Honeywell

PRODUCT: PHD
SOFTWARE RELEASE: ALL
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CUSTOMER PRIORITY NOTIFICATION # 9902

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TO: **All Users of Uniformance Process History Database (PHD)**

SUBJECT: **a) "Sample Averages" Using the Automation Server May Produce Incorrect Averages**
b) Clarification of the "Reduction Average" and Timestamp Convention and Planned Changes

SUMMARY:

"Sample Average"

The Sample Average calculation is intended to provide a time-weighted average around a specified time. A Sample Average, requested with a time period from 2:00 to 3:00, will return averages at 2:00 and at 3:00, each covering a span of 30 minutes before and after each of these times. The function uses the "raw" data values, interpolates values through the period and at the start and end of a period. The resultant average is the 'area under the plot line', which is the time-weighted average. For example:

- Assume that the time period is from 2:00 to 3:00
- Assume also, that there is a raw value of 3.0 at 2:30 with start and end interpolated values being 1.5 at 2:00 and 3.5 at 3:00 respectively
- The calculation performed by this method in PHD R120.1 and earlier is as follows:
  (1.5 x .5) + (3.0 x .5) = 2.25
- The correct average should be calculated as follows:
  ((3.0 + 1.5)/2) x .5 + ((3.5 + 3.0)/2) x .5 = 2.75

The nature of the data factors greatly into the magnitude of the error in the calculated average. A data stream that has a value very close to the end of its period will contain a very small error, whereas one that has most of the data near the beginning of the period will show a larger error. The variability of the data is also a contributor to the magnitude of the error.

Reduction-Type Average

PHD performs 'time-weighted averages' for the periods selected; however there is a possible misunderstanding of these averages, as the documentation may not accurately describe the function. In all cases, the PHD Average that is referred to as a 'Reduction Average', is a time weighted average that is designated as being "Before", "Around", or "After" the period of interest. The time that is noted for that period is always shown as the end of the period. For example, if a request is made to obtain hourly (Reduction) averages (Reduction Frequency = 3600 seconds) over a period from 2:00 to 5:00, the averages will be returned as follows:

*"**Before**"* Averages		*"**Around**"* Averages		*"**After**"* Averages	
Timestamp	Average is from	Timestamp	Average is from	Timestamp	Average is from
2:00	1:00 to 2:00	2:30	1:30 to 2:30	3:00	2:00 to 3:00
3:00	2:00 to 3:00	3:30	2:30 to 3:30	4:00	3:00 to 4:00
4:00	3:00 to 4:00	4:30	3:30 to 4:30	5:00	4:00 to 5:00
5:00	4:00 to 5:00	5:30	4:30 to 5:30	6:00	5:00 to 6:00

One of the major sources of confusion is that the timestamp associated with any of these averages is always the "end" of the period that is stated. The "Before" average at 4:00 is the same average as the "After" average at 4:00.

ESTIMATED PROBABILITY OF OCCURRENCE: 100%

ACTIONS:

1. The Sample Average will be corrected and made available in Uniformance R130.2 due for release in Q1/1999
2. Honeywell has reviewed the current conventions used for Reduction Average timestamping. It should be clear that the reduction averages are correct ***if*** one understands that the timestamp shown against them is always that at the end of the 'before', 'around', or 'after' period. However, in order to provide a more consistent understanding of the Reduction Averages, it is planned that the Timestamp associated with the three Reduction Averages will be changed in Uniformance R200 to be as follows:

"Before" Reduction Average 2:00 timestamp	Average is from 1:00 to 2:00
"Around" Reduction Average 2:00 timestamp	Average is from 1:30 to 2:30
"After" Reduction Average 2:00 timestamp	Average is from 2:00 to 3:00

If you have any questions concerning this notice, please contact your local Honeywell National Response Center (NRC), Customer Response Center (CRC), or Solution Support Center (SSC).

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