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SSD Drives / Eurotherm Servo Drives

Information Sheet for Crimson v2.0

Compatible Devices

- Eurotherm 631/635/637 Digital Drives

Verified Device

- 635f/KD6R16.S5-7-0-485-000-RD12

Device Option

The programmer can set the axis number of the drive to be accessed.

Accessible Data

Mnemonic	Eurotherm Command	Other Information
VAR	34 (Read) - 39 (Write)	Read/Write Variables
FLG	34 (Read) - 39 (Write)	Read/Write One Flag
FGP	34 (Read) - 39 (Write)	Read Group of 32 Flags

FGP – This Read-Only command returns 32 flags in one 32 bit word, MS Bit is the highest address. Select an address from 0-7 for the desired group using the following table:

FGP Address	Flag Numbers (Most Significant Bit on Left)
0	31 – 0
1	63 - 32
2	95 - 64
3	127 - 96
4	159 - 128
5	191 – 160
6	223 – 192
7	255 - 224

For all subsequent selections, the Eurotherm Command number is prefixed by a 'C'. Suffixes, where found in the command list, indicate particular items within the data frame, as data transfer for some functions involves multiple data items per request.

NOTE: An ERR selection is provided for those commands that might not execute because of the controller state. If such an error (24) occurs, the driver will not retry the command, but will set ERR to the number of the command causing the error. The programmer should examine the ERR value after issuing commands of that type.
Writing any new value to ERR sets it to 0.

Commands

Mnemonic	Operation
C0	Disable
C1	Enable
C2	Reset
C3	Host Login
C4	Host Logout
C5	Transfer Data in EEPROM

Commands should be programmed as Write Only. If a Command is read, the data will return with all 32 bits set. If used as Write Only, setting the Variable equal to any number is sufficient to activate the command. E.g. VarC0 = 1.

READ ONLY Instructions

Mnemonic	Operation	Other Information
C6	Firmware Version	C6A-C6L= 1 Byte each
C7	Diagnosis Information	C7A-C7J = Mixed Words & Bytes
C22	EEPROM Pointer	C22A = Pointer, C22B = State
C33	BIAS Diagnosis	8 Words + 4 Long Words
C40	Ext. I/O Diagnosis	C40A-C40H = 1 Word Each

WRITE ONLY Instructions

Mnemonic	Operation	Other Information
C13	Set BIAS Process Pointer	Ex. VarC13 = nnnn
C23	Positioning Command	1) Fill C23A-F with data. 2) Write a value to C23
C36	Start Position Set	Ex. VarC36 = n
C47	Serial Speed Setpoint	Ex. VarC47 = nnnn

Reading C23 will return the most recent values written. If nothing has been written, the data will be undefined.

NOTE: All remaining instructions are both read and write. Where multiple data are to be written, that is, the instruction has multiple entries, it is the responsibility of the programmer to ensure valid values are entered into all selections before issuing the 'Execute Write' instruction. The driver is not able to validate values before transmitting write data.

READ operations are automatic. Each individual item issues a request for data, so it is possible to display, say, C78D without displaying any other C78 item.

READ/WRITE Instructions, Single Values

Mnemonic	Operation	Other Information
C14	Network Axis Number	Ex. VarC14 = nnn sets a new axis number. See Note, below!
C62	Rated current of motor	Ex. VarC62 = nnnn

Reading C14 or C62 will retrieve the current value in the controller.

NOTE: Changing the axis number will disable further communication with that device. The database will need to have another device assigned with the new axis number as the unit address, if communication is to continue with the drive. If it is a requirement to change the axis number, the programmer should provide a list of axis numbers that have devices assigned to them, in order to prevent the necessity of reprogramming either the G3 or the drive.

READ/WRITE Instructions, Multiple Values

NOTE: Commands C69, C72, C73, and C76, require a set number in order to select the proper data to read. The programmer should ensure that a valid number is entered into the A location of those items before calling a page that reads those data. The value in the A location will be transmitted when a read or write operation is performed.

IMPORTANT: Please read the following "Additional Information" section before writing data using these instructions.

Mnemonic	Operation	Other Information
C65	Configuration Parameters	
C66	Speed Controller Parameters	
C67	Current Controller Parameters	
C68	Position Controller Parameters	
C69	Position Set	Requires Set Number
C72	Cam Profile Parameter Set	Requires Set Number
C73	Profile Point Block	Requires Set Number
C74	I/O Definitions	
C76	BIAS Program	Requires Set Number
C78	Extended Control Parameters	

Additional information

COMMANDS C65, C66, C67, C68, C69, C72, C73, C74, C76, C78
Because these commands transfer an entire block of data at one time, the internal operation of the driver must be understood. C69, C72, C73, and C76, require a set number for both reading and writing. That value is stored in the A instruction, independently of other data. In the following text, xx is to be replaced by 65, … 78.

READING DATA:

The special instructions **CFxx** are used to select the source of the data to be read.

If CFxx is 0, (the value at start-up) the data is taken directly from the controller's response.

If CFxx is not 0, the data will come from the internal cache used for writing data. Cache data will be undefined until data is written there.

For commands 65, 66, 67, 68, 74, and 78, the first data are found in CxxA.
For commands 69, 72, 73, and 76, the first data are found in CxxB.

Reading CFxx will show 0 (controller data), or 1 (cache data).

The special instructions **CTxx** are used to execute a single read of the controller data, and put that data into the cache for that command. Commands 69, 72, 73, and 76, use the set number value in CxxA. The data from the cache will be displayed in the read item when CFxx equals 1.

Reading CTxx will always return 0.

WRITING DATA:

The Cxx instruction, with no suffix, executes the writing of the data to the controller.

Data written to Cxx instructions with a letter suffix (CxxA…) are stored internally in a cache, and are not transmitted until Cxx is written.

How to write data for these commands:
The programmer has two procedures that can be used to write a set of parameters to the controller.

Method one: a set of variables is assigned as Write Only. The programmer loads all of the instructions with valid values before writing to the Execute Write instruction. A User Program might use this method for applications that use fixed settings. A separate set of variables would be needed to read that data from the controller.

Method two: one set of variables, read and write:

Step 1. C73A = 3	Select profile point set number 3.
Step 2. CF73 = 1	Set the driver to read from the C73 cache, data may be undefined.
Step 3. CT73 = 1	Read the controller data and put it into the cache.
Step 4.	Change the data as necessary.
Step 5. C73 = 1	Write the data to the controller.
Step 6. CF73 = 0	Set the driver to read from the controller.

Cable Information for G3 to Eurotherm 635/637

G3 RS-232 Port		COM 1	
G3 PIN	**Function**	**635/637 Pin**	**Function**
5	TxD	1	RxD
2	RxD	2	TxD
4	0V	4	0V

G3 RS-232 Port		COM 2 Design A	
G3 PIN	**Function**	**635/637 Pin**	**Function**
5	TxD	2	RxD
2	RxD	3	TxD
4	0V	5	0V

G3 RS-422/485 Port		COM 2 Design A	
G3 PIN	**Function**	**635/637 Pin**	**Function**
1	TxB	4	Data In
2	TxA	6	Data In Inverted
3	RxA	7	Data Out Inverted
4	RxB	8	Data Out