatic control, manual control allows for specific valve position inputs, while automatic relies on the PID controller outputs and the system temperature setpoint to control valve position. The recirculation pump is also able to be turned on and off via this screen by selecting the "Recirc Pump" toggle switch. The high limit and cold-water injection valves status displays are also located on the main screen. The local time is also displayed, see the BACNet Configuration Settings section for details on where to adjust the time.

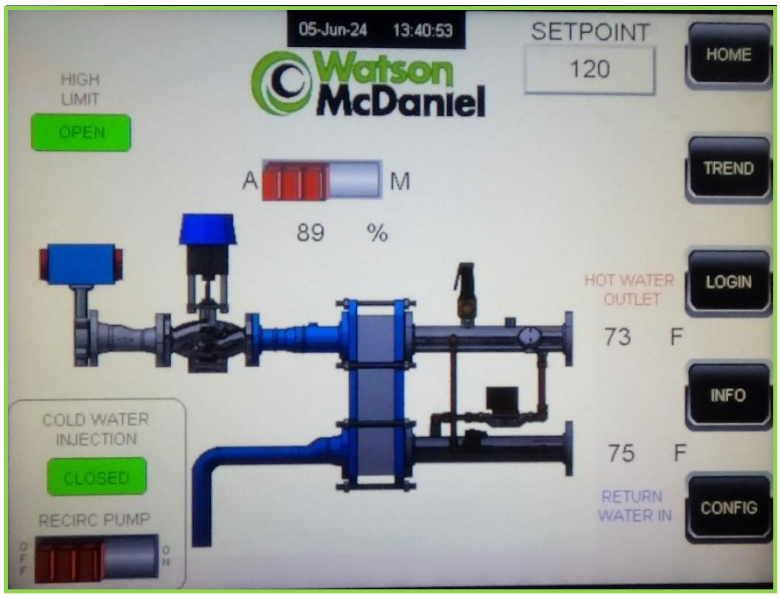

Figure 2: Touch Screen Panel Main Screen

Main Screen Menu Options

The menu screen allows for further customization of the Heat Miser unit for the end users' needs via other menu selection options. The "HOME" button will bring the menu path back to the main menu screen shown above if the user is further into a menu path. The "TREND" button will display the values for temperature set point, hot water temperature, return water temperature, and control valve position in percent open. The "LOGIN" button will allow for selection of engineer access level to adjust 'Heat Miser' configuration settings. The "INFO" button will display the touch screen panel software version and Watson McDaniel contact information. The "CONFIG" button will allow for further adjustment of the Heat Miser system configuration.

Note: To access the "CONFIG" menu, the user must be logged in as engineer.

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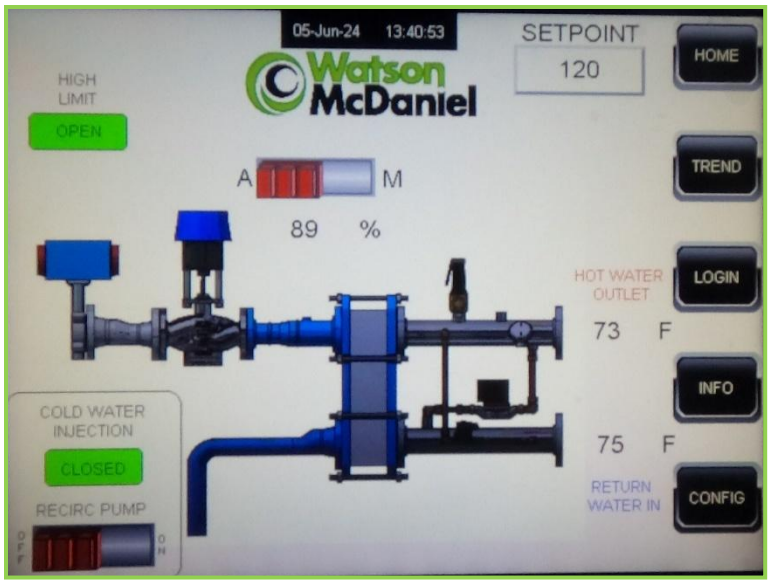

Figure 3: Main Screen Menu Options

Trend Screen

The trend screen displays the Heat Miser event history of all temperatures, setpoints, and valve positions. The user can view the trends over the course of the system's operation. By using the navigation arrows the user can verify operating conditions based on time and date. Inside the panel on the rear side of the touchscreen there is a micro-SD card that continually records the trend screen information. This may be removed at any time to download the performance data.

