Min/Max/Ave Feature Changes

The Min, Max and Ave that is displayed on the System Summary page used to be calculated using data points taken at 10-minute intervals. This is fine for slow moving cooling tower and boiler systems, but in many other applications parameters change more quickly. In version 15, the calculations are made using data points taken at 15-second intervals.

In addition, the Min/Max/Ave calculations will not include data that would make the calculations invalid, such as during calibration, during a probe wash or if you have selected that datalogging of a parameter should be suppressed by a particular event (like a no-flow DI state, for example).

Another change is that the Min/Max/Ave data are now available as parameters to be datalogged.

The Average will now be available as a parameter to graph when using the 1 Day or 7 Day views. This will be helpful for verifying that fast spikes in a process will be detected in the graph.

Graphs

The time between samples for the Last Hour view will be 15 seconds.

The Average of a parameter is now available to view in a graph in the 1 Day and 7 Day views. We have a limited number of data points that can be displayed, so we show one data point every 5 minutes in the 1 Day view and every 20 minutes in the 7 Day view. In order to be able to see when spikes in the value may have occurred but not recorded in the normal graph, the Average graph displays a rolling average over the time span between the data points. Any spike in the reading will show up as a bump in the average.

Datalog Changes

The Manual Datalog (must be downloaded manually) and AutoReport Datalog (sent to you via email) are no longer mutually exclusive. It is possible to have both logs at the same time. The Manual log allows you to list a maximum time frame (say 60 days) and when the log is downloaded to a stick or PC the log is erased and a new one started automatically. This eliminates the need to connect via PC when downloading a datalog onto a USB stick.

The Active Datalog is no longer available, so if you normally get data via email, you can use the Manual log to act as the old Active log.

Data points may be taken as frequently as every 15 seconds, as opposed to the once every 10 minutes used in the previous software versions.

In addition to Normal datalogging mode (where data is logged all the time) we have added Event triggered datalogging (where the parameters are not logging unless an alarm condition is in effect) and Datalog Suppression. In this case, data is not logged, graphed or calculated in the Min/Max/Ave if it is being suppressed.

Events that may Trigger or Suppress datalogging include all alarms, Interlock or Generic DI states, or relay on/off states. Each parameter now gets its own choice of triggers or suppressors.

Alarm Changes
The remote alarm email and alarm relays are now independent. Any of the WebMaster relays may be an alarm relay, not just R8. You may set up multiple relays as alarms, each trigged by different problems.

It is possible now to suppress an alarm relay or email by an Interlock or Generic DI state.

Modbus Read and Write Capability
When the Modbus TCP option is purchased, not only can you have your HMI program request data from the controller, but you may also use the HMI program to change set points in the controller.

Communications Pages
The Communications page and Advance Communications page have been simplified. Any unused sections, such as the USB WiFi Network Settings, have been removed. Many settings will only be displayed if the appropriate hardware or software activation is installed. The Pager feature has been discontinued. The Advanced Communications page is now a link from the Communications page, and contains only rarely used settings.

Flow Based Feed using multiple water meters
You may now select as many as three makeup water meters to use for a single Flow Based Feed relay. The algorithm adds together flow totals from all selected water meters to trigger the relay to activate.

Feed PPM with PosiFlow control algorithm
In PPM Feed with PosiFlow control mode, the controller monitors the total volume of flow through up to three analog or digital flow meters, and after a programmable volume has been totalized the relay activates and PosiFlow pulses are counted, and converted to a volume of chemical needed to achieve a target PPM level. The calculation uses cycles of concentration, specific gravity of the chemical product, ppm set point, makeup water volume, and ml per stroke of the pump to calculate the required addition.

The PPM may also be displayed on the LCD or system summary page, and may be datalogged.

This control mode is normally used to feed a chemical in proportion to the volume of makeup water going into the cooling tower.

Feed PPM without PosiFlow control algorithm

In PPM Feed without PosiFlow control mode, the controller monitors the total volume of flow through up to three analog or digital flow meters, and after a programmable volume has been totalized the relay activates for a programmable time to achieve a target PPM level. The calculation uses cycles of concentration, specific gravity of the chemical product, ppm set

point, makeup water volume, and output per hour of the pump to calculate the required addition.

DI Following algorithm
In a DI Following control mode, the relay is activated as long as a digital input signal from a generic-type digital input is in the open/closed state as selected by the user. An on-delay and an off-delay are used to prevent the relay from chattering on and off if the DI state is changing rapidly.

This algorithm is commonly used to feed a chemical whenever the system is running, as identified by the flow switch registering flow.

Cl2, ClO2 Sensors
The WebMasterONE can now support our free chlorine (as HOCl) and chlorine dioxide sensor inputs. Currently these allow readings between 0 and 10 ppm.

Redundant Sensor algorithm
The redundant sensor algorithm will allow the user to define a primary sensor to use for control and a backup sensor. If the primary sensor goes invalid, the backup sensor will automatically take over control, and the sensor error alarm will activate. If the sensors don't match each other within user-defined limits but both are valid readings, control will stop and an alarm will activate. If the backup sensor goes invalid while the primary sensor is OK, control continues but the sensor error alarm will activate. If both sensors are invalid, control stops and the sensor error alarms activate.

Each input (SI or AI or Paddlewheel DI) will have a radio button to select backup sensor function. When Backup is selected and submitted, the page redraws, and new fields appear:
   Primary Sensor Assignment
Allowable Deviation from Primary Sensor Reading

Add makeup conductivity and manual temperature entry option to RSI/LSI calculation
We've changed the calculations used for LSI and RSI to make them more accurate. Instead of entering the *system* hardness and alkalinity, the user will enter the *makeup* hardness and alkalinity. The user can select the makeup sensor, or select it as Not Used and manually enter the makeup conductivity. The controller will calculate the system hardness and alkalinity:
System Hardness = makeup hardness*(system conductivity/makeup conductivity) and
System Alkalinity = makeup alkalinity*(system conductivity/makeup conductivity).

We have added the ability to select whether to use the system water temperature as reported by a sensor, or to manually enter the temperature. If there is no ATC on any sensor, then only manual entry will be possible.

Provide high-high alarm, and low-low alarms
New high-high and low-low alarms have been added to all sensor inputs, analog inputs, and paddlewheel rate inputs.

Add adjustable damping on all SI, AI and Paddlewheel DI
Damping is applied to the displayed (and used for control) reading by taking a running average of the readings of the input signal over the time frame specified by the damping setting (0-60 seconds).

Add generic and level type DI states to the event log
Function the same as existing feature for Interlock. If no active state is defined, 1 = closed, 0 = open.

Add DI_D, E and F Functionality
DI_D can be any type of input, while DI_E and DI_F cannot be paddlewheel, contacting flow meter or generic counter.

Add a "Reset Defaults" button for all AI calibrations
A button to reset the analog input calibration to factory defaults is now available on the 4-20 mA Inputs page.