

**Application Example – VLT HVAC Drive
Parameter set-up for a Variable Air Volume Ventilation System**



The purpose of supply fan speed control is to maintain the minimum required duct static pressure at the inlet of all the VAV boxes. This allows VAV boxes to operate properly and distribute the proper air quantity to the controlled zone. If the duct static pressure is too low at the VAV box, airflow is less than required. Excessive duct static pressure wastes energy and can cause sound problems at the outlet diffusers of the VAV boxes.

The system static pressure requirement is calculated by adding the static pressure required by the VAV boxes to the pressure drop expected between the box and the controlled zone. A safety margin is often applied to compensate for design modifications during installation. To conserve fan energy, the static pressure setpoint should be set at the lowest possible setting to maintain proper air distribution.

The following example is for a **single zone** building using one duct pressure transducer.

Assume a duct pressure transducer to maintain static duct pressure with the following specifications:

Input: 24 VDC supply from drive.

Output: 4 – 20mA

Range: 0 – 15” water column (wc) Note. The drive programming units will be “inWG”.

Set point: 2” wc

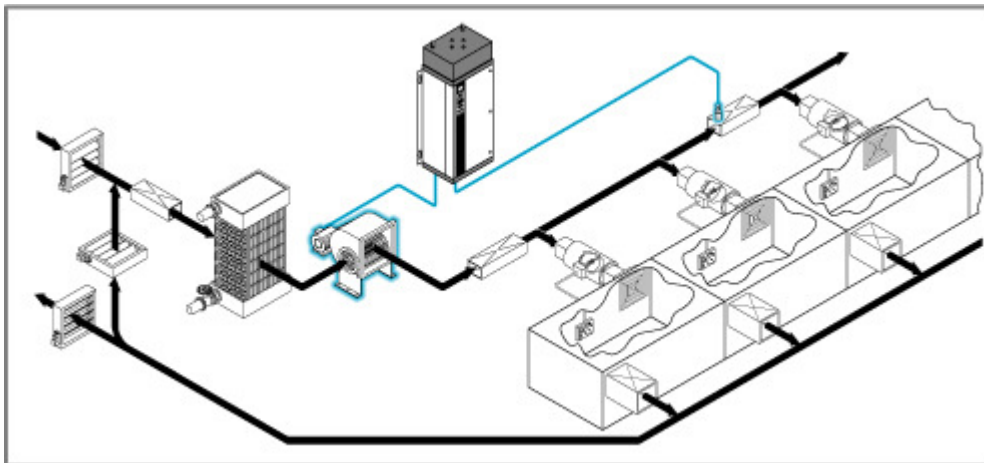


Figure 1: VAV System with Adjustable Speed Drive

The user will need to enter motor parameter data in addition to the parameters listed below. Motor is assumed to have a base speed of 1750 RPM at 60Hz. The fan should never run below 15Hz.

Parameter values listed below are suggested and may not match user requirements.

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Using Quick Menu, select *Closed Loop Settings > Single Zone Int. Setpoint*

ID	Name	Setup 1	Factory Setup	Unit
1-00	Configuration Mode	Closed Loop		
20-71	PID Performance	Normal		
20-72	PID Output Change	0.1		
20-73	Minimum Feedback Level	0		%
20-93	PID Proportional Gain	0.5		
20-94	PID Integral Time	20		s
3-02	Minimum Reference	0		inWG
3-03	Maximum Reference	15		inWG
6-22	Terminal 54 Low Current	4		mA
6-24	Terminal 54 Low Ref./Feedb. Value	0		inWG
6-25	Terminal 54 High Ref./Feedb. Value	15		inWG

Exit Quick Menu and use Main Menu to access following parameters:

ID	Name	Setup 1	Factory Setup	Unit
0-02	Motor Speed Unit	Hz		RPM

Setting Parameter 315 is optional, but helps insure any signal applied to Terminal 53 is not added to the setpoint.

ID	Name	Setup 1	Factory Setup	Unit
3-15	Reference 1 Source	No function		

ID	Name	Setup 1	Factory Setup	Unit
4-12	Motor Speed Low Limit [Hz]	15		Hz
4-14	Motor Speed High Limit [Hz]	60		Hz
4-53	Warning Speed High	1800		RPM

ID	Name	Setup 1	Factory Setup	Unit
5-10	Terminal 18 Digital Input	Start		
5-12	Terminal 27 Digital Input	Coast inverse		

ID	Name	Setup 1	Factory Setup	Unit
6-23	Terminal 54 High Current	20		mA

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ID	Name	Setup 1	Factory Setup	Unit
20-00	Feedback 1 Source	Analog input 54		
20-01	Feedback 1 Conversion	Linear		
20-12	Reference/Feedback Unit	in WG		inWG
20-21	Setpoint 1	2		inWG
20-81	PID Normal/ Inverse Control	Normal		

Typical Wiring Diagram

