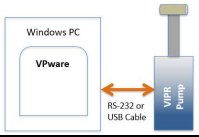
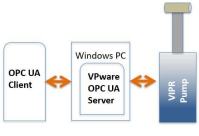
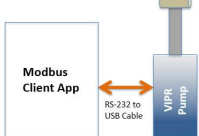
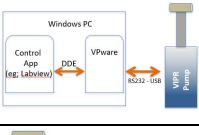
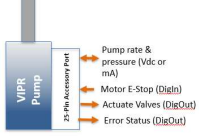
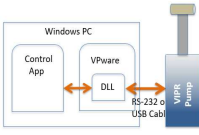


VIPR Pump Control Options

Pump Control System	Description	Control Platform	Pump Control Capabilities	Access to Pump Data	Example Applications	Connection Type
VPware	PC application developed by Vindum Engineering. Free to Vindum pump customers.		Full Pump control, graphing, ramping, scheduler, and error/warning notices.	Real-time graphing and/or save to CSV file for later analysis.	Any PC running Windows 7 or later. Able to run multiple pumps in app.	<ul style="list-style-type: none"> • RS232–USB • USB-USB • RS232-RS232 • RS232-Ethernet
OPC UA	VPware is an OPC UA server that allows OPC UA client applications to access pump data and pump commands.		Full library of pump commands.	OPC UA Client can request full pump data.	Any OPC UA client application	<ul style="list-style-type: none"> • same as above
Modbus RTU	Direct control of Vindum pumps (without computer) by Modbus RTU client		Library of common pump commands added to pump firmware	All pump data is available.	Applications with Modbus Client capability	<ul style="list-style-type: none"> • RS232-USB
DDE	VPware acts as “server” to a DDE “client” application.		Full library of pump commands.	All pump data is available.	LabVIEW or other applications with DDE client capability	<ul style="list-style-type: none"> • RS232–USB • USB-USB • RS232-RS232 • RS232-Ethernet
Pump Accessory Port	25-pin connector on pump uses digital signals for Run/Stop and status & analog voltage input to set pressure/rate.		Analog-In (Vdc or mA) to set pumping rate/pressure. Several configurable digital I/O channels	Analog-Out (Vdc or mA) for pumping rate/pressure	Direct pump control, without PC	DB25 port (25 pin)
.NET DLL	.NET assembly DLL, handles low-level COM to Vindum Pump. The API to the DLL provides simple interface with custom control apps.		Full library of pump commands, status & errors, communication status, etc.	Full pump data is available.	Python, MATLAB	<ul style="list-style-type: none"> • RS232–USB • USB-USB • RS232-RS232 • RS232-Ethernet