VERDERFLEX®

# Peristaltic Cased Tube Pump

## Vantage 5000 Selectable Output Control Functionality and Setup

**Version** 1.0v-11/2016

**Print-No.** 01

CE

VERDER
passion for pumps

# Table of Contents

**1. Introduction**

**2. Powering the Input/Output Port**
2.1 Wiring for Local Voltage Sourcing
2.2 Wiring for Remote Voltage Sourcing

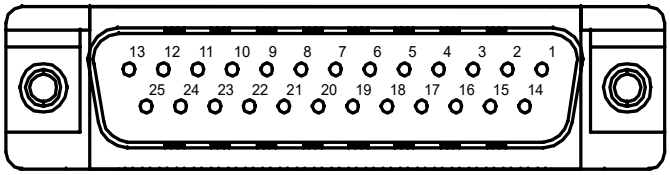
**3. Output Port Allocation**

# 1. Introduction

The Vantage 5000 can be programmed by the user to define the relationship between the general purpose outputs pins, 5, 6, 7 & 8, available on the 25 WAY Remote I/O Connector, to select pump functionality status. These selectable outputs are optically isolated and therefore the Input/Output (I/O) port must be powered from either a local i.e. the Vantage 5000, or a remote, nominal 24V DC power source.

# 2. Powering the Input/Output Port

The following images show the Vantage 5000 25 WAY Remote I/O Connector, positioned at the rear of the unit, and the associated pin out assignment and description table:




| PIN | Description | PIN | Description |
|---|---|---|---|
| 1 | Manual/Auto | 14 | Start |
| 2 | Stop | 15 | Product Source Empty |
| 3 | Product Destination Full | 16 | Direction Input |
| 4 | Slave Steps Input | 17 | Bund Detection |
| 5 | General Purpose Output 3 | 18 | Master Steps Output |
| 6 | General Purpose Output 4 | 19 | NC (Not Connected) |
| 7 | General Purpose Output 2 | 20 | 0-10V Output |
| 8 | General Purpose Output 1 | 21 | 4-20mA Output |
| 9 | 4-20mA Input | 22 | 0-10V Input |
| 10 | Remote I/O +24V | 23 | +24V Pump Supply |
| 11 | +10V Analogue Supply | 24 | NC (Not Connected) |
| 12 | 0V Analogue Supply | 25 | 0V Pump Supply |
| 13 | Remote I/O 0V | | |

*Figure 1 25 WAY Remote I/O Connector - Diagram & Description of PINs*

## 2.1 Wiring for Voltage Provided by Pump

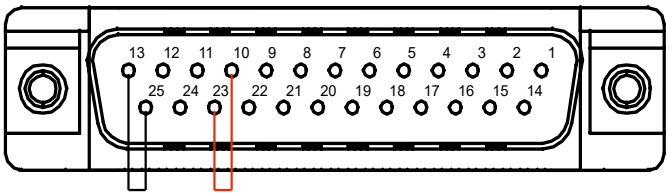
| Description | Wiring Diagrams |
|---|---|
| This is achieved by linking pin 25 (0V Pump Supply) to pin 13 (remote I/O 0V) and similarly linking pin 23 (+24V Pump Supply) to pin 10 (Remote I/O +24V). The user should be aware that when using local voltage sourcing all of the advantages of I/O isolation are no longer valid. |  |



*Figure 2 Local Power, I/O Not Isolated*

## 2.2 Wiring for Remote Voltage Supply

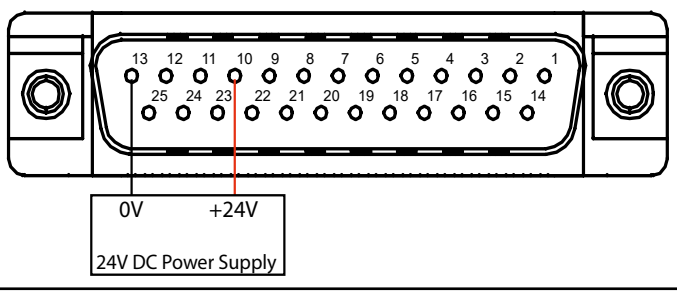
| Description | Wiring Diagrams |
|---|---|
| This is achieved by attaching an external 24V DC supply the positive line of which is connected to pin 10 (Remote I/O +24V) and the negative is connected to pin 13 (Remote I/O 0V). This method of connection ensures that the vantage 5000 is electrically isolated from any control and feedback functionality. |  |



*Figure 3 Remote Power, I/O Isolated*

# 3. Output Port Allocation

The output port allocation menu can be found in the ‘Outputs’ submenu of the ‘Tools and settings’ menu and is shown below with its default settings.

