Application Note

C010 Simple 690Like Registration Application

HA502487C010

AC30P/D V2.16 onwards

Safety Information ⚠️

Requirements

Intended Users

This Application Note is to be made available to all persons who are required to install, configure or service equipment described herein, or any other associated operation.

The information given is intended to enable the user to obtain maximum benefit from the equipment.

Application Area

The equipment described is intended for industrial motor speed control utilising AC induction or AC synchronous machines.

Personnel

Installation, operation and maintenance of the equipment should be carried out by qualified personnel. A qualified person is someone who is technically competent and familiar with all safety information and established safety practices; with the installation process, operation and maintenance of this equipment; and with all the hazards involved.

Hazards

Refer to the Safety Information given at the front of the Product Manual supplied with every Parker SSD Drives product.

C010 SIMPLE 690LIKE REGISTRATION APPLICATION

Abstract

This application note described a simple application using the 690Like registration described in HA503284U010.

Pre-Requisite

The pre-requisites are :

- AC30D drives, with SB encoder 1 and SB encoder 2 inputs

- Firmware version 2.16 onwards

- Application RA503284U010 (Detailed setting of the application is well described in HA503284U010)

Introduction

Register control is based on phase control.

The phase loop is keeping the phase relationship between the Master and the Slave, by using the gearing ratio entered by the operator. The accuracy of the scaling GearingA and GearingB may be not enough good to insure a correct and accurate phase control.
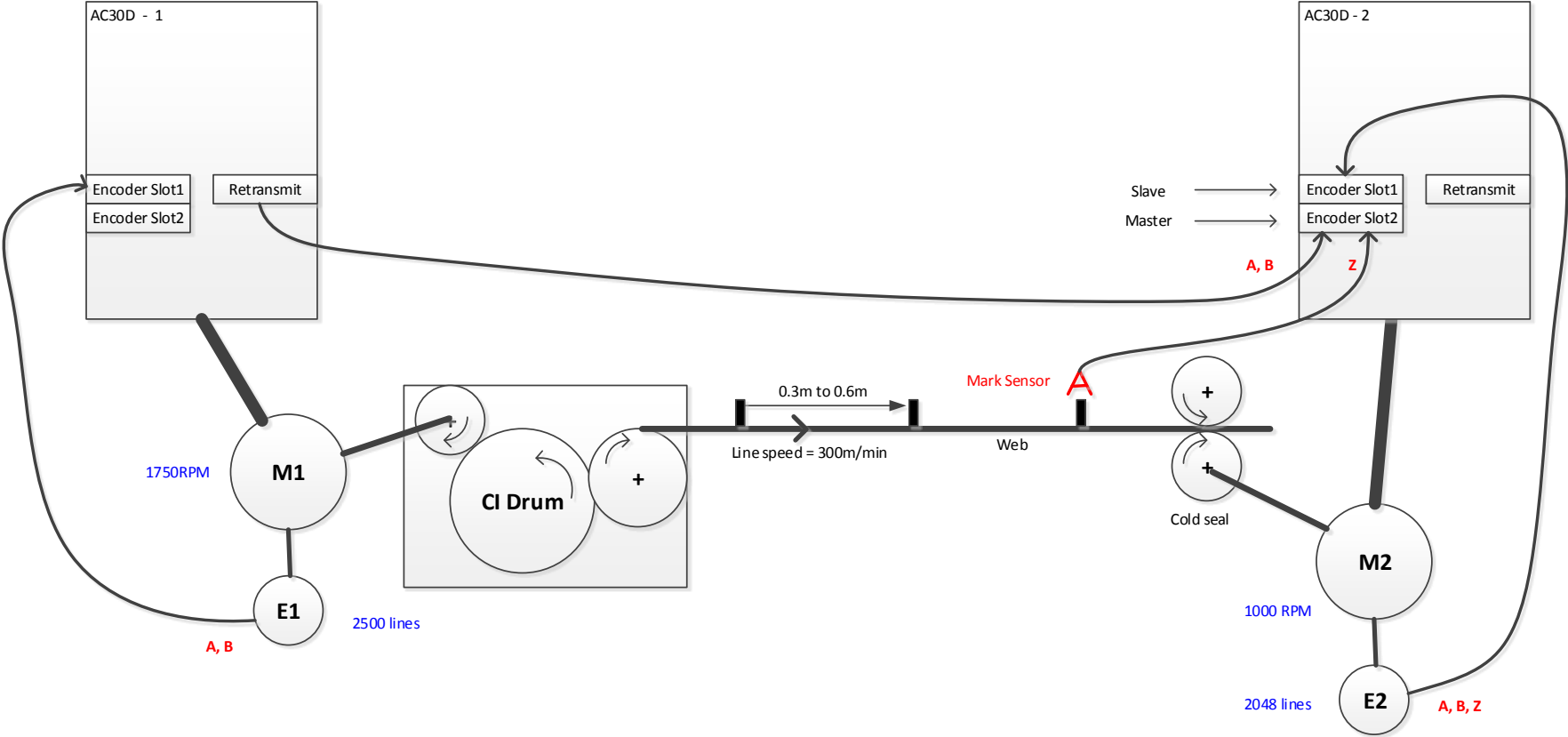
This is why using registration marks allow to compensate for any deviation due to wrong gearing factors.

