Pump Drive with PID Pressure Control through Sinus H Drive

Figure 1

Power supply 400V
Fuse

Sinus H

Pressure Transducer
4–20mA
0 + P max

Motor
Pump

Sump tank

MANIFOLD

Output
Circuit diagram (passive sensor – 2 wires)

--- Optional parts

Figure 2
Circuit diagram (passive sensor – 3-4 wires)

--- Optional parts

- Supply voltage 400V
- Fuse
- Run
- Automatic
- Manual
- Reset
- Probe power supply
- Probe 4 – 20mA
- 0 ÷ P max
- Sinus H
- 24
- +24V
- RST
- P1 Run
- P2 A/M
- P4 Reset
- CM
- I
- +11V
- VR
- V1
- CM
- 3A
- 3C
- CM
- MG
- MO
- Pump
- POTentiometer for speed control, manual
- Drive Fault (Alarm)
- External relay 24VDC 50mA
- Pump running

Figure 3
The diagrams shown in the previous pages represent the pressure control inside a manifold with feedback from a 4–20mA transducer. The pressure can be set via the keypad. The manifold pressure setting ranges from 0 to the max value of the transducer scale, and can be kept constant even when the demand fluctuates.

If the pressure exceeds the set value, because of a reduction in the consumption, the pump will adjust to a minimum speed (AP30) and then automatically stop (if this condition is longer than the time value set in AP37) at a lower speed than the sleep speed (AP38). As soon as the consumption is resumed and the system pressure is lower than the value set in parameter AP39, the pump will instantly restart and restore its pressure value, keeping it constant by means of the PID controller.

This example allows for the exclusion of the automatic PID controller, in order to manually manage the pump speed, by operating the P2 Automatic/Manual selector. When controlling the Drive in manual mode, it serves as a normal speed controller, allowing to adjust the speed value from 0 to the max speed.

In order to activate the "sleep" function (automatic switching-off of the pump after reaching the target pressure) use the following parameters, making sure that the value of AP38 is higher than AP30, to avoid the disabling of the automatic system.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
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<tbody>
<tr>
<td>AP37</td>
<td>Sleep time 30sec</td>
</tr>
<tr>
<td>AP38</td>
<td>Sleep level 35Hz</td>
</tr>
<tr>
<td>AP39</td>
<td>Wake-up level 35%</td>
</tr>
<tr>
<td>l89</td>
<td>PIDscaleMin 0.0 %</td>
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</tbody>
</table>

Note: The above-mentioned diagrams and parameter values represent a mere example of how the application can be used, and they may be modified according to the User requirements and the technical specifications of the system. Therefore, it is the installer's responsibility to ensure a correct implementation. Moreover, it is the installer's responsibility to comply with the applicable safety regulations, and to provide a state-of-the-art installation. Please refer to the Product Application Manual for further information.