APPLICATION SOLUTION P48 #02 A

REMOTE / LOCAL POSITIONER APPLICATION (WITH P48 OUTPUT MONITORING)

A facility supervisor wants to remotely or locally control the position of a fluid valve. His remote 4-20 mA signal is from a PLC, which sometimes he needs to override (with a key switch) at the valve location. He wants to monitor the P48 output at the valve site.

PRODUCTS USED: P4810105, PKS10000

The product for this application is the P4810105 Process Controller with the PKS10000 key switch. The P4810105 is a process input PID controller with remote setpoint input and analog output. However, the analog output can be configured to follow the remote input from the PLC or the supervisor's desired local input.

HOW IT WORKS

The analog output is assigned to setpoint value in module 2-OP. In this same module, the output type is assigned to 0-10VDC or 4-20mA with the scaling of the low and high values to the desired engineering units. This module does not care if it is a remote or local value to follow.

In module 1-IN, the top display is programmed. For this case, the output of the P48 is looped back into the input of the same P48. In this case, the low and high display values would be the same values as used in module 2-OP analog out. The input type to the P48 must be programmed the same as the output type of the P48. For voltage P48 output, the output is wired in parallel back to the P48 input. For current P48 output, the output is wired in series through the P48 input. For current, terminal 10 is now the negative output. The "Remote In With Top Display Showing P48 Output Signal" illustration should be used.

The remote input from the PLC is wired into terminals 13 and 14. It can only be a 4-20 mA signal. This will be shown in the bottom display. It is programmed in module 7-rS (remote setpoint). The default for the P48 is remote setpoint so the setpoint value cannot be changed from the P48 front panel from the factory. To switch between remote and local setpoint, the user input (InPt) must be programmed for rSP in module 1-IN and the key switch is wired to the user input. In local mode, (switch open) "MN" will illuminate on the P48.

DESIGN ADVANTAGES

Workers can now see the signal from the PLC in Engineering units, at the value location, in the bottom display of the P48. They can also monitor the output signal from the P48 in the top display. The supervisor can easily override the PLC signal when it is necessary without changing the PLC program.

ADDITIONAL CAPABILITIES

This model of the P48 has two alarms, which could be used to detect high or low levels when using the feedback signal in the top display. Setpoint limits could be programmed to limit entering an unacceptable value. The output could be based on PID control when a feedback signal is used. The 4-20 mA signal from the PLC can be offset in value or converted to 0-10 V dc output to the positioner.

DIP SWITCH OR JUMPER SETTINGS

Make sure the internal analog output jumpers are in the correct location for the needed output type.

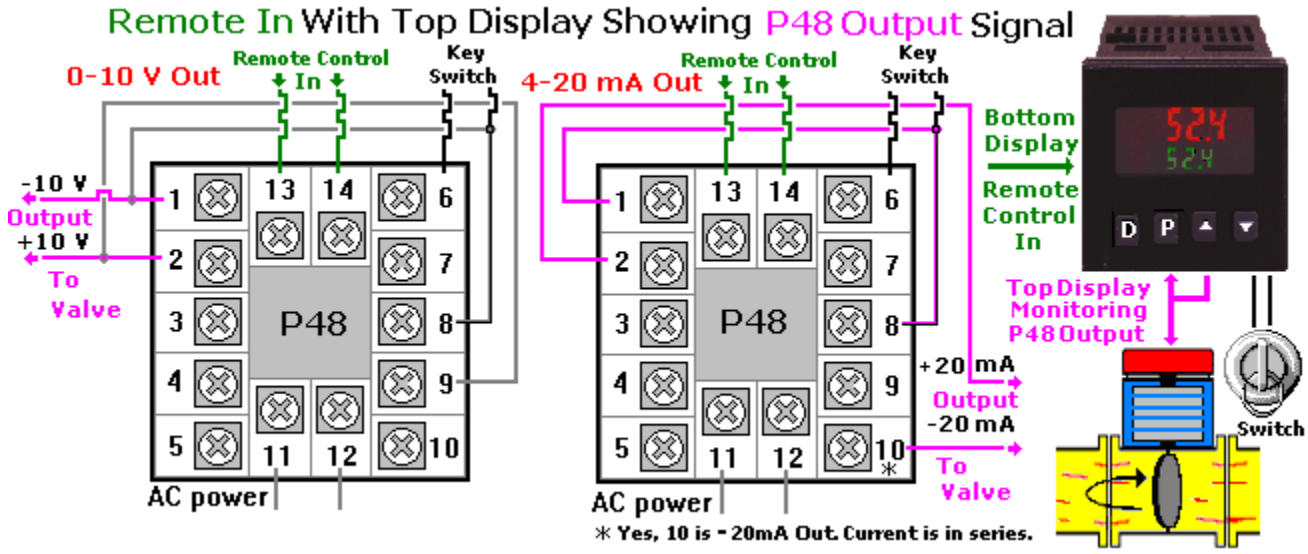
PROGRAMMING (ONLY NON-FACTORY SETTINGS SHOWN)

