Setting up Analogue Output Number 2

Analogue Output Number 2 can be configured to mimic a number of process variables or auxiliary inputs across the numerous operating modes. To achieve this there are a number of settings that need to be considered. This document will attempt explain what each of the setting are and how they are implemented. If you do not need to understand whys' and wherefores' then proceed to the end when examples have been included for many of the options.

1. The current options for Analogue output 2 are:
    a. System process variable (Pressure, Level or Flow).
        i. The process variable menu option aquatically changes according the operating mode selected.
    b. Flow rate.
        i. There are three modes for calculating and displaying the flow, each one can also be assigned to analogue output 2.
            1. Calculated flow based on pump speed.
            2. Flow meters with an Analogue output.
            3. Flow meters with a Digital output.
    c. VFD Speed.
        i. Analogue output 1 is normally set to output the required VFD speed but Analogue output 2 can also be programmed to output the VFD speed. Both Analogue outputs can be set the same or Analogue output 2 only. Useful if Analogue Output 1 has been blown up somehow!
2. Menus and options involved in linking and configuring Analogue output 2.
    a. Output Options.

        Analogue output 2 – Found in the OUTPUTS Menu.
        Selections.
        a. System process variable (Pressure, Level or Flow).
        b. Flow rate. Totally separate to the system process variable when in Flow mode.
        c. VFD Speed.

    b. System Mode of operation. (Process variable)

        Operating Mode – Found in the CONFIGURE Menu
        Selections:
        a. Pressure
        b. Level
        c. Flowrate

    c. Flow Type Selection and linking
        i. Flow meters with a pulse output. (Relay or NPN open collector)

            Any input can be programmed to receive a pulse from a digital flow meter.
            Input 1-20 – Found in the INPUTS Menu.
            Selections:
            Flow Pulse

            Plus.

            Flow Sensing – Found in the CONFIGURE Menu.
            Selections:
            Digital Pulse

ii. Flow meters with an analogue output. (0-10V or 4-20mA)

Analogue input 2 – Found in the INPUTS Menu.
Selections:
Flow Mtr

Plus.

Flow Sensing – Found in the CONFIGURE Menu.
Selections:
Scaled AnInp2

iii. Calculated Flow Rate.

Flow Sensing – Found in the CONFIGURE Menu.
Selections:
Calculated

The Flow Rate / VFD Speed screen has an icon attached to the Flow rate number to indicate the type of flow sensing that is being used.

No Icon = Scaled Analogue Input
* = Calculated
# = Pulsed input

3. Input Scaling & Zero.
   a. The analogue input can be scaled and zeroed in exactly the same way as the process variable. If analogue 2 is set up to read a flow meter or pressure sensor then menus will appear in the CONFIGURE menu to achieve zero and scale.
   b. If the system is set up for a pulsed meter input then a menu will appear in the CONFIGURE menu to allow setting of the flow per pulse.

4. Analogue Output 2 Scaling.
   a. Analogue output 2 can be scaled. There is a Menu labelled “Scale An Output2” in the CONFIGURE menu. The default setting is 1000, this means that when a variable that is linked to Analogue Output 2 reaches 1000 the Analogue Output 2 will be at maximum.
   For Example:
   If analogue output 2 is set up for 0-10V and configured to output the current system pressure.
      1. With the system pressure at 1000, then the output voltage will be 10.00V. If the system pressure is 300, then the output will be 3.00V.
      2. If the An Output Scale is set to 500, then with the system pressure at 500 the output voltage will be 10.00V. If the system pressure is 250, then the output will be 5.00V.
      3. If the An Output Scale is set to 2000, then with the system pressure at 2000 the output voltage will be 10.00V. If the system pressure is 1000, then the output will be 5.00V.
   b. Analogue output 2 is not scaled when outputting the VFD speed.

Operating in Flow Mode

Analogue Output 2 = Flow

Main Menu -->		CONFIGURE		OUTPUTS		INPUTS	
	Sub Menu -->		Operating Mode		Analogue Output 2		Analogue Input 1
	Selection -->		Flow		System Flow		Control Flow

Analogue Output 2 = Control Pressure

Main Menu -->		CONFIGURE		OUTPUTS		INPUTS	
	Sub Menu -->		Operating Mode		Analogue Output 2		Analogue Input 2
	Selection -->		Flow		Control Pressure		Control Pressure
					(Pre 19.18.08 the option was incorrectly labelled Flow Rate)		

Analogue Output 2 = VFD Speed

Main Menu -->		CONFIGURE		OUTPUTS		INPUTS	
	Sub Menu -->		Operating Mode		Analogue Output 2		Analogue Input 2
	Selection -->		Flow		VFD Speed		N/A

Operating in Pressure Mode

Analogue Output 2 = Pressure

Main Menu -->	CONFIGURE		OUTPUTS	INPUTS
Sub Menu -->	Operating Mode	Flow Sensing	Analogue Output 2	Analogue Input 1
Selection -->	Pressure	N/A	System Pressure	Control Pressure

Analogue Output 2 = Calculated Flow *Not an option previously*

Main Menu -->	CONFIGURE		OUTPUTS	INPUTS
Sub Menu -->	Operating Mode	Flow Sensing	Analogue Output 2	N/A
Selection -->	Pressure	Calculated	Flow Rate	N/A

Analogue Output 2 = Pulsed Input Flow

Main Menu -->	CONFIGURE		OUTPUTS	INPUTS
Sub Menu -->	Operating Mode	Flow Sensing	Analogue Output 2	Input 1 - 20
Selection -->	Pressure	Digital Pulse	Flow Rate	Flow Pulse

Analogue Output 2 = Analogue Input Flow

Main Menu -->	CONFIGURE		OUTPUTS	INPUTS
Sub Menu -->	Operating Mode	Flow Sensing	Analogue Output 2	Analogue Input 2
Selection -->	Pressure	Scaled AnInp2	Flow Rate	Flow Mtr

Analogue Output 2 = VFD Speed

Main Menu -->	CONFIGURE		OUTPUTS	INPUTS
Sub Menu -->	Operating Mode	Flow Sensing	Analogue Output 2	Analogue Input 2
Selection -->	Pressure		VFD Speed	N/A

Operating in Level Mode

Analogue Output 2 = Level

Main Menu -->	CONFIGURE		OUTPUTS	INPUTS
Sub Menu -->	Operating Mode	Flow Sensing	Analogue Output 2	Analogue Input 1
Selection -->	Level	N/A	System Level	Control Level

Analogue Output 2 = Calculated Flow *Not an option previously*

Main Menu -->	CONFIGURE		OUTPUTS	INPUTS
Sub Menu -->	Operating Mode	Flow Sensing	Analogue Output 2	N/A
Selection -->	Level	Calculated	Flow Rate	N/A

Analogue Output 2 = Pulsed Input Flow

Main Menu -->	CONFIGURE		OUTPUTS	INPUTS
Sub Menu -->	Operating Mode	Flow Sensing	Analogue Output 2	Input 1 - 20
Selection -->	Level	Digital Pulse	Flow Rate	Flow Pulse

Analogue Output 2 = Analogue Input Flow

Main Menu -->	CONFIGURE		OUTPUTS	INPUTS
Sub Menu -->	Operating Mode	Flow Sensing	Analogue Output 2	Analogue Input 2
Selection -->	Level	Scaled AnInp2	Flow Rate	Flow Mtr

Analogue Output 2 = VFD Speed

Main Menu -->	CONFIGURE		OUTPUTS	INPUTS
Sub Menu -->	Operating Mode	Flow Sensing	Analogue Output 2	Analogue Input 2
Selection -->	Level		VFD Speed	N/A