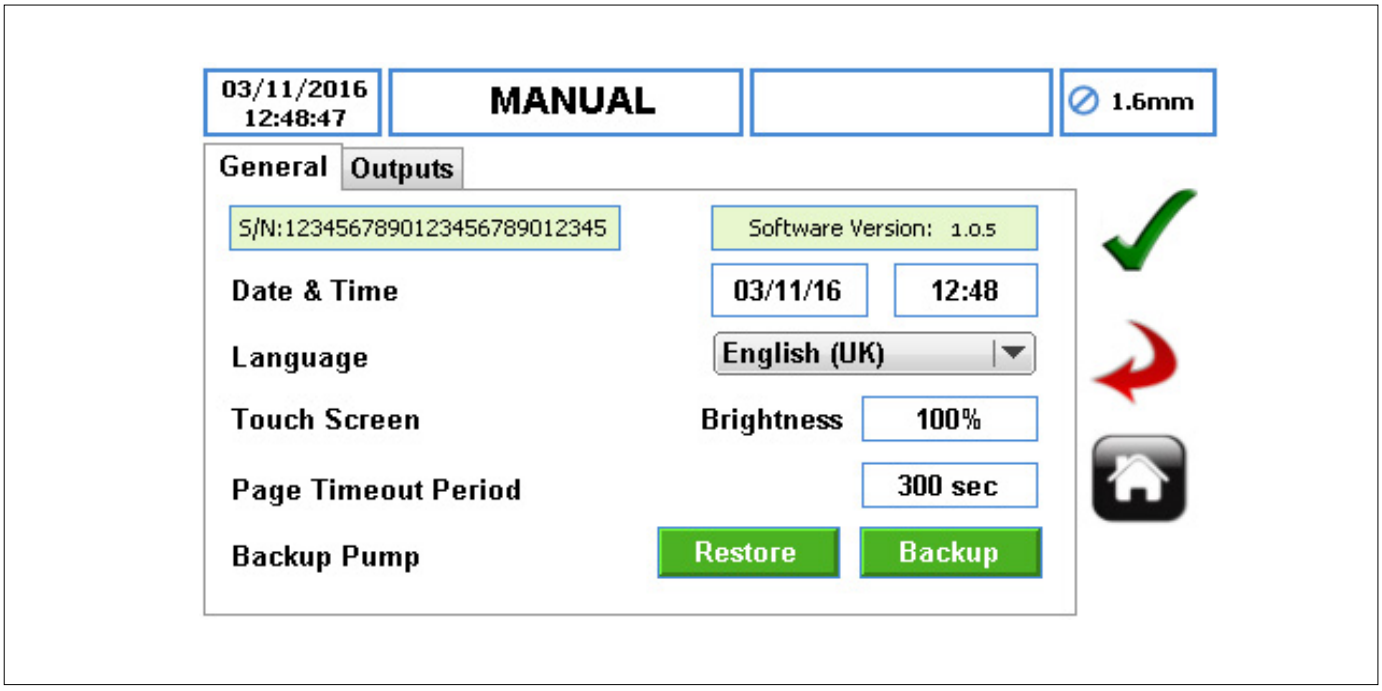



*Figure 4 Tools and Settings Screen*

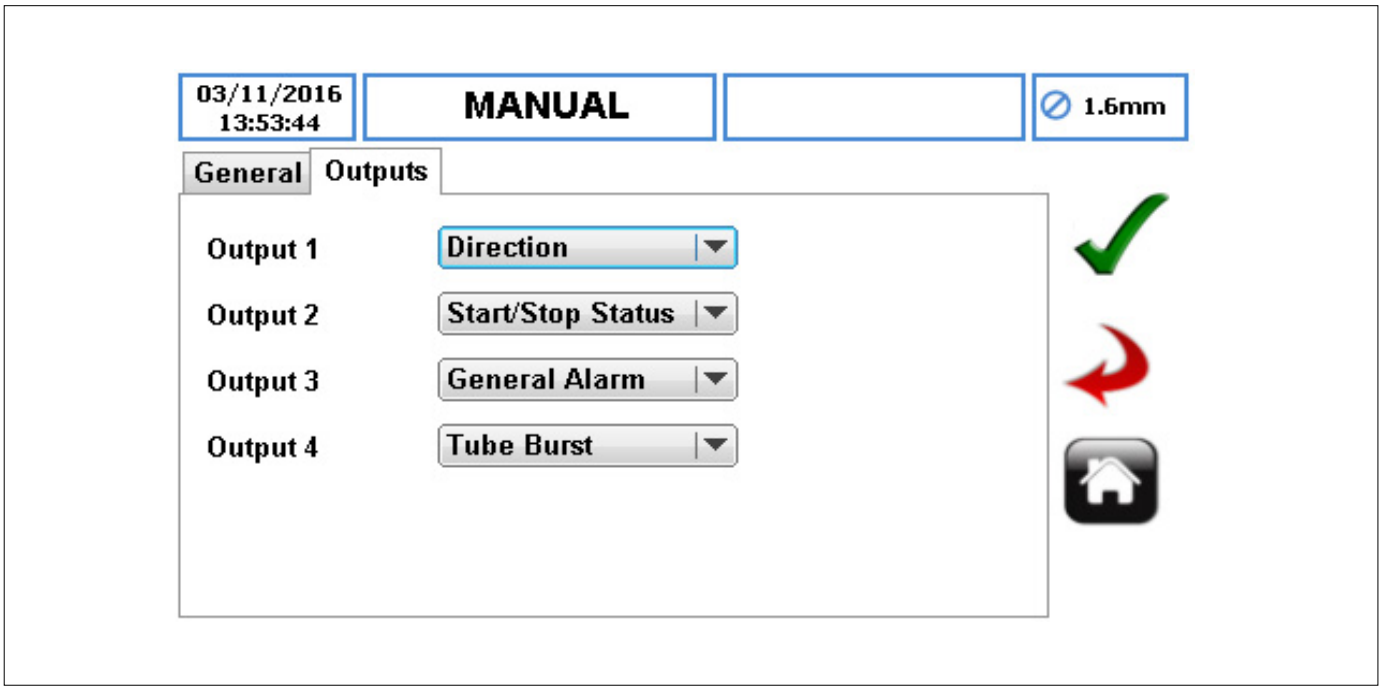



*Figure 5 Output Menu with Default Settings*

By touching the down arrow of each output a selection submenu appears, as shown below:

