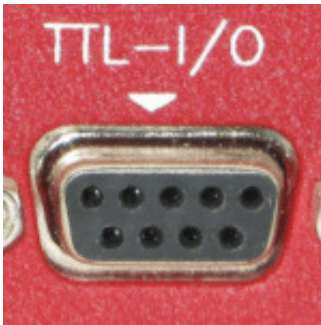🔍

Home ☐ **TTL Inputs and Outputs**

TTL Inputs and Outputs

TTL Ports – Button Pumps

Pump TTL Db9
Connector

On the normal button/display pumps or bench pumps, the ttl output ports are available on the DB9 connector on the rear panel. This connector is not the RS-232 port!

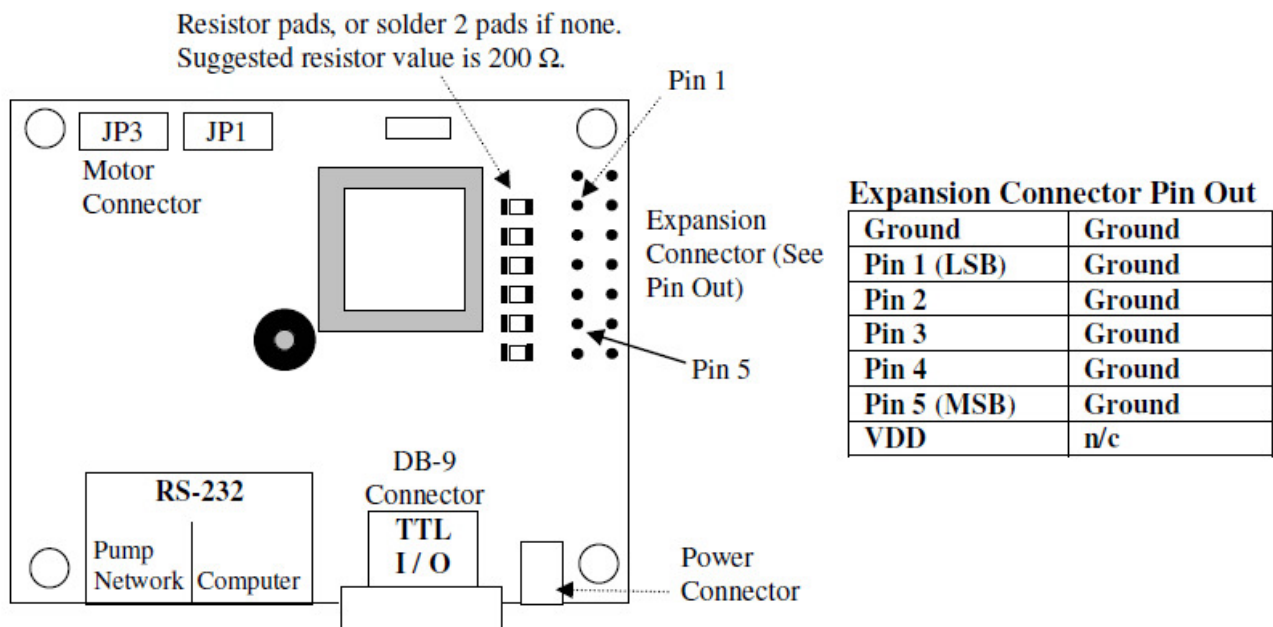The following chart shows the pin input and output assignment.

Pin #	Definition	Type	Function
1	Vcc (5V)	Reference	Logic high reference. Power on indicator.
2	Operational Trigger	Input	Configurable start/stop operational trigger input. [Ft] Foot Switch — Falling edge: Start or stop trigger [FH] Foot Switch Hold — Falling edge: Start trigger; Rising edge: Stop trigger [F2] Foot Switch Reverse — Rising edge: Start or stop trigger [LE] Level — Falling edge: Stop trigger; Rising edge: Start trigger [St] Start only — Falling edge: Start trigger [t2] Start only Reverse — Rising edge: Start trigger [SP] Stop only — Falling edge: Stop trigger [P2] Stop only Reverse — Rising edge: Stop trigger [rL] Start on low level — Low level: Start trigger [rH] Start on high level — High level: Start trigger [SL] Stop on low level — Low level: Stop trigger [SH] Stop on high level — High level: Stop trigger [OF] Trigger off (disabled) [Et] Program function: Redirects trigger to Event trap [bt] Program function: Redirects 'Stop' key to Event trap
3	Pumping Direction	Input	Changes pumping direction according to setup [dr:rE] [dr:dU] Falling edge: Infuse Withdraw Rising edge: Withdraw Infuse
4	Event Trigger	Input	Event input or user definable input
5	Program Output	Output	Program controlled output or user definable output
6	Program Input	Input	Program conditional input read by the "IF" program function. Also user definable input. Also used by the keypad lockout function.
7	Pump Motor Operating	Output	[RUN.0] High: Pumping; Low: Not pumping [RUN.1] High: Pumping or Pause timer Low: Pumping Programmed stopped or paused
8	Pumping Direction	Output	High: Infuse; Low: Withdraw
9	Ground (0V)	Reference	Logic low reference

Db9 TTL Pin Out Chart

Logic Levels

To guarantee recognition of logic levels, voltages on the input lines must be within the following
ranges:

- TTL logic low (0): 0 to 1.5 V

- logic high (1): 3.5 to 5.25 V

TTL Ports – OEM Pumps

The OEM pump models are configured for installing in equipment of your design. As such the pump control circuit board is set up to take soldered connections rather than a single plug.

This diagram from the OEM Pump Manual shows the solder pad location and the location of current limiting resistors.

9. Logic Interface: TTL Input and Output

Expansion Connector Pin Out	
Ground	Ground
Pin 1 (LSB)	Ground
Pin 2	Ground
Pin 3	Ground
Pin 4	Ground
Pin 5 (MSB)	Ground
VDD	n/c

Download Diagram

Accessing Ports Via RS232

The logic levels of pins 2, 3, 4, and 6 can be queried from an attached computer using the RS-232 'IN'
command and the output logic level of pin 5 can be set with the RS-232 'OUT' command.
There's more details in your pump manual.

Power on Pin State

Unfortunately neither model of the pump appear to remember the last state of the TTL outputs after power cycling. All the pins appear to come on high at switch on regardless of previous state.

Users of the Valve Control Box

If you're a user of the Valve Control Box inverting the signal is just a matter of changing the valve activate switch from Infuse to Withdraw.

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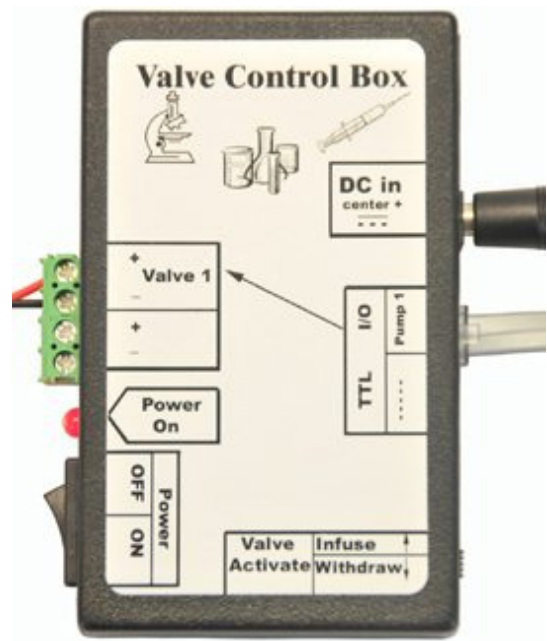
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