



**ALLEN-BRADLEY  
BULLETIN 1336  
MASTER/SLAVE WITH TRIM**

**APPLICATION NOTE #14**

March 4, 1994

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**PURPOSE**

The purpose of this document is to provide guidelines for wiring and control schemes for the Bulletin 1336 AC Drive. This document is to be used as a suggestion only. Users must ensure that installations meet applicable codes and are suitable for the existing conditions.

The Bulletin 1336 User Manual should be used as a reference to ensure that proper wire selection, routing, and fusing guidelines are followed.

**WHAT THIS NOTE  
CONTAINS**

The Bulletin 1336 drive can be configured as a MASTER and SLAVE combination that allows the SLAVE drive to act as a follower. The Users can then control the speed with a single "master reference". To provide the "system" greater flexibility, the Users may install a TRIM POT for fine adjustment of the SLAVE drive.

**INTENDED  
AUDIENCE**

This application note is intended to be used by personnel familiar with the hardware components and programming procedure necessary to operate the Bulletin 1336/1336VT.

**WHERE IT  
IS USED**

The diagrams, parameter settings, and auxiliary hardware used in this application note are designed to address specific issues in many different applications. Some changes by the Users may be necessary to apply the concepts of this document to a specific application.

**DESCRIPTION**

The MASTER drive will utilize a 10K ohm speed pot as the "master reference" for the system speed control. The MASTER drive analog output is a 0-5vdc signal relative to the output frequency. Parameter 25 is used to configure the signal for 0-5vdc proportional to output frequency. The SLAVE drive analog input is scaled for a 0-10vdc signal, therefore the setting of the maximum frequency must allow the SLAVE drive to match the MASTER drive plus the desired TRIM.

**PARAMETER SETTINGS**

**TABLE 1**

DRIVE	PARAMETER #	DESCRIPTION	VALUE
MASTER	5	FREQ SELECT 1	5=REMOTE POT
MASTER	17	BASE FREQ	60
MASTER	18	BASE VOLTS	460
MASTER	19	MAX FREQ	60
MASTER	25	ANALOG OUTPUT	1=0-5V/0-60HZ
SLAVE	5	FREQ SELECT 1	1=0-10VDC
SLAVE	17	BASE FREQ	60
SLAVE	18	BASE VOLTS	460
SLAVE	19	MAX FREQ	126

The voltage divider circuit used for this document is a TRIM POT with a value of 1K ohm and a fixed resistor at 9.1K ohm. With the parameter settings in table 1, the SLAVE drive will produce an output frequency equal to the MASTER drive +/- 5% TRIM.

The recommended wattage values for the fixed resistor and potentiometers are 2 watt.

The Master and Trim potentiometers should be mounted no more than 25 cable feet from the drives.

**APPLICATION  
CONSIDERATIONS**

For a trim adjustment larger than 5%, reduce the value of the fixed resistor and increase the value of the TRIM POT resistance. A TRIM POT of 2k ohm and an 8.2k ohm fixed resistor produce roughly +/- 10% TRIM adjustment. The SLAVE drive maximum frequency must be set higher to allow for the positive TRIM adjustment. For a ratio other than 1:1, the value of the maximum frequency parameter for the SLAVE drive must be adjusted using the following formula.

A = Master drive Maximum Frequency setting (in Hertz)  
 B = Trim adjustment (in Hertz)  
 RATIO = multiple of Master drive speed

$$[(A \times 2) + B] \times \text{RATIO} = \text{SLAVE MAXIMUM FREQUENCY SETTING}$$

MASTER/SLAVE WITH TRIM

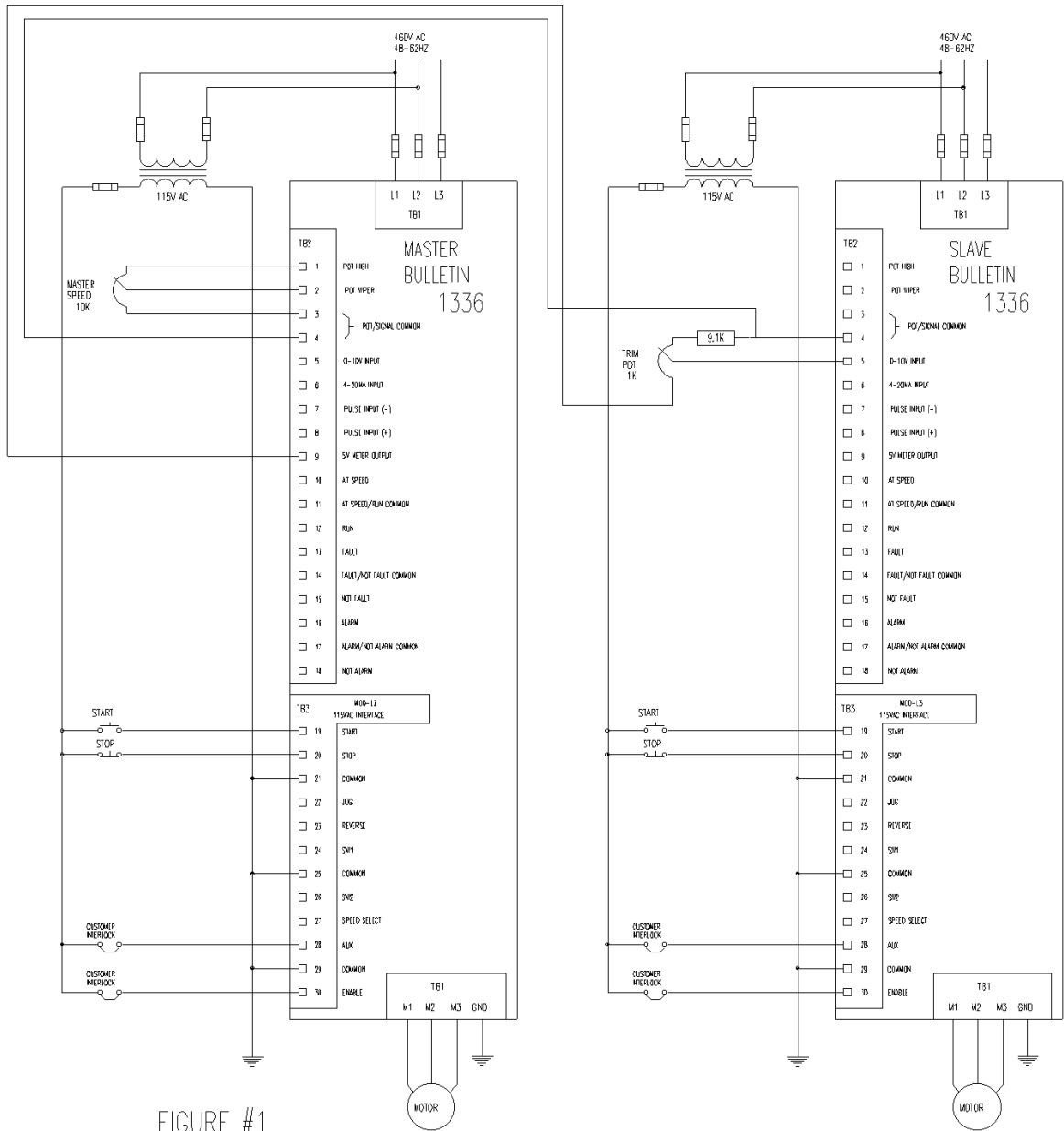


FIGURE #1