

# Review

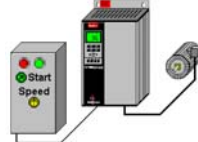


## Multiple Choice

1) If you are controlling the VFD from the keypad mounted 3m (10feet) away, this control arrangement is known as which of the following?

- A) Local/ Hand Control
- B) Remote/ Auto Control
- C) Serial Control
- D) Cascade Control
- E) Closed Loop Control

2) In the picture below, what type of Control Arrangement is displayed?



- A) Local/Hand Control
- B) Remote/ Auto Control
- C) Serial Control
- D) Cascade Control
- E) Closed Loop Control

See notes for additional questions

3) A single VFD operates 3 fan motors, which of the following must be remembered?

- A. It must be connected in a Master/Slave arrangement.
- B. The VFD must use a Cascade Controller card.
- C. An RS-485 connection must be made between the VFD and fans.
- D. Each of the 3 fans must have overload protection.
- E. All of the above are required.

4) Multiple pumps are to be operated together to maintain the correct pressure in a hot water supply. When the demand increases beyond the capacity of the initial pump, which uses a VFD, separate fixed stages are enabled to start additional pumps. This control arrangement is referred to as which of the following:

- A. Multi Motor Control
- B. Master/Slave Control
- C. Cascade Control
- D. Serial Communications
- E. Open Loop Control

5) On a Closed Loop system using a VFD, the output starts to oscillate between minimum and maximum speed. Which of the following might correct the problem?

- A. Increase Proportional Gain
- B. Decrease Proportional Gain
- C. Make Action Normal
- D. Make Action Inverse
- E. Turn Derivative ON

# Review



## Multiple Choice

6) Which of the following control arrangements are identified by one VFD sending a 4-20mA signal out its AO (Analog output) to the AI (Analog Input) of the other VFD?

- A) Local/ Hand Control
- B) Remote/ Auto Control
- C) Master/Slave
- D) Serial Comm.
- E) Multi-motor with Cascade Controller card.

7) A pressure transmitter is wired directly to a VFD and a DDC Controller from a BAS system only starts and stops the VFD. Which of the following is the correct connection?

- A) An AO on the Controller is wired to an AI of the VFD.
- B) An AI on the Controller is wired to an AO of the VFD.
- C) A DI on the Controller is wired to a DO of the VFD.
- D) An AI on the Controller is wired to an DO of the VFD.
- E) A DO on the Controller is wired to a DI of the VFD.

See notes for additional questions

8) A pressure transmitter (4-20mA) is needed to monitor the feedback going to a VFD, which is programmed for Closed Loop. To which of the following VFD control wire connections should the transmitter be attached for proper operation?

- A. Analog Input
- B. Digital Input
- C. Analog/Digital Output
- D. Relay Output
- E. Both C and D are correct

9) A light is used to indicate when the VFD goes into an alarm condition. To which of the following VFD control wire connections should a 120Vac light be attached.

- A. Analog Input
- B. Digital Input
- C. Analog/Digital Output
- D. Relay Output
- E. Both C and D are correct

10) Three VFDs are operating via Serial Communications with a Local Area DDC Controller. How many wire connections are needed on the VFD for serial communications?

- A. 2 wire
- B. 4 wire
- C. 9 wire
- D. 10 wire
- E. It depends on how much information is desired between the VFDs and DDC Controller.

## Review - Answers



- 1) A – Local/ Hand Control
- 2) B – Remote/ Auto Control
- 3) D - Each of the 3 motors must have overload protection.
- 4) C – Cascade Control
- 5) B – Decrease Proportional Gain
- 6) C - Master/Slave
- 7) E - A DO on the Controller is wired to a DI of the VFD.
- 8) A – Analog Input (AI)
- 9) D - Relay Output
- 10) A - 2 wire

### **Objective:**

The Student is able to identify 10 different ways to control a Variable Frequency Drive and give a brief explanation of each.

If you have any comments or questions, please contact:

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