

* Serial interface applies on pump with FLEX or 5 wire connection

INTERFACE DESCRIPTION

VCC (SUPPLY VOLTAGE)

Each pump model is calibrated to run on at least one input voltage from the range of 3.2 to 24 V DC. Supply voltage can be customized for each customer need.

Max input voltage: Calibrated voltage +0.1V DC. Pump can be damaged otherwise.

Min input voltage: 3.2 V DC. However, Pump performance is reduced if voltage is reduced from the calibrated voltage. Xavitech recommends to always run the pump on the calibrated voltage.

Image 2 shows in terms of current consumption a typical pump stroke cycle. Since the motor of Xavitech pumps is based on an electromagnet a negative current will occur when the electromagnet is turned off. (you can read more about this in the principle of operation document)

It is because of this current a capacitor between VCC and GND is needed.

If your system can't handle this spike generated by the electromagnet a schottky diode (flyback diode) can be used instead of the capacitor.

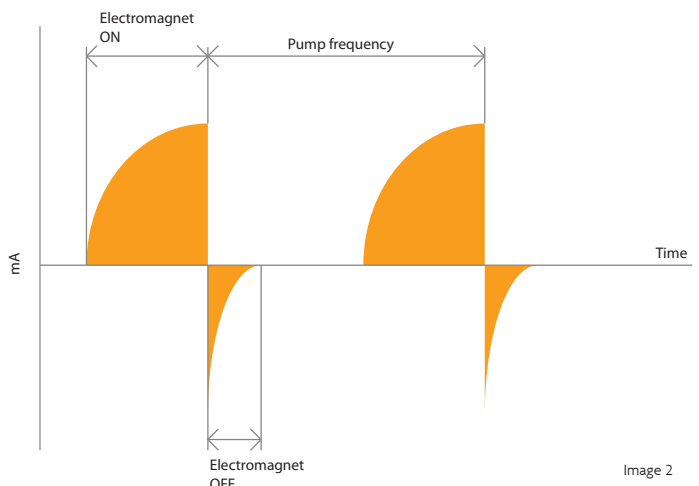


Image 2

I/O X

This is a general I/O connected to a A/D converter of the microcontroller inside the pump.

Default functionality is frequency control.

0 - 0.05V DC Max frequency of the pump.

0.06 to 2.75V DC Frequency control of the pump.

2.75 to 2.85V DC Pump stops

Max input voltage: 3.3 V DC (pump can be damaged if this is exceeded)

Note that the frequency adjustment can only lower the frequency from the factory default frequency. Normally a pump is calibrated to have its max frequency (max flow) set as default at factory.

The use of I/O X can be customized for each customer's need. I/O X can be an analog input, digital input or output. Please contact a Xavitech representative for more information.

I/O R

This connector is connected to the Receive pin of the internal microcontroller UART. Note that a pull-up voltage of 2.85V DC is applied.

The serial interface uses RS-232 with TTL levels of 2.85V DC. Maximum rating of this connector is 3.3V DC. Read more about this in documentation for the pump serial interface.

I/O T

This connector is connected to the Transmit pin of the internal microcontroller UART. Note that a pull-up voltage of 2.85V DC is applied.

The serial interface uses RS-232 with TTL levels of 2.85V DC. Maximum rating of this connector is 3.3V DC. Read more about this in documentation for the pump serial interface.

SWITCH THE PUMP ON AND OFF

There are many ways that you can turn the pump on and off. But Xavitech recommends these three options.

1) Via the I/O X connector. apply a voltage of at least 2.75V DC (max 3.3V DC) and the pump will stop. The pump will start within a few ms (depending on what frequency the pump is calibrated in default) when a voltage lower than 2.75V DC is applied. However, note that the internal microcontroller will still run so the pump will consume <10mA.

2) Via the serial interface. Use the specific STOP command and the pump will stop. Then use the RESET command to start the pump. Note that the microcontroller now will perform the start-up procedure which takes up to <3s (depending on default pump frequency). During this time the pump adjusts the stroke length to reach its calibrated length. The regulation adjusts the stroke length for every pump stroke thus it depends on the pump frequency.

Note that the internal microcontroller will still run so the pump will consume <10mA.

3) Switch power on and off. Note that the power has to be switched off on the supply connector (see image 1) and that the capacitor has to be placed between the pump and the switch. This is due to the current that the electromagnet generates. Pump will be damaged if the switch is placed on the ground connector.

The pump will in this case not consume any power but the microcontroller will perform the start-up procedure which takes up to <3s (depending on default pump frequency) when the power is turned on. During this time the pump adjust the strokelength to reach it's calibrated length. The regulation adjusts the strokelength for every pumpstroke thus it depends on the pump frequency.

MOTOR SPECIFICATION

Xavitech can customized the motors for customers, but for the standard pump models the following values are the specifications for the electromagnets in those pumps.

	V/P200-5V Versions	
Inductance:	14.2mH	
Impedance:	5.8ohm	
	V/P200-12V Versions	V/P1500-12V and 24V Versions
Inductance:	36mH	29.5mH
Impedance:	14.2ohm	5.8ohm

CAPACITOR SPECIFICATIONS

Xavitech recommend to us a capacitor parallel to the power supply (see image above) in order to reduce the power spikes generated by the electromagnetical driven motor. See information below of the recommended sizes of capacitors.

V200-5V Pumps	47µF, 10V
V200-12V Pumps	100µF, 16V
P200-5V Pumps	47µF, 10V
P200-12V Pumps	100µF, 16V
V1500-12V Pumps	470µF, 25V
V1500-24V Pumps	1000µF, 35V
P1500-12V Pumps	470µF, 25V
P1500-24V Pumps	1000µF, 35V