

## PRODUCT DESCRIPTION

The **CWMC (Chilled Water Master Controller)** is a microprocessor based controller designed for the precise monitoring and coordination of DDC controllers for multiple chilled water systems. The control unit provides central control for up to six chillers via interfaces with the individual Digital Diagnostic Controllers (DDC)\* on each chiller. It controls all of the heating and cooling functions for each chiller, as well as operation of the seawater and chilled water pumps. It optimizes compressor operation by automatically changing the lead compressor to evenly distribute run time.

The two-line lit LCD display provides a scrolling read-out of system status including inlet and outlet water temperature of each stage, mixed outlet water temperature of the system, compressor run times, and diagnostic faults including refrigerant high and low pressure, flow switch, low voltage, freeze warning, and high water temperature limit. It also interfaces with a PC via a serial port permitting remote control and monitoring. The PC software also permits the system to be programmed in several different languages. Note that a PC is optional - not required and the software is available on request.

The entire assembly is grounded and protected against static interference and RF noise. The circuit board is conformally coated to provide high resistance to external damage or corrosion.

A display cable with phone-type modular jacks connects the display to the circuit board. The circuit board has two display jacks. One jack is used for the display local to the chiller the second jack allows a second display to be remotely installed on the bridge or elsewhere. Non-volatile memory stores all user-selectable parameters indefinitely during operation or any power failure situations.

Internal self-diagnostic programs provide complete electronic checks of all lights, sensors, keys, and circuits.

The CWMC controller meets or exceeds applicable ABYC, U.S. Coast Guard Regulations and CE Directives.

### DDC Design Features.....

As part of the over all chilled water master control system, the DDC provides the monitoring of each individual control circuit including: refrigerant high and low pressure, freeze protection, high water temperature limit, flow switch, optional chilled water pressure transducers, and optional high and low refrigerant pressure transducers. The DDC communicates and is controlled by the CWMC through a simple shielded cable and connects through phone-type modular jacks. (Note that optional transducers should be part of original chilled water system order.)

\* The DDC must be version A23 or greater.



## FEATURES

### What is the difference between the Hydromatic controller and the CWMC?

	<u>CWMC</u>	<u>Hydromatic</u>
Compressor duty cycling	yes	yes
Fahrenheit/Celsius	either	either
High Pressure Monitoring	integrated	integrated
Low Pressure Monitoring	integrated	integrated
Flow Switch	integrated	external
Freeze Protection	integrated	external
High Limit	integrated	external
Maximum Stages	6	4
Network Compatible	yes	no
Water Press. In (system)	optional	no
Water Press. Out (system)	optional	no
Refrig. Press. High (stage)	optional	no
Refrig. Press. Low (stage)	optional	no
Hour meter for each stage	yes	no
Automatic Setpoint Adjustment	yes <sup>(1)</sup>	no
Multi-lingual Programming	optional <sup>(2)</sup>	no
Hurry Mode	yes <sup>(3)</sup>	no
Remote Monitoring/Diagnostics	optional <sup>(4)</sup>	no
Text Display	backlit LCD, 2 lines, 16 char./line	two 3-digit LEDs

<sup>(1)</sup> Whenever a stage is bypassed or off due to a fault, the next stage assumes the setpoint of the bypassed stage. Subsequent stages are also adjusted.

<sup>(2)</sup> Requires computer attached to serial bus. Message codes can be changed in the field from English to the target language.

<sup>(3)</sup> Standard staging delay is adjustable, but when differential is greater than five degrees stages are started 15 seconds apart.

<sup>(4)</sup> Requires computer and modem interface.