1-In (Top Display: scaling the same as output 2-OP ANLO and ANHI)
tyPE : Curr or Volt (same as 2-OP ANtP)
dSP1 : 0 or Engineering Unit (Low)
INP1 : 4 or 0
dSP2 : Engineering Unit (High)
INP2 : 20 or 10
InPt : rSP
2-OP (Output program)
CYCt : 0 (Turns off O1 annunciator.)
ANtP : 4-20 or 0-10
ANAS : SP (assign analog out to follow setpoint)
ANLO : 0 or Engineering Unit (Low)
ANHI : Engineering Unit (High)

3-LC
OP: LOC
Dev : LOC
bdSP : LOC
CodE : xxx (Program lock code)
7-rS (Remote control input from PLC)
dSP1 : 0 or Engineering Unit (Low)
INP1 : 4
dSP2 : Engineering Unit (High)
INP2 : 20

WIRING DIAGRAM P48 #02 A

All wiring must be according to the installation guidelines listed in the product's specifications.



This application note is intended to be an example. Your specific application may require changes in products, programming and/or wiring. For specific assistance, you may contact your local Red Lion products supplier or Red Lion Controls Technical Support at 717-767-6511.

APPLICATION SOLUTION P48 #02 B

REMOTE / LOCAL POSITIONER APPLICATION (WITH EXTERNAL FEEDBACK MONITORING)

A facility supervisor wants to remotely or locally control the position of a fluid valve. His remote 4-20 mA signal is from a PLC, which sometimes he needs to override (with a key switch) at the valve location. He wants to monitor the feedback from an external sensor at the valve site.

PRODUCTS USED P4810105, PKS10000

The product for this application is the P4810105 Process Controller with the PKS10000 key switch. The P4810105 is a process input PID controller with remote setpoint input and analog output. However, the analog output can be configured to follow the remote input from the PLC or the supervisor's desired local input.

HOW IT WORKS

The analog output is assigned to setpoint value in module 2-OP. In this same module, the output type is assigned to 0-10VDC or 4-20mA with the scaling of the low and high values to the desired engineering units. This module does not care if it is a remote or local value to follow.

In module 1-IN, the top display is programmed. For this case, the output of the P48 is not looped back into the input of the same P48. "Remote In with Top Display Showing Feedback Signal" illustration should be used.

To monitor the feedback signal from a sensor, the low and high input display values and input type would correspond to the external sensor. (The input type to the P48 does not have to be the same as the output type of the P48.) The feedback device signal in this application is only used to monitor the process and it can be wired back to the PLC.

The remote input from the PLC is wired into terminals 13 and 14. It can only be a 4-20 mA signal. This will be shown in the bottom display. It is programmed in module 7-rS (remote setpoint). The default for the P48 is remote setpoint so the setpoint value cannot be changed from the P48 front panel from the factory. To switch between remote and local setpoint, the user input (InPt) must be programmed for rSP in module 1-IN and the key switch is wired to the user input. In local mode, (switch open) "MN" will illuminate on the P48.

