

# Drive Application Interview



Date \_\_\_\_/\_\_\_\_/\_\_\_\_ Distributor \_\_\_\_\_

Salesperson \_\_\_\_\_ Customer \_\_\_\_\_

1. Briefly describe the **Application**: \_\_\_\_\_

*Allen-Bradley Drives are used in most industries, therefore, we can help to identify and eliminate potential problems in your applications (food processing, manufacturing, HVAC, etc.).*

2. What kind of **Mechanical System** is being driven?

- Conveyor     Fan     Pump
- Direct Drive     Chain/Sprocket     Belt/Sheave
- Gear Ratio     Counterweighted     Other \_\_\_\_\_

*The type of mechanical system defines the torque requirements, speed profiles, and volts/hertz characteristics of the drive.*

3. Are there any unusual **Load Characteristics** (high inertia, sudden load changes, etc)? \_\_\_\_\_

*Identifying requirements for extra starting or accelerating torque, shock loading, or high acceleration and deceleration can greatly reduce the chances of misapplication.*

4. What is the anticipated **Acceleration Time**? \_\_\_\_\_

**Deceleration Time**? \_\_\_\_\_

*Extremely short acceleration times require extra torque that may exceed the capability of the motor. Rapid deceleration in ramp-to-stop mode may require the addition of a dynamic brake package. See #10 for limitations.*

5. What is the desired **Speed Range** for the application?

Maximum Continuous Motor Speed? \_\_\_\_\_ RPM

Minimum Continuous Motor Speed? \_\_\_\_\_ RPM

*The ability to run standard motors at continuous low speed can create motor temperature failures. Speed ranges greater than 2:1 require motors designed for better heat dissipation. Extended maximum speeds also require special attention (bearings, balancing, etc.)*

6. What type of **Control** will be used?

- 2-wire     3-wire     Local     Remote

What is the control voltage? DC \_\_\_\_\_ or AC \_\_\_\_\_

*The control voltages used may introduce distance limitations that are best addressed up front. Be prepared to offer some guidance on control schemes that will best suit the needs of the application such as: Fault Reset and Run may be desirable for unmanned areas.*

7. **Motor Data**:

- AC Induction     DC
- HP/kW \_\_\_\_\_    HP/kW \_\_\_\_\_
- Base Speed \_\_\_\_\_    Base Speed \_\_\_\_\_
- Min. Cont. Speed \_\_\_\_\_    Min. Cont. Speed \_\_\_\_\_
- Maximum Speed \_\_\_\_\_    Maximum Speed \_\_\_\_\_
- Base Volts \_\_\_\_\_    Armature Volts \_\_\_\_\_
- Base Frequency \_\_\_\_\_    Armature Amps \_\_\_\_\_
- Full Load Amps (FLA) \_\_\_\_\_    Field Volts \_\_\_\_\_
- NEMA Design \_\_\_\_\_    Field Amps \_\_\_\_\_
- Speed Feedback Device (Encoder, DC Tach., Armature Voltage) \_\_\_\_\_

Additional Notes \_\_\_\_\_

*The motor data may be the single most important piece of data. Be alert for motor lead lengths in excess of 300 cable feet.*

8. **Cable Length** from drive \_\_\_\_\_ ft.

*Long cable lengths may determine if special motor requirements are needed.*

9. What type of **Speed Reference(s)** will be used?

- Local     Remote     Potentiometer     4-20ma
- 0-10Vdc     MOP     Pulse train     Serial

Is the **Signal Source** isolated?  Yes     No

*Many different speed references are available. Have an understanding of the specifications such as: Potentiometers need to be 10K ohms, analog signals may need to be isolated.*

10. How will the **Motor** be stopped?

- Coasting     Ramping     Braking

If **Braking**, type required:

- Dynamic     Injection     Mechanical

*Many application problems caused by braking issues can be avoided by defining the braking method and deceleration time expectations early. Be aware of Dynamic Brake limitations such as watts dissipation and cycle time. The three "gotchas" are high inertia loads, very fast deceleration rates and a high duty cycle. (How often is it used?)*

*(Interview continues on back)*



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**11. Is the drive controlling Speed or Torque?**

- Speed  Torque

What is the expected **Regulation/Accuracy** of this control?

\_\_\_\_\_ % or \_\_\_\_\_ RPM

*The Volts/Hertz and Sensorless Vector AC drives control Speed. The Field-Oriented Control (Force Technology™) AC drives control Torque. Speed regulation in most applications is limited to the slip of the induction motor. Tight speed regulation may require Slip Compensation, Encoder Feedback or Synchronous Motors.*

**12. Environmental** considerations:

- NEMA-1  NEMA-12  NEMA-4

Ambient Temperature C° \_\_\_\_\_ Humidity \_\_\_\_\_

Elevation \_\_\_\_\_ ft. High vibration or shock \_\_\_\_\_

Corrosive atmosphere \_\_\_\_\_ Indoor \_\_\_\_\_ Outdoor \_\_\_\_\_

Other \_\_\_\_\_

*Be sure the location is within the specifications of the drive. Refer to derating guidelines for ambient temperature and elevation.*

**13. What type of Distribution System** will supply the drive?

- 3-Phase  Single Phase  
 Wye  Delta  Grounded  Ungrounded

**Solid Neutral?**  Yes  No

Voltage \_\_\_\_\_ Frequency \_\_\_\_\_

Short Circuit Capacity \_\_\_\_\_

Any unusual conditions?

- Power dips  Interruptions  Voltage Spikes

Other \_\_\_\_\_

*Knowing the distribution system can help the customer avoid under-voltage and over voltage trips, grounding problems and harmonic distortion issues. It can also identify the need for isolation transformers or line reactors. The recommended system is 3-phase, 4-wire grounded neutral with a solid neutral throughout the plant. Be alert for power factor correction capacitors and their location to the drive.*

**14. Will an Input or Output** contactor be used?

- Yes  No

If Yes, describe its function \_\_\_\_\_

*Input contactors should be used to isolate the drive from the line during maintenance, not as a start/stop control. Output contactors are used to isolate the motor from the drive during maintenance or in an e-stop circuit. The drive should be stopped/off prior to opening the Output contactor. Proper coordination is necessary between the drive and the contactors to ensure a successful application.*

**15. Will this drive require Coordination** with other drives

and/or motors?  Yes  No

(Speed following, Master-slave, Load sharing) \_\_\_\_\_

*Coordination between drives and motors in a system must be considered carefully. Many unreasonable expectations may arise.*

**16. Are there any other Unusual Characteristics** about this

installation?  Yes  No

If Yes, describe \_\_\_\_\_

*Some examples of unusual are: clutches, power feed rails/pick-up shoes, generator power, large motors on the same distribution system that are across-the-line started.*

**17. Will the drive be required to Communicate** to a PLC?

Yes  No

If yes:  DeviceNet  Data Highway Plus

ControlNet  RS232

Other, specify \_\_\_\_\_

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**Americas Headquarters**, 1201 South Second Street, Milwaukee, WI 53204, USA, Tel: (1) 414 382-2000, Fax: (1) 414 382-4444  
**European Headquarters SA/NV**, avenue Herrmann Debroux, 46, 1160 Brussels, Belgium, Tel: (32) 2 663 06 00, Fax: (32) 2 663 06 40  
**Asia Pacific Headquarters**, 27/F Citicorp Centre, 18 Whitfield Road, Causeway Bay, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

