

USER MANUAL

IHP24

Proportional valve setup

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Instructions

This document describes how to setup and calibrate the IHP24 with proportional controller using ValConnect.

1 Initial setup

The IHP24 can be used to control several types of valve systems. It is important to make the following changes via ValConnect to make the IHP24 work correctly on a proportional valve system.

Set regulator type

1. Connect to the device to ValConnect.
2. Go to the advanced menu on the left side of the screen on the home tab in ValConnect.
3. Go to the Regulator item, set the regulator type to proportional.
4. Press write at the top of the screen.

| | Name | value | Description |
|--|------------------|--------------|---|
| <ul style="list-style-type: none"> Identification Log Basic menu Advanced menu Bump control Live status Calibration data | 75% ADC | 10250 | The ADC value of the 75% position (0 - 65535) |
| | Regulator | | |
| | Regulator type | Proportional | General regulator settings Select the regulator type. Warning: Changing motor to other regulator may harm the system. |
| Control parameters | | | |
| | Hysteresis | 0,70 % | Hysteresis around the dead band (0 - 100 %) |
| | Pos. ADC 1st end | 2771 ADC | ADC value of first endpoint (0 - 65535 ADC) |
| | Pos. ADC 2nd end | 12448 ADC | ADC value of second endpoint (0 - 65535 ADC) |

Set controller output

1. Go to the advanced menu on the left side of the screen on the home tab in ValConnect.
2. Go to the Proportional item and choose the correct setup according to the system.
3. Press write at the top of the screen.

| | Name | Value | Description |
|--|----------------------------|----------|---|
| <ul style="list-style-type: none"> Identification Log Basic menu Advanced menu Bump control Live status Calibration data | Proportional | | |
| | Proportional output signal | A01 | Proportional valve settings set the proportional output |
| | Stay-put position | 12,00 mA | adjust AO1 or AO2 stay put position (0 - 20 mA) |
| | Fail position | 12mA | set the fail position for the Proportional output |
| | Fail position 2 | 12mA | set the fail position 2 for the Proportional output |
| Position feedback | | | |

Proportional output signal

Configures how the valves operate during open, close and stay-put. The proportional output can be configured in three ways.

- AO1 : 4 mA is full close, 12mA is stay-put and 20mA is full open.
- AO2 : 4 mA is full close, 12mA is stay-put and 20mA is full open.
- AO1 and AO2 : AO1= 20mA, AO2= 4mA is full close.
AO1= 4mA, AO2 = 20mA is full open.
AO1= 4mA, AO2= 4mA is stay-put.

Stay-put position

Tune the 12mA output when only one AO is used. Used for proportional valves that has a spool which is out of the center.

Adjustment is done in the following way:

1. First test by setting the valve to 50% and monitoring it for about 2 minutes. If it stays at 50% everything is OK.
2. If the valve drifts towards open, the stay-put value is reduced by 0.1 mA at a time until the valve remains at 50% without movement.
3. If the valve drifts towards closing, the stay-put value is increased by 0.1 mA at a time until the valve remains at 50% without movement.

Fail position and fail position 2

Set the fail position of the analogue output.

- 4mA
- 12mA (Default)
- 20mA

2 End point calibration of the controller

For end point calibration use the push buttons on the front.

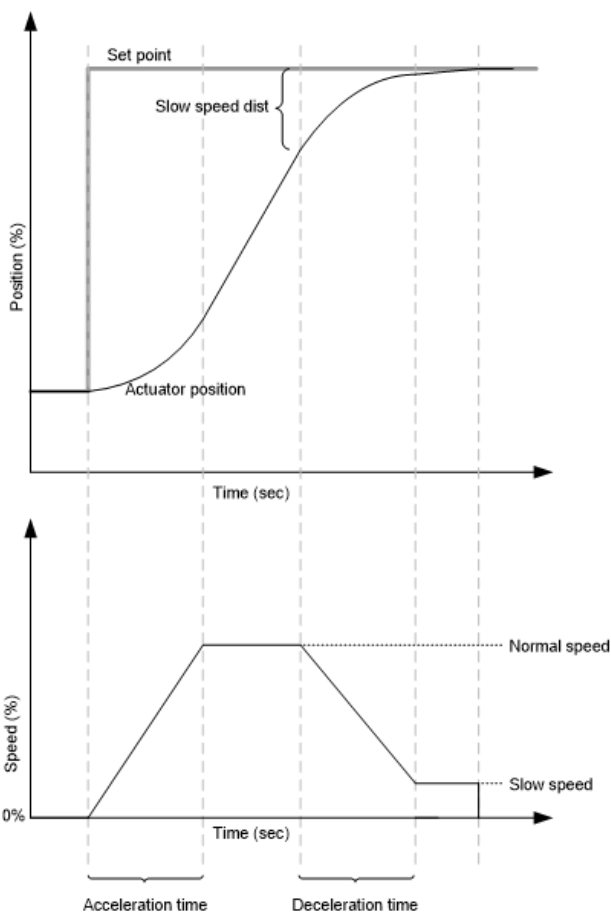
1. Press CALIBRATE (left arrow)
2. Select MANUAL (down arrow)
3. Press OK (right arrow)
4. Press and hold STATUS (down arrow) valve moves to close position
5. When the valve no longer moves press OK (right arrow)
6. Now the 0% point is measured
7. Then press and hold ERROR (up arrow) valve moves to open position.
8. When the valve no longer moves press OK (right arrow)
9. Now the 100% point is measured
10. Calibration is now complete

