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YASKAWA

F7U Drive Parameter Access Technical Manual

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Drive Models: CIMR-F7U*

Document Number TM.F7.11

Warnings and Cautions

This Section provides warnings and cautions pertinent to this product, that if not heeded, may result in personal injury, fatality, or equipment damage. Yaskawa is not responsible for consequences of ignoring these instructions.

WARNING

YASKAWA manufactures component parts that can be used in a wide variety of industrial applications. The selection and application of YASKAWA products remains the responsibility of the equipment designer or end user. YASKAWA accepts no responsibility for the way its products are incorporated into the final system design. Under no circumstances should any YASKAWA product be incorporated into any product or design as the exclusive or sole safety control. Without exception, all controls should be designed to detect faults dynamically and to fail safely under all circumstances. All products designed to incorporate a component part manufactured by YASKAWA must be supplied to the end user with appropriate warnings and instructions as to that part's safe use and operation. Any warnings provided by YASKAWA must be promptly provided to the end user. YASKAWA offers an express warranty only as to the quality of its products in conforming to standards and specifications published in the YASKAWA manual. NO OTHER WARRANTY, EXPRESS OR IMPLIED, IS OFFERED. YASKAWA assumes no liability for any personal injury, property damage, losses, or claims arising from misapplication of its products.

WARNING

- Read and understand this manual before installing, operating, or servicing this F7 drive. All warnings, cautions, and instructions must be followed. All activity must be performed by qualified personnel. The F7 drive must be installed according to this manual and local codes.
- Do not connect or disconnect wiring while the power is on. Do not remove covers or touch circuit boards while the power is on. Do not remove or insert the digital operator while power is on.
- Before servicing, disconnect all power to the equipment. The internal capacitor remains charged even after the power supply is turned off. Status indicator LEDs and Digital Operator display will be extinguished when the DC bus voltage is below 50 VDC. To prevent electric shock, wait at least 5 minutes after all indicators are OFF and measure DC bus voltage and verify that it is at a safe level.
- Do not perform a withstand voltage test on any part of the unit. This equipment uses sensitive devices and may be damaged by high voltage.
- The F7 drive is not suitable for circuits capable of delivering more than the specified RMS symmetrical amperes. Install adequate branch short circuit protection per applicable codes. Refer to the specification. Failure to do so may result in equipment damage and/or personal injury.
- Do not connect unapproved LC or RC interference suppression filters, capacitors, or over voltage protection devices to the output of the F7 drive. Capacitors may generate peak currents that exceed F7 drive specifications.
- To avoid unnecessary fault displays, caused by contactors or output switches placed between F7 drive and motor, auxiliary contacts must be properly integrated into the control logic circuit.
- YASKAWA is not responsible for any modification of the product made by the user, doing so will void the warranty. This product must not be modified.
- Verify that the rated voltage of the F7 drive matches the voltage of the incoming power supply before applying power.
- To meet CE directives, proper line filters and proper installation are required.
- Some drawings in this manual may be shown with protective covers or shields removed, to describe details. These must be replaced before operation.
- Observe Electrostatic Discharge Procedures when handling the F7 drive and F7 drive components to prevent ESD damage.
- The attached equipment may start unexpectedly upon application of power to the F7 drive. Clear all personnel from the F7 drive, motor and machine area prior to applying power. Secure covers, couplings, shaft keys, machine beds and all safety equipment before energizing the F7 drive.
- Do not attempt to disassemble this unit. There are no user serviceable parts. Disassembling this unit will void any and all warranties.

Introduction

This manual is intended as an overview of parameter access for the Yaskawa model F7 drive and describes how to connect the F7 drive to an RS232, RS422 or RS485. Refer to the ***F7 Drive Programming Manual*** for detailed parameter information.

This document pertains to the F7 drive. In this document, the word “inverter”, “ac drive” and “drive” may be used interchangeably.

For details on installation and operation of the F7 drive, refer to the ***F7 Drive User Manual***. All manuals and support files are available on the CD that came with the F7 drive and are also available for download at **www.yaskawa.com**.

F7 Drive User Manual document reference **TM.F7.01**

F7 Drive Programming Manual document reference **TM.F7.02**

F7 Drive Parameter Access Technical Manual document reference **TM.F7.11**

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Chapter 1 Connections

This chapter describes how to connect the F7 drive to an RS232, RS422 or RS485 network

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Connection Check Sheet

The following is a quick reference guide to connect and configure the F7 drive for serial communications. Make a copy of this page and check-off each item as it is completed. For detailed information please refer to the detailed sections that follow.

- ☐ **1:** Unpack the F7 drive and verify that all components are present and undamaged.
- ☐ **2:** Connect power to the F7 drive and verify that the F7 drive functions correctly. This includes running the F7 drive from the operator keypad. Refer to the ***F7 User Manual*** for information on connecting and operating the F7 drive.
- ☐ **3:** Remove power from the F7 drive and wait for the charge lamp to be completely extinguished. Wait at least five additional minutes for the F7 drive to be completely discharged. Measure the DC bus voltage and verify that it is at a safe level.
- ☐ **4:** Connect the F7 drive to an RS232 network.
  - ☐ **4.1:** Remove the F7 drive's operator keypad.
  - ☐ **4.2:** Connect the RJ45 port on the front of the F7 drive to the controller serial port. Refer to *Figure 1.1 – F7U Diagram* for the location of drive connectors. Use a DB9 to RJ45 adapter with a standard Ethernet CAT-5 patch cable or use Yaskawa cables, part numbers UWR00468-1 or UWR00468-2. **Do NOT connect this cable to an Ethernet port** on the controller, as damage to the controller and/or F7 drive may result. Refer to *Figure 1.2 – RS232 Connections* for a description of the interface cable.
  - ☐ **4.3:** Verify that the controller communications parameters match the F7 drive's communications parameters. Refer to *Table 1.1 – RS232 (RJ45 port) Communications' Parameters* for a list of default F7 drive communications parameters.
  - ☐ **4.4:** Reapply power to the F7 drive.
- ☐ **5:** Connect the F7 drive to an RS422/485 network.
  - ☐ **5.1:** Remove the F7 drive's terminal cover.
  - ☐ **5.2:** Connect the controller to the S+/S- and R+/R- terminals on the F7 drive's terminal block as shown in *Figure 1.3 – RS422/485 Connections.*
  - ☐ **5.3:** If this device is either the first or last device on the network, set the network termination, S1, to the ON position.
  - ☐ **5.4:** Reapply power to the F7 drive.
  - ☐ **5.5:** Set the F7 drive communication parameters to match those of the controller. Refer to *Table 1.2 –Baud Rate*, *Table 1.3 – Parity* and *Table 1.4 – RTS*.
  - ☐ **5.6:** Set the node address of the F7 drive.
- ☐ **6:** Verify that the F7 drive and controller are communicating and that the exchanged data is valid.

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Verify Operation

Connect power to the F7 drive and verify that the F7 drive functions properly. This includes running the F7 drive from the operator keypad. Refer to the ***F7 Drive User Manual***, for information on connecting and operating the F7 drive.

Remove power from the F7 drive and wait for the charge lamp to be completely extinguished. Wait at least five additional minutes for the F7 drive to be completely discharged. Measure the DC bus voltage and verify that it is at a safe level.

Remove the operator keypad and terminal cover.