Note: The valve position is a percentage from 0-100%.

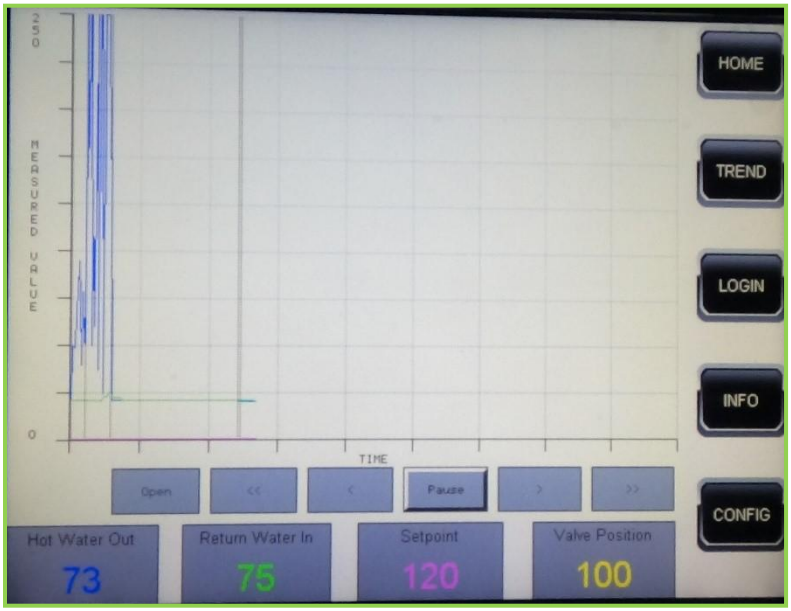

Figure 4: Trend Screen Display

Login Screen

This screen allows for selection of the Engineer access level. The Engineer level is for use when Heat Miser configuration parameters wish to be changed via the “CONFIG” menu. To access the Engineer level, enter the username “ENGINEER” and enter the password “10”, then click “LOGIN”.

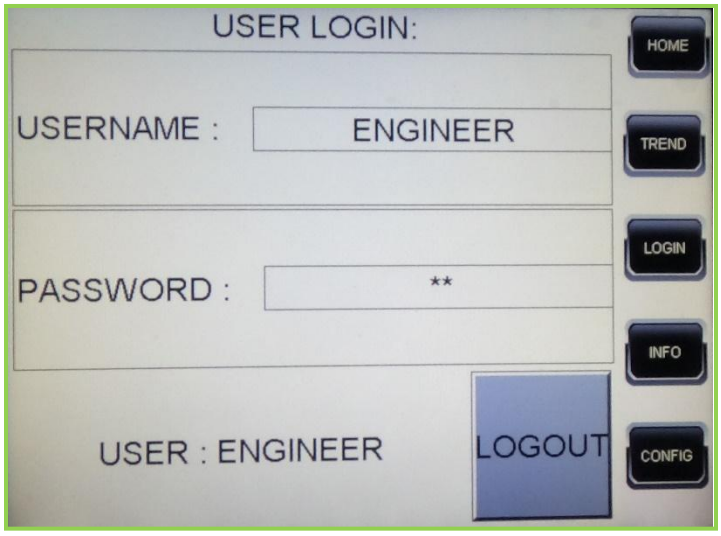

Figure 5: User Login Screen

Info Screen

The info screen will provide details about the current software version installed.