DESIGN ADVANTAGES

Workers can now see the signal from the PLC in Engineering units, at the valve location, in the bottom display of the P48. They can also monitor the feedback signal from the external sensor in the top display. The supervisor can easily override the PLC signal when it is necessary without changing the PLC program.

ADDITIONAL CAPABILITIES

This model of the P48 has two alarms, which could be used to detect high or low levels when using the feedback signal in the top display. Setpoint limits could be programmed to limit entering an unacceptable value. The output could be based on PID control when a feedback signal is used. The 4-20 mA signal from the PLC can be offset in value or converted to 0-10 V dc output to the positioner.

DIP SWITCH OR JUMPER SETTINGS

Make sure the internal analog output jumpers are in the correct location for the needed output type.

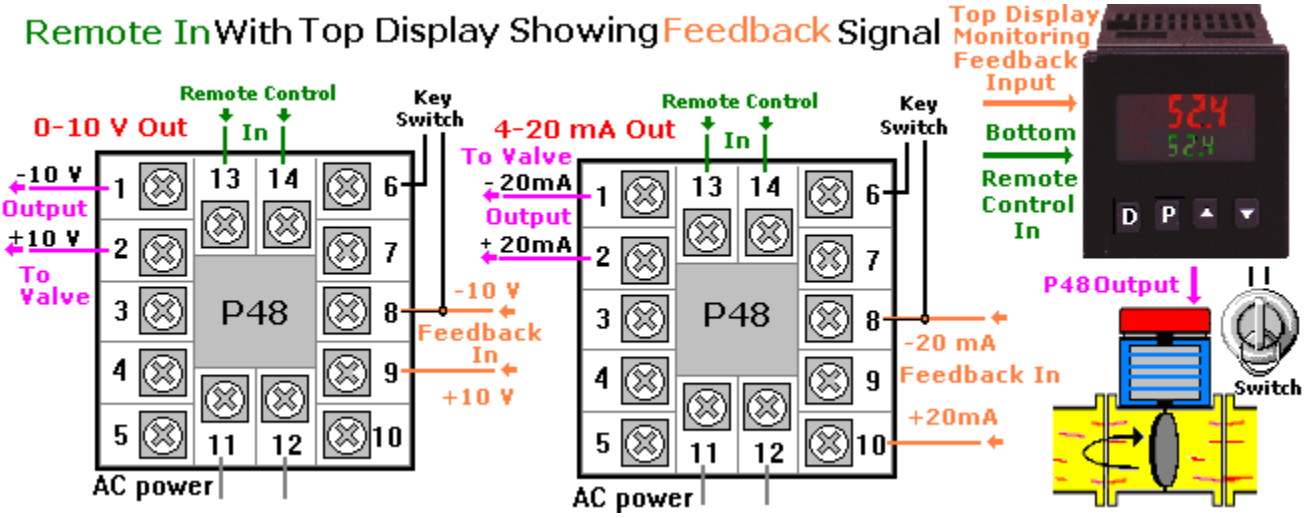
PROGRAMMING (ONLY NON-FACTORY SETTINGS SHOWN)

1-In (Top Display: scaling for the external input)
tyPE : Curr or Volt
dSP1 : 0 or Engineering Unit (Low)
INP1 : 4 or 0
dSP2 : Engineering Unit (High)
INP2 : 20 or 10
InPt : rSP
2-OP (Output program)
CYCt : 0 (Turns off O1 annunciator.)
ANtP : 4-20 or 0-10
ANAS : SP (assign analog out to follow setpoint)
ANLO : 0 or Engineering Unit (Low)
ANHI : Engineering Unit (High)

3-LC
OP: LOC
Dev : LOC
bdSP : LOC
CodE : xxx (Program lock code)
7-rS (Remote control input from PLC)
dSP1 : 0 or Engineering Unit (Low)
INP1 : 4
dSP2 : Engineering Unit (High)
INP2 : 20

WIRING DIAGRAM P48 #02 B

All wiring must be according to the installation guidelines listed in the product's specifications.



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