The 745-S and 904-S Series Controllers are able to provide a Feature/Function that has been, and is becoming one of the most sought after, preferred, or required enhancement of a Control System or Controller. This Function is commonly refereed to as "P I"; the Integration of the Proportional Signal. This function can be best described in control scenarios as:

> *The integration of a proportional signal by Firmware, over time, that provides*
>
> *for the control of a load to be maintained at set point, without signal error (offset).*

The Purpose

The P I Function is desirable or useful for two major reasons. The most obvious is "Accuracy". By being able to control a load at a set point, without signal error, provides the optimum accuracy. Accomplishing this objective at all possible Thermodynamic loadings assures the optimum theoretical control.

Another important requirement would be, the above described accuracy must be obtained so as to provide the optimum temperature that must occour to provide an "industrial chemical" (etc.) process to occur that otherwise would not have occurred unless that specific temperature could be obtained.

The Function

The Function is very complex, but can simply be described as the integration of the signal at the prevailing signal error, by sampling the signal error continuously over fractions of a second; summing those resolutions and independently increasing or decreasing the output to cause the error signal to approach zero. This function includes an adjustable time base of the integration to allow for minimum oscillations that naturally occur in Systems.

In this case, the complexity of the Function is a result of the variations that are encountered for all the combinations of staging and modulation that simultaneously and continuously occur in the control process.

This Function can be encoded in the Controller at the time of manufacture, or the provisions made by the manufacture for the customer to install the Function in the field. These Sequencing/Step controllers are able to offer this Enhancement by obtaining access to an encoded instruction, from this Manufacturer, at a nominal cost.