Figure 6: Info Menu Details

CONFIGURATION MENU

The configuration menu allows the user to cycle through different menus to configure relevant Heat Miser control parameters. The right side of the screen has icons to cycle through different menus. Ensure Engineer access level is logged into to gain access to configuration menu.

High Limit Settings

The first page of the configuration menu gives access to the high limit settings screen. The user may select whether the high limit package is installed or not. Note the butterfly valve will appear on the main screen when the high limit screen is equipped. The alarm type, whether "absolute high" or "deviation high" is adjustable in this menu. The alarm setpoint, deviation, and hysteresis can be adjusted based on user preferences and alarm type. For absolute high alarms, the setpoint is the maximum temperature the hot water outlet can reach before triggered the alarm and closing the valve. The hysteresis is the amount the temperature may fluctuate above and below the alarm setpoint before the high limit valve closes. For deviation high settings, the deviation is the amount the temperature may exceed the main system setpoint, hysteresis adds another amount that temperature can exceed the system setpoint.

Figure 7: High Limit Settings menu shows parameters for alarm type selections

Water Injection Settings

The cold-water injection screen allows for selection of whether cold water injection is installed on the Heat Miser. If equipped, the water injection feature will protect from overheating of hot water leaving the Heat Miser by allowing return water to bypass the heat exchanger and cool the hot water leaving the outlet. The alarms and parameters may be adjusted like the high limit valve settings as described in the High Limit Settings section.

Figure 8: Water Injection Settings Options

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Control Valve Settings

The control valve settings consist of a screen for selection of “single valve” or “split range”. This menu allows the user to adjust the output and scale values for the equipped control option. If equipped with a split range control valve, the values from Table 1 should be entered into the applicable menu boxes when the system leaves the factory. Changing these values is only applicable if upgrading an existing system from a single valve to a split range configuration.

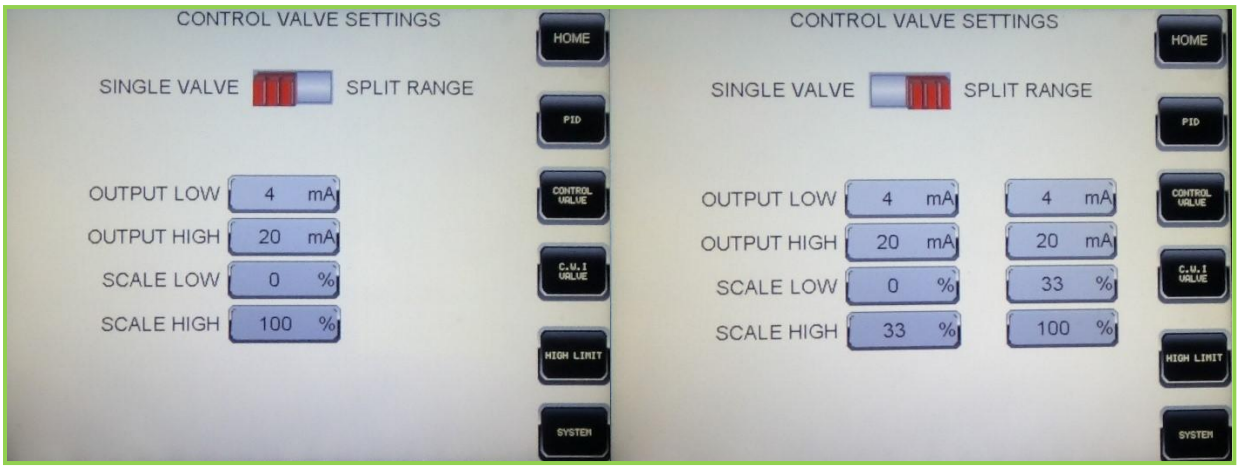

Figure 9: Control Valve Settings

Table 1			
Single Valve Configuration			
Valve One	mA	Valve Two	mA
Output Low	4	n/a	n/a
Output High	20	n/a	n/a
Scale Low	0	n/a	n/a
Scale High	100	n/a	n/a
Split Range Configuration			
Small Valve (one)	mA	Large Valve (two)	mA
Output Low	4	Output Low	4
Output High	20	Output High	20
Scale Low	0	Scale Low	33
Scale High	33	Scale High	100

PID Settings

The PID settings menu allows for manual adjustment of PID values for the controller or for selection of the auto tune feature to populate PID values during operation of the Heat Miser. It is recommended to use the autotune feature when the Heat Miser is experiencing a normal system load that closely matches the design conditions.