The Auto Gear function is provided to automatically calculate the gearing from the marks inputs of the Master and Slave.

With the Auto Gear function, the phase loop locks the master and slave shafts to an arbitrary position.

By using the Register loop, the position of registration may be made absolute. The position of Master and Slave drives is compared and the error is used to move the Slave shaft relative to the Master.

Simple Example

AC30D - 1

Encoder Slot1
Encoder Slot2

Retransmit

AC30D - 2

Slave →
Master →

Encoder Slot1
Encoder Slot2

Retransmit

A, B **Z**

1750RPM

M1

CI Drum

0.3m to 0.6m

Line speed = 300m/min

Mark Sensor **A**

Web

+

+

Cold seal

+

M2

1000 RPM

E1

2500 lines

A, B

2048 lines

E2

A, B, Z

4

Drive 1 (AC30D – 1) / M1 / E1 :

Encoder E1 connected to SB Encoder Slot1 (A, B) set up to 2500 lines,

Vector control mode with SB encoder Slot1 max speed = 1750RPM

Retransmit output set up to copy SB encoder Slot 1. Power Supply should be compatible with the Mark sensor on drive 2

Drive set up in speed mode.

Drive 2 (AC30D – 2) / M2 /E2 :

Encoder E2 for Slave control/phase locking connected to SB encoder Slot1 (A, B, Z), set up to **2048 lines**

max speed at **1000RPM**

Application loaded is RA503284U010 (690Like Registration)

Slave :

Slave roll directly driven by Motor M2

Slave marks are corresponding to M2 - E2 turn (1 Mark for every M2 – E2 turn).

Main parameters to set up into the application :

      Phase Configure::Counts Per Units = 2048 * 4 = 8192

      Phase Configure::Maxspeed = 1000RPM

      Auto Gear:: Nom_Slave_Length = 1.000

Master :

Encoder is E1. So Repeat Output of Drive 1 (A, B)is connected to SB encoder Slot 2.

Z pulse encoder input of SB encoder Slot 2 is connected to the Mark Sensor. Supply should be compatible with the encoder retransmit output voltage of Drive 1.

 (As SB Encoder Supply 1 and SB Encoder Supply 2 is the same power supply, then E1, E2 and Mark sensor are all the same power supply voltage)

SB Encoder slot1 number of lines :

Line speed is **300m/min**.

There are 2 possible mark lengths : 0.3m and 0.6m.

Line speed related to M1 : 2500 * 4 * 1750 = 17500000 points per minute

For 0.3m :

Mark length = 17500000 / 300 * 0.3 = 17500 points

SB Encoder Slot 2 set up at 17500/4 = **4375 lines**

Auto Gear:: Nom_Master_Length = 1.000

For 0.6m :

SB Encoder Slot 2 set up at 17500/4 = **4375 lines**

Auto Gear:: Nom_Master_Length = 2.000 (only 1 mark over 2 will be processed)