Note: If you are using ValConnect also, it is important to press READ when end point calibration is finished to make sure the values are updated.

3 Adjusting the proportional parameters of the controller

The following parameters can be adjusted in ValConnect.

| Name | Value | Description |
|-------------------------------|-----------|---|
| Proportional regulator | | |
| Slow speed open | 10,00 % | The slowest allowed speed when opening (0 - 100 %) |
| Slow speed close | 10,00 % | The slowest allowed speed when closing (0 - 100 %) |
| Speed open | 60,00 % | The normal speed when opening (0 - 100 %) |
| Speed close | 60,00 % | The normal speed when closing (0 - 100 %) |
| Acceleration open | 0,100 sec | The acceleration time when opening (0 - 10 sec) |
| Acceleration close | 0,100 sec | The acceleration time when closing (0 - 10 sec) |
| Deceleration open | 0,100 sec | The deceleration time when opening (0 - 10 sec) |
| Deceleration close | 0,100 sec | The deceleration time when closing (0 - 10 sec) |
| Slow open dist | 5,00 % | The distance before the set point where the deceleration starts (0 - 100 %) |
| Slow close dist | 5,00 % | The distance before the set point where the deceleration starts (0 - 100 %) |



To setup the unit follow the next steps.

3.1 Adjustment of opening and closing time

Start by setting the desired opening and closing time, we recommend an opening time of min. 5 sec. and a closing time of min. 5 sec.

1. Go to the advanced menu on the left side of the screen on the home tab in ValConnect.
2. Go to the Proportional regulator and set speed to:
 - a. Speed open: 15%
 - b. Speed close: 15%
3. Press write at the top of the screen.
4. Now test the opening and closing time.
5. If the speed is too slow increase the speed and if the speed is too fast reduce the speed.
6. Continue until the correct speed is reached.

3.2 Adjustment of positioning speed

7. Go to the advanced menu on the left side of the screen on the home tab in ValConnect.
8. Go to the Proportional regulator and set to:
 - a. Slow open dist: 20%
 - b. Slow close dist: 20%
 - c. Slow speed open: Set to half of Speed open found above
 - d. Slow speed close: Set to half of Speed close found above
9. Press write at the top of the screen.
10. The valve is now opened from 0 to 50%, from 30% the valve will now move slowly towards 50%, this is the speed at which the valve is positioned precisely when opening, if it is too slow, the Slow speed open % value is increased, if it is too fast, the % value is reduced.
11. The valve is now closed from 100% to 50% from 70% the valve will now move slowly towards 50% this is the speed at which the valve is positioned precisely when closing if it is too slow the Slow speed open % value is increased if it is too fast the % value is reduced.

3.3 Adjustment of acceleration and deceleration times.

As a starting point, these are set low as it provides a more precise valve regulation.

1. Acceleration open is increased if you want a softer start to the valve movement when opening.
2. Acceleration close is increased if you want a softer start to the valve movement when closing.
3. deceleration open is increased if you want a softer braking of the valve movement when opening.
4. deceleration close is increased if you want a softer braking of the valve movement when closing.

Note: Increasing these times results in a slower valve and on fast systems these times should be kept to a minimum.

3.4 Adjustment of Slow open and Slow close dist.

1. Go to the advanced menu on the left side of the screen on the home tab in ValConnect.
2. Go to the Proportional regulator and set to:
 - a. Slow open dist: 2%
 - b. Slow close dist: 2%

3. Press write at the top of the screen.
4. Valve is now opened from 25% to 75% now you probably get an overshoot, i.e. the valve gets over 75% and creeps back now the % value on slow open dist is increased. gradually until there is no longer overshoot, when this is achieved the value is increased by a further 5% on systems with an opening time of over 5 sec. and 7% on systems with an opening time of less than 5 seconds.
5. Valve is now closed from 25% to 75%, now you probably get an overshoot, i.e. the valve comes below 25% and creeps back, now the % value slow close dist is increased. gradually until there is no longer overshoot, when this is achieved the value is increased by a further 5% on systems with an opening time of over 5 sec. and 7% on systems with an opening time of less than 5 seconds.