CONTREX SPEED CONTROLLERS

Application Note

This document describes how to configure a Paradigm operator interface terminal to allow communications with Contrex Speed Controllers. The communications protocol supports access to pertinent parameters. Please read this document carefully before attempting to configure communications with these devices.

Introduction

The EDICT-97 configuration software has been designed to allow the user to enter commands a manner that should be familiar to the user of any Contrex Speed Controller.

Addressing Drives

The default Device Address, found in Comms Devices, is 0. This is the "Broadcast" address, and as such will neither attempt to perform a read, nor will it expect a response, from any controller, to a write command.

Under Options, in Comms Devices, is a selection for the type of serial communications to be used for a particular device. For example, the default setting of YES will select the 16 character protocol for controllers such as the M-Rotary. NO will select the 12 character protocol used on controllers such as the ML-Drive. This allows just one port to communicate with different Contrex units. The programmer should refer to the individual manuals for each type of controller to ensure the proper protocol is selected. However, each controller must have a unique address, but be set to the same baud rate, parity, etc.

Accessing Data

PARAMETERS

The programmer selects the desired function either via the drop down list, or by entering the function mnemonic. In the case of parameters 0-99, the syntax is:

Pnn(d)

where nn is the parameter number, and d is the number of decimal places for which the parameter is configured in the drive. But, see B below for information about Parameter Send.

A. For a Read operation, the driver ignores the number of decimal places specified by the format character returned with the value. The driver will return a negative number to the display if the format character indicates to do so. In 4 Data Byte units, the driver will multiply the returned 4 digit value by 10 if the format character is 8 or higher. It is imperative that the programmer take into account the number of decimal positions configured for the parameter, in order to represent the result properly.

B. For a Write operation, the driver will configure the outgoing format character based upon the number of decimal places specified by the programmer. Note that some parameters require that no decimal place data be written because they have a pre-determined decimal point location. These parameters MUST be configured as Pxx(0) even though they will be displayed with decimal fractions. Refer to the product manual.

COMMANDS

For Commands, such as STOP, it is recommended that the programmer provide keys that write the correct code to the drive, rather than permit the operator to enter a number. Since each type of Contrex drive has one or more unique codes, the programmer must refer to the manual to select the correct value to be written. Performing a Read operation on the Command returns the value of the most recent command sent.

ERROR

Additionally, there is one selection, ERROR, that does not go to the controller, but contains the most recent serial communications error and the parameter that caused the error.

The special selection ERROR is a 32 bit number that when represented in hex, will show the most recent communications error in the lower 16 bits, and the parameter number in the upper 16 bits. By inserting an integer assigned to ERROR, with the template set to:
<16>0000 0000
the programmer/operator can determine what error occurred on what parameter, by referring to the manual. For example, attempting to write an out of range value to a parameter will show an error 00pp 0001, where pp is the affected parameter. This parameter is both read and write, that is the programmer can reset it by writing a 0 to it, perhaps to see if the error has been cleared.

Knowledge of Unit Operation Is Assumed

In all cases, the simple principle of 'pass-through' is maintained: there is no attempt to validate a value in terms of the end use of the unit: both familiarity with the Drive functions and knowledge of system operation are assumed. Note that for Command functions, in particular, the programmer/operator is responsible for using the drive's manual to determine the proper value to be sent to execute the command.

Since different types of drives have different connections, please consult the manual to determine the proper connections, wiring the signal names as defined in the tables below.

Connection for RS232

Paradigm RS232 Port	CONTREX
Terminal 1 (Tx)	Rx
Terminal 2 (Rx)	Tx
Terminal 5 (0V)	0V or Common

In addition, connect a jumper between 3 and 4 of the Paradigm.

Connection for RS422 or 4 wire RS485

Paradigm RS485 Port	CONTREX
Terminal 6 (TxA)	RxD+
Terminal 7 (TxB)	RxD-
Terminal 8 (RxA)	TxD+
Terminal 9 (RxB)	TxD-
Terminal 10 (Comm.)	0V or Common

In addition, connect a 1K resistor between 9 and 10 of the Paradigm.

Connection for 2 wire RS485

Paradigm RS485 Port	CONTREX
Terminal 6 (TxA)	T/R+
Terminal 7 (TxB)	T/R-
Terminal 8 (RxA)	T/R+
Terminal 9 (RxB)	T/R-
Terminal 10 (Comm.)	0V or Common

In addition, connect a 1K resistor between 9 and 10 of the Paradigm.