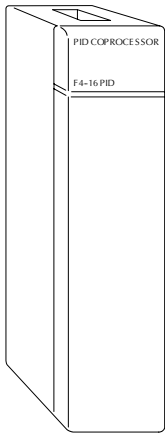


F4-16PID



The F4-16PID is a Proportional Integral Derivative (PID) CoProcessor designed to execute up to 16 PID loops independent of the DL405 CPU. Using the high-speed

Intelligent bus interface, the F4-16PID reads

the process variable and writes the PID output directly into V-memory of the DL405 CPU. Software is provided to configure the PID loops via simple menus. Minimal ladder logic is required in the CPU; therefore, the floating point math-intensive PID calculations in the CoProcessor have little effect on the CPU scan time. As a result, the CPU can perform high-speed discrete control while the CoProcessor performs high-speed PID. This architecture provides higher performance than a small PLC with PID instructions imbedded into the instruction set.

Operation

The process variable (PV) comes from an input module, usually an analog input or thermocouple. The user ladder logic copies the input value to the Process Variable location.

The PID module calculates the loop output value and places it at the Output location. The user can write this value to an analog output channel, use it as a time proportion for a discrete output, or send it to the setpoint or another loop for cascading loops.

All loop information is read from and written to a user specified block of V-memory. Each loop that is enabled requires 32 V-memory locations. Since all loop parameters are stored in V-memory, any device capable of reading and writing DL405 V-memory can be used to configure, tune, and monitor loops. The information included in each loop's block of B-memory includes:

- Bit Mapped Mode Word
- Process Variable (PV)
- Setpoint (SP)
- Bias
- Output
- Bit mapped Alarm word
- Sample Rate (.1 to 999.9 Sec. or Min.)
- Gain
- Reset
- Rate
- PV Low Low Alarm
- PV Low Alarm
- PV High Alarm
- PV High High Alarm
- PV Yellow Deviation Limit
- PV Orange Deviation Limit
- Alarm Deadband
- Error Deadband Below SP
- Error Deadband Above SP
- Derivative Gain Limiting Coefficient
- Setpoint Low Limit
- Setpoint High Limit
- Maximum Output Clamp
- Minimum Output Clamp

Some variations of PID control are done with supporting ladder logic. Examples that are included in the PID manual are:

- Auto/Manual Mode Control
- Setpoint Ramp and Soak
- Alarm Word Decoding
- Time Proportioning Control Loops
- Cascading Loops
- Positioning Actuator Control Loops

