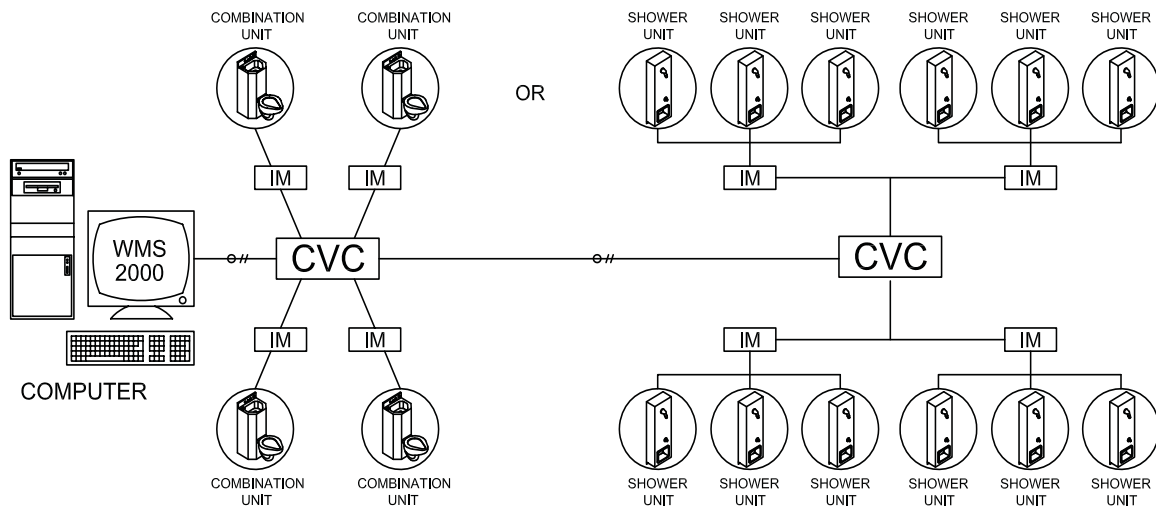


WMS-2000 Water Management System



Recommended Specifications

Electronic water management system shall be:
Willoughby Model: **WMS-2000**

Water management system shall be a PC based system operating in a Windows XP or Windows NT environment. PC shall serve as operator interface serving up to eight individual trunks of up to 32 networked Cell Valve Controllers.

Individual Cell Valve Controllers (CVC's) shall be located in the plumbing chase and shall control the operation of electronic lavatory valves, electronic shower valves and electronic-hydraulic flush valves.

CVC's shall require 24 VAC for operation. System manufacturer shall supply 120/24 VAC step down transformers. Each CVC shall be capable of controlling up to 4 lavatory/toilet combination units (1 hot valve, 1 cold valve and 1 flush valve for each of the units), or 4 individual lavatories and toilets, or a total of 12 individual low voltage solenoid valves. The recommended total length of low voltage cabling from the CVC to the solenoid is 50 ft. CVC's are modular and capable of operating in a fully networked or stand alone configuration.

CVC enclosure shall be fabricated from stainless steel with clear Lexan front cover to view diagnostic lights. Lights on the CVC shall provide diagnostic information on the 16 inputs, the 12 outputs, communication activity to the CVC and the presence of control voltage. A flashing light will indicate the computer within the CVC is operational.

Individual Interface Modules (IM's) shall be located inside the plumbing chase and will provide the means to distribute signals between the CVC and individual valves and switches. The IM shall be capable of connecting up to 3 input switches and up to 3 low voltage solenoid valves. It shall also house the optional hardware necessary to provide overflow protection when used with toilets manufactured with overflow prevention option. IM's with the overflow option should be mounted above the toilet waterline and in close proximity to the fixture. IM enclosure is fabricated from stainless steel with clear Lexan front cover to view diagnostic lights.

Diagnostic lights on the IM will provide the status of the output valves and indication of a valve being disabled. Diagnostic push buttons are also provided on the IM to enable the maintenance personnel to activate valves from the plumbing chase. Valve activation shall come from vandal-resistant stainless steel waterproof electronic push buttons. Push buttons shall require less than 5 lbs. of force to activate. Push buttons shall be isolated from the low voltage wiring.

A fully networked system will consist of CVC's in the plumbing chases and a graphical operator workstation located inside a control room. Operator workstation consists of a Pentium PC with 15" color monitor. Optional touch screen interface, in lieu of a mouse, is available. The workstation displays a block diagram representation of the facility to simplify user interaction. Optional floor plan screen layout is available. The workstation is capable of supporting a network of up to 256 CVC's.

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A twisted shielded 3-pair (6-conductor) RS-485 communication link shall run from the workstation to the first CVC and continue on to each subsequent CVC in an individual network trunk. The RS-485 communication cable is by others. Stand-alone CVC's not on a network shall be programmed via an optional laptop or one-time factory program.

Optional toilet overflow prevention shall automatically disable toilet if overflow is attempted and, on networked systems, initiate audio/visual alarming at the workstation.

In the event of a loss of network communications or a loss of power, system timing parameters shall be retained in each CVC to allow fixtures to operate in the same way they were operating prior to the loss of power or the loss of network communications.

All solenoid valves shall be non-hold open and all metering times shall be independently adjustable. Metering time for each of the valves is adjustable from 1 to 60 seconds for each lavatory valve, 1 to 10 seconds for each flush valve and 1 second to 9 minutes and 59 seconds for each shower valve. Metering cycles shall be interruptible with a second push of the button.

* Willoughby will require an electronic CAD file (DWG or DXF) of the facility floor plan identifying the fixtures to be controlled by the WMS-2000 system.

1.) Control System:

WMS-2000

2.) Programming:

Stand Alone
 Networked (network cable by others)

3.) Control Station:

Desktop PC
 Standard Monitor (LCD)
 Touch Screen (LCD) (additional cost)
 Laptop PC
(available only w/ Stand Alone option or single network systems)
 No PC (Stand Alone only)

4.) Other Options:

Block Diagram Screen Layout (Standard)
 Floor Plan Screen Layout (additional cost)
 Overflow Protection System
 On-site Start-Up, Commissioning, and Training Session
(must be scheduled 30 days prior to training and after complete installation and testing of the system)
 Other _____
 Other _____

The networked system shall be capable of:

- Enabling or disabling an individual fixture or an entire group of fixtures from the control station.
- Controlling the maximum number of simultaneous flushes (adjustable from 1 to 999) that can occur within a given time period (adjustable from 1 to 60 seconds).
- Automatically flushing a toilet after an adjustable period of non-use has passed to prevent the trap from drying out and the water becoming stagnant.
- Logging all valve activity chronologically. This will include all overflow or alarm conditions.
- Allowing for a remote flush from the control station.
- Allowing for valve timing changes to be made from the control station.
- Providing a scheduled lockout of selected fixtures.
- Providing a between-flush delay of up to 10 minutes.
- Providing an overuse alarm at the control station for a given number of flushes in a given time period.
- Providing three levels of security: operator, supervisor, and builder.

◦ Operator Security Level:

- Remote flush
- Lockout fixtures
- Reset fixtures
- Reset alarms

◦ Supervisor Security Level:

- All of the above plus the following
- Set supervisor password
- Adjust valve timing
- Set and adjust scheduled lockouts
- Electronically disconnect fixtures
- Set alarm display options
- Set overuse alarm parameters
- Turn on and set simultaneous flush guard
- Turn on activity log function
- Assign sound effects

◦ Builder Security Level:

- All of the above plus the following
- Set builder password
- Set communication settings
- Place Bitmap floor plans
- Add and remove navigation regions
- Insert, set, and adjust fixtures

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