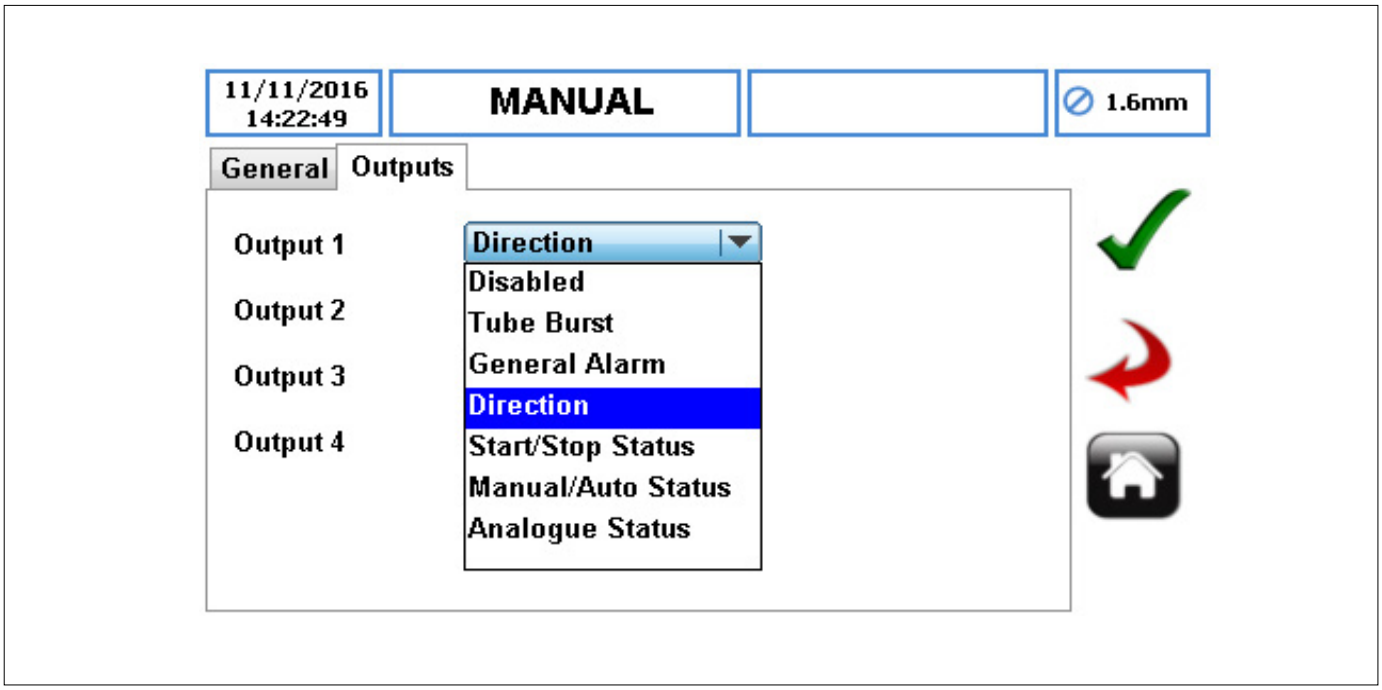



*Figure 6 Selected Output Submenu*

The functionality of each submenu element is shown in the table below where logic 0 refers to 0V and logic 1 refers to the I/O positive power supply voltage, which would nominally be 24V. Note that in order to observe this voltage change a 10K Ω pull up resistor should be used between the selected output pin and the remote 24V (pin 10).

| Functionality status | Description |
|---|---|
| Disabled | The selected output pin is not allocated and will default to a logic 1 level. |
| Tube burst | The selected output pin will be a logic 1 when no burst is detected and a logic 0 when fluid is detected for the burst sensor. |
| General Alarm | The selected output pin will be a logic 1 when there are no faults on the pump and a logic 0 when any of the following events occur:<br><br>• Door open<br>• Tube Burst<br>• Motor Stalled<br>• Power failure<br>• Over temperature<br>• Source Empty (1<br>• Destination Full (1<br>• Empty Bund (1<br>• Communication failure (2<br>• Missing 4-20 mA (3<br><br>(1 Pump must be configured for 25 WAY Remote I/O Connector.<br>(2 Fieldbus pump versions only.<br>(3 4-20mA must be enabled. |
| Direction | The selected output pin will be a logic 1 when the pump is set to run in a clockwise direction and a logic 0 when the pump is set to run in an counter-clockwise direction. |
| Start/Stop Status | The selected output pin will be a logic 1 when the pump is not running and a logic 0 when the pump is running. |
| Manual/Auto Status | The selected output pin will be a logic 1 when the Manual/Auto, pin 1 of the 25 WAY Remote I/O Connector, is not connected and a logic 0 when the pin is connected to 0V |
| Analogue Status | The selected output pin will be a logic 1 when the pump is in Human Machine Interface (HMI) mode and will be set to a logic 0 when set for 4-20mA, 0–10V or proportional flow |

A typical application for settings is shown below:

