
Eurotherm Universal Master

Application Note

This document explains how EDICT-97 handles communications with the range of Eurotherm devices which use the Eurotherm International Bisynchronous Communications protocol (EI Bisynch). The driver as described here is an attempt to provide a generic driver that will communicate with most Eurotherm products and supports a subset of the many data formats used. The onus is upon the user to be familiar with the Eurotherm device in question, its parameter identifiers and data formats to ensure the correct configuration of the EDICT-97 terminal.

Introduction

The EDICT-97 configuration software has been designed to allow the user to address a parameter in a manner that should be familiar to a user of the Eurotherm device. The EI Bisynch protocol operates in 2 modes, Binary and ASCII, both of which are supported by this driver. The driver supports a subset of data formats.

Configuration

Parameter Addressing

The EI Bisynch protocol uses 3 elements to identify a particular parameter. These are Group ID (GID), Unit ID (UID) and an optional Channel ID, which are specified when configuring the device. The parameter is addressed by a 2 character mnemonic which is specified when configuring the block.

Port Configuration

Select the required EI Bisynch protocol mode (Bisynch ASCII (default) or Bisynch Binary) through the Edit driver configuration.

Device Configuration

The Drop is a 2 character string where the first is the Group ID followed by the Unit ID. Both these parameters may take a character in the range '!' to '~'.

The Options property allows for a Channel ID to be used and set in the range 0 - 9. Setting Use Channel ID to "Yes" will include the Channel ID in all frames.

Block Configuration

A parameter is identified through a string of the form *AA(C)*.

AA is the parameter identifier. In the Binary mode case this is the PNO number where both characters are hexadecimal in the range '0' – 'F'. In the case of the ASCII protocol mode these 2 characters are the ASCII mnemonic where each character is in the range '!' to '~'.

C is the format specifier and may take a value from the Table 1. Note this limited list is a subset of the format specifiers used throughout the full range of Eurotherm devices. Further formats maybe added a later date.

Data Format Specifiers

Format	Meaning	Comment
P	24-bit IEEE floating point	ASCII mode only
Z	Free Format	ASCII mode only
B	BOOL	ASCII mode only
0	TCS Fixed point Format 0 decimal places	ASCII or Binary mode
1	TCS Fixed point Format 1 decimal places	ASCII or Binary mode
2	TCS Fixed point Format 2 decimal places	ASCII or Binary mode
3	TCS Fixed point Format 3 decimal places	ASCII or Binary mode
4	TCS Fixed point Format 4 decimal places	ASCII or Binary mode

The selection of Data Format Specifier is most relevant when writing parameters. Read Parameter values will typically be interpreted by the driver in the most appropriate way using information returned from the Eurotherm device. The exception to this is when using the TCS Fixed point Format where the decimal place specifier implies that the values used by the terminal are scaled by a factor given by the precision requested, but written to the Eurotherm device with the decimal point inserted in the correct position.

For example, the value might be 10.1 in the Eurotherm device but is represented in the Paradigm terminal as 101. This is not the case for the 24-bit IEEE floating point as this is a true floating point data type.

Communications

The default configuration for EDICT-97 is:

9600 baud
 7 bits
 Even Parity
 1 Stop Bit
 Unit ID - 0
 Group ID - 0
 Mode - Bisynch ASCII
 Use Channel ID - No

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.

RS485 Connection - Use Red Lion Part # P895059Z (RS485 to Bare Wires)

Paradigm RS485 Port	Eurotherm
Terminal 6 (TxA)	RXB
Terminal 7 (TxB)	RXA
Terminal 8 (RxA)	TXB
Terminal 9 (RxB)	TXA
Terminal 10 (Comm.)	0V

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

RS232 Connection

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

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