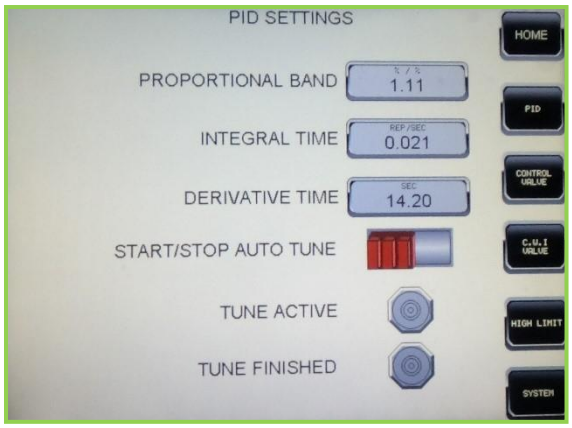

Figure 10: PID Settings Menu

System Settings

The System settings menu allows for adjustment of network and temperature units to match building communication network applications. Users can adjust the IP address of the controller to match their network communication requirements. The local date and time can be adjusted in this menu which may be applicable after shipping from the factory or if located in daylight savings zones.

System Button

The right side of the touchscreen panel contains several physical buttons with the top one being the “SYSTEM” button. This allows the user to change several parameters of the touchscreen system itself. It is not recommended to adjust these settings as some settings may disrupt the operation of the touchscreen. Items in this menu that may be worth adjusting include time and date for more advanced time adjustment options not in the touchscreen interface, the touchscreen beeper volume which may be turned on or off, and the memory card options which allow the user to clear the memory card directly from the touchscreen without removing it from the unit. To access this advanced system menu, enter code 5131.

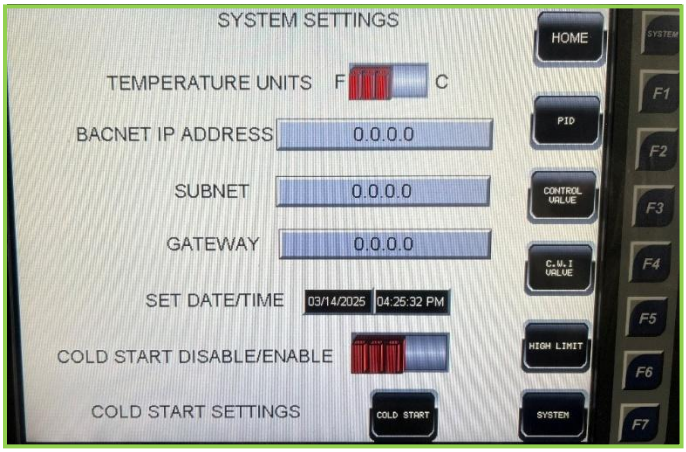

Figure 11: System Settings

BACnet Configuration Settings

The IMO touchscreen panel can communicate and be controlled through BACnet communication protocols. This allows the user to incorporate their heat exchanger system into their building automation system. The user may monitor temperatures and system statuses through BACnet. Importantly the user may inhibit the system via the Loop Inhibit option to ensure a system does not run. See Table 2 below for details.

BACnet ID #	Internal Address	Parameter Description	R/W Ability
AO0	AQ9	Analog Output 1	R
AO1	AQ10	Analog Output 2	R
AV0	R2000	Hot Water Temp Deg C	R
AV1	R2002	Hot Water Temp Deg F	R
AV2	R2004	Cold Water Temp Deg C	R
AV3	R2006	Cold Water Temp Deg F	R
AV4	R2008	High Limit ABS SP C	R/W
AV5	R2010	High Limit ABS SP F	R/W
AV6	R2012	High Limit Dev C	R/W
AV7	R2014	High Limit Dev F	R/W
AV8	R2016	Cold Water ABS SP C	R/W
AV9	R2018	Cold Water ABS SP F	R/W
AV10	R2020	Cold Water Dev C	R/W
AV11	R2022	Cold Water Dev F	R/W
AV12	R2024	Loop SP C & F	R/W
BV0	M5050	Loop Inhibit	R/W
BV1	M5051	Auto/Manuel Modes	R/W
BV2	M5052	High Limit Valve Status	R
BV3	M5053	Cold Water Injection Status	R
BV4	M5054	Recirc Pump Status	R/W

Table 2: BACNet Configuration Settings

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COLD START FEATURE

The cold start feature allows the user to have their heat exchanger unit slowly ramp to the operating temperature. This ensure existing equipment can sustain the condensate loads that may be seen only during the startup of a unit. The user can set the deviation which is the amount the temperature must differ before the cold start initiates. The cold start setpoint can also be set in this menu. The ramp time or time the control valve will slowly open is set here. The dwell time at the cold start setpoint can also be set in this menu.

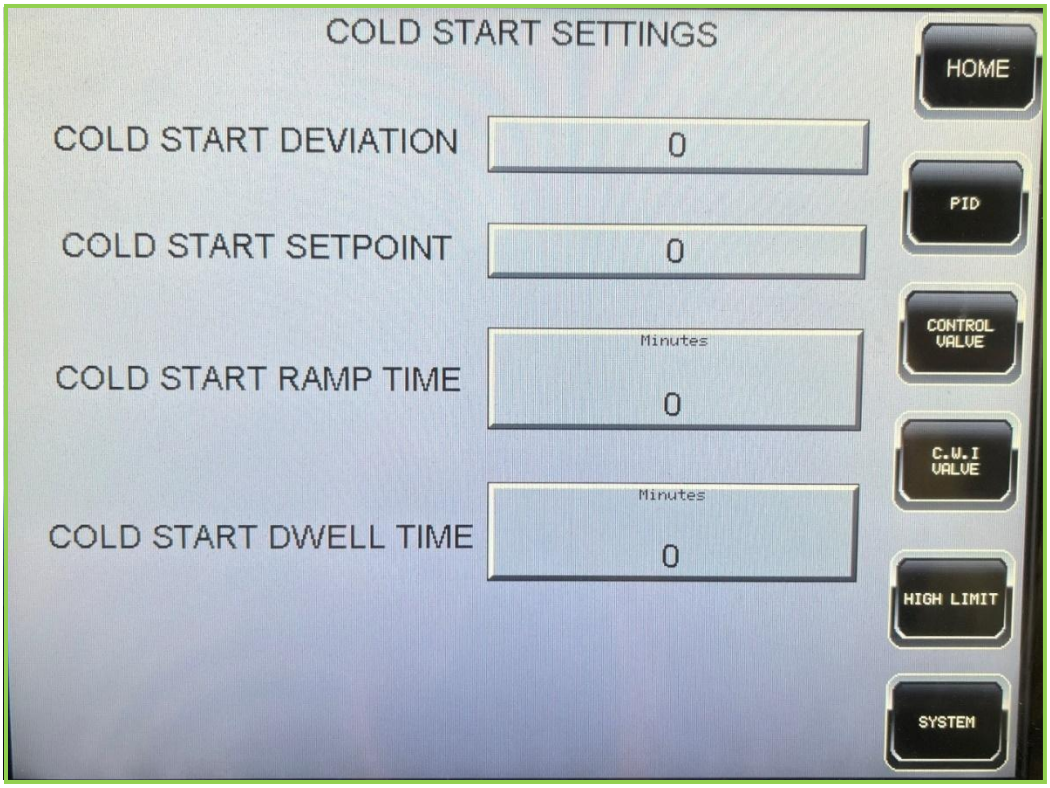

Figure 12: Cold Start Settings