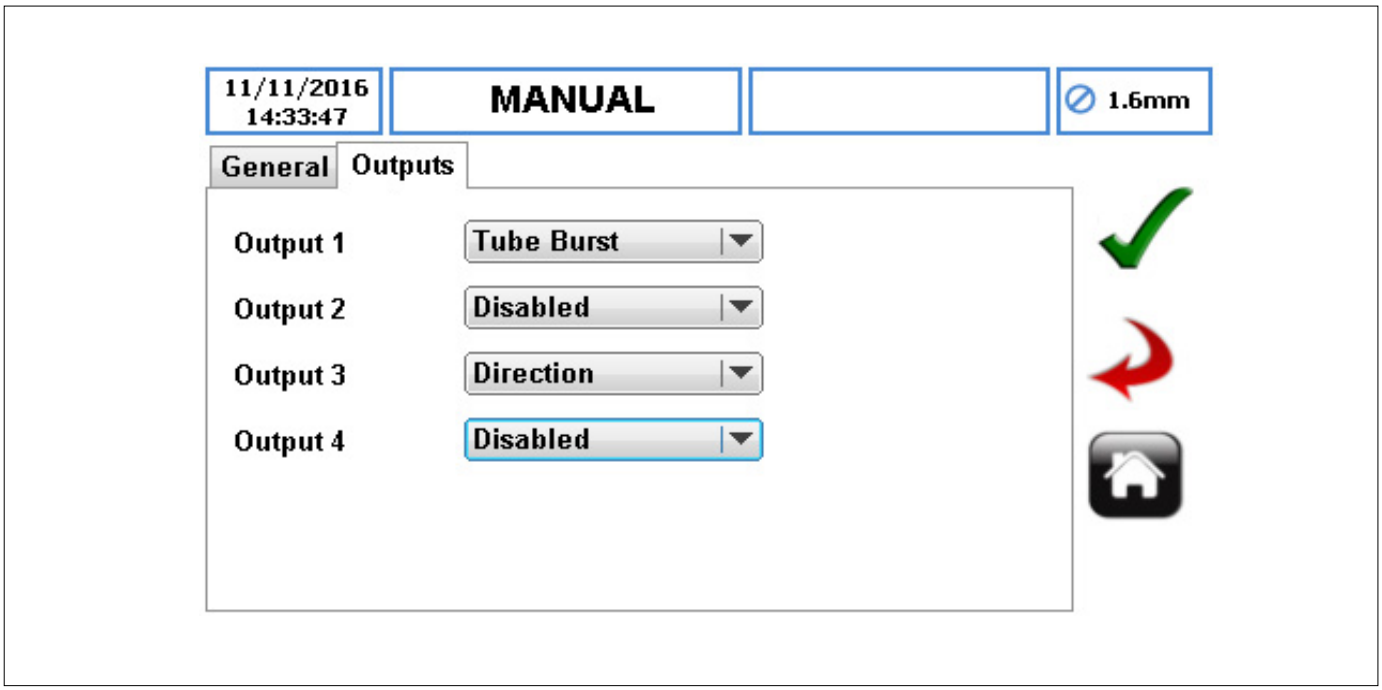



*Figure 7 Typical Application Set Up*

From this image it can be seen that Output 1 is set to reflect the status of the tube burst detection sensor and Output 3 is set to reflect the state of the direction control. For settings to be saved in the Vantage 5000 the green 'Tick' must be touched when exiting the menu. If the 