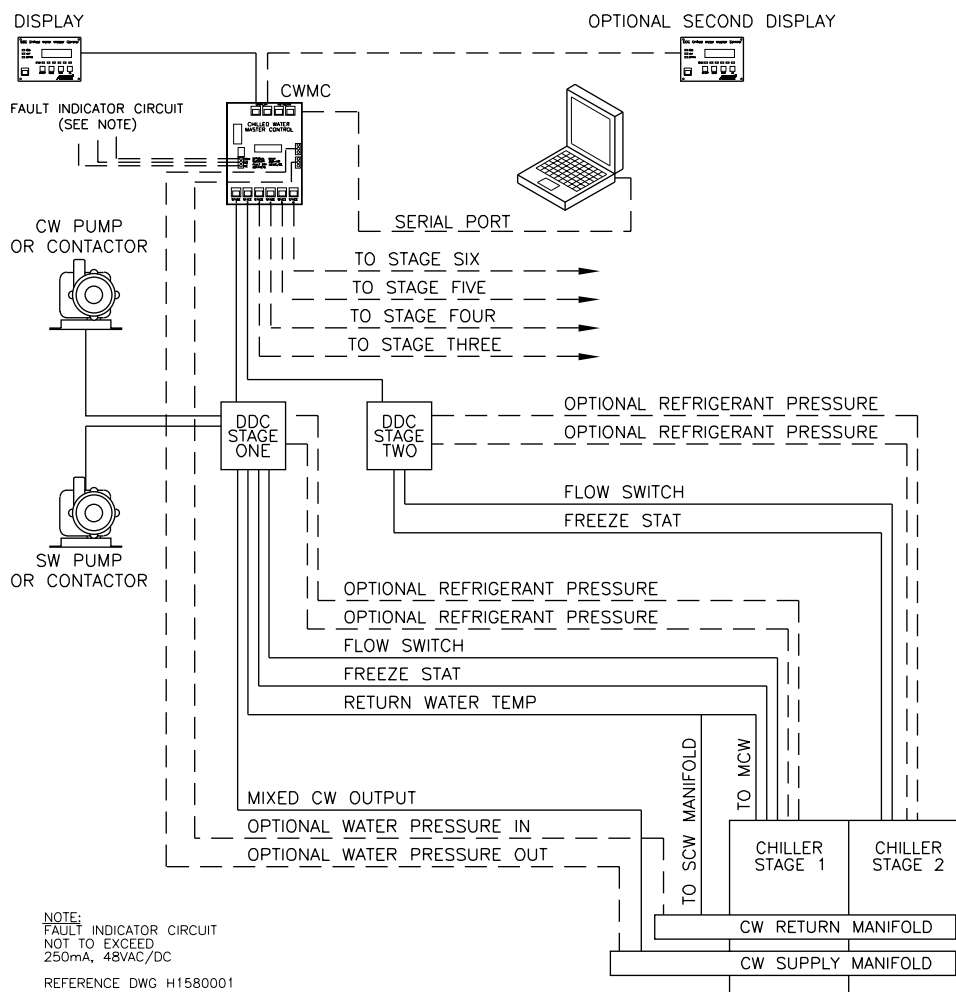
# Installation Guidelines for the Chilled Water Master Controller

Each **Chilled Water Master Controller (CWMC)** comprises a display panel, display cable, and a control circuit board assembled into the unit's electrical box. Determine the proper location of all components before proceeding with the installation.

Each DDC circuit board is connected to the CWMC by a 6 pin shielded cable with telephone (RJ-45LAN) style plugs. The DDC connected to stage 1 jack of the CWMC is defined by the CWMC as stage 1. Stage 1 DDC must have three sensors (see schematic). Other DDC stages only need one freeze protection sensor each. The freeze protection sensors are installed downstream of each evaporator outlet. The return water sensor must be installed in a location where the temperature readings will

always be representative of the water returning from all air handlers. The mixed supply water temperature sensor must be installed downstream of all stages so as to read the mixed supply water temperature. (Supply water is water leaving chiller to supply the air handlers. Return water is water returning from the air handlers to the chiller.) If CW or SW pump is smaller than 3/4 Hp, then that pump may be operated directly by stage one DDC. Otherwise, stage one DDC should control a contactor to operate that pump. Note that 3-phase pumps should have overloads, sized and set according to the amperage. The DDC board has pots for cooling setpoint, heating setpoint, and time delay; however these are overridden when connected to the CWMC.

## CHILLED WATER MASTER CONTROL (CWMC) TYPICAL INSTALLATION



In the interest of product improvement, Taylor Made Environmental's specifications and design as outlined herein are subject to change without prior notice.



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