'Home' button is pressed then a warning message will appear on the screen as shown below:

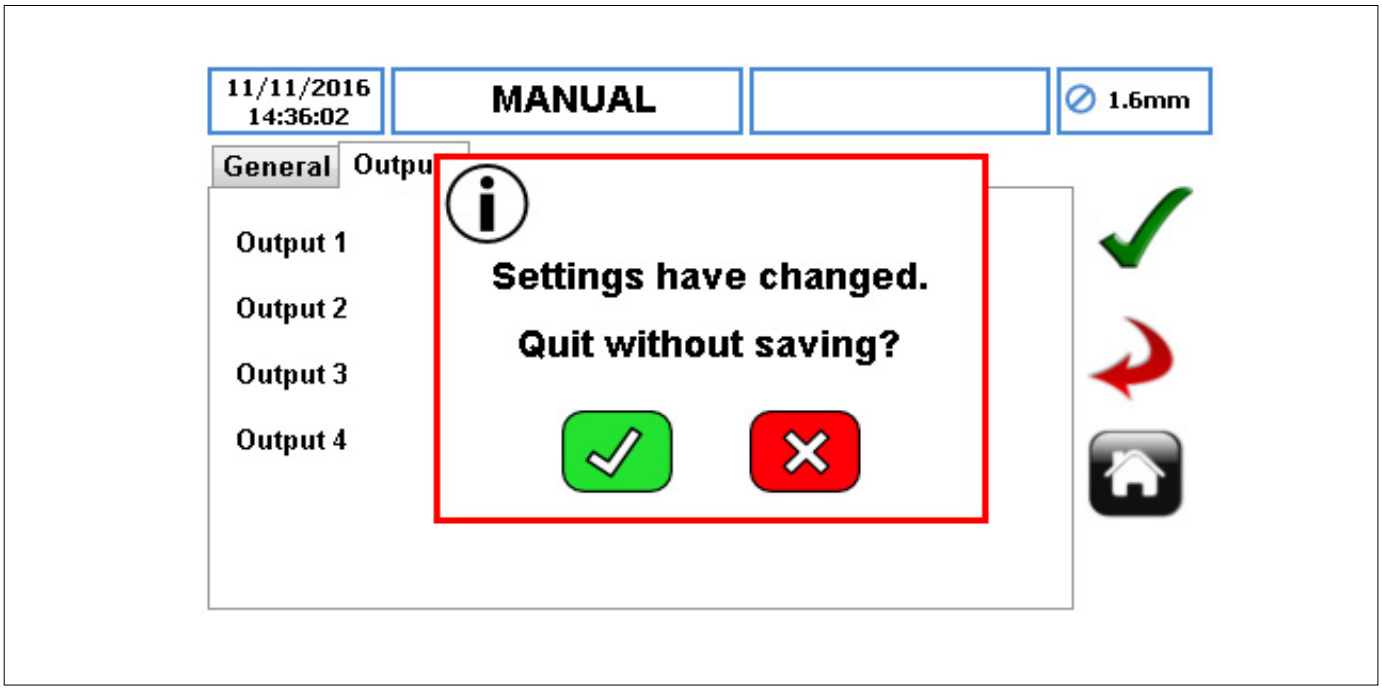



*Figure 8 Home exit warning screen*

Note that certain output activity may be overridden if the unit is set for '25 WAY D-Sub' mode rather than 'HMI' where active remote input signals override the manual control of the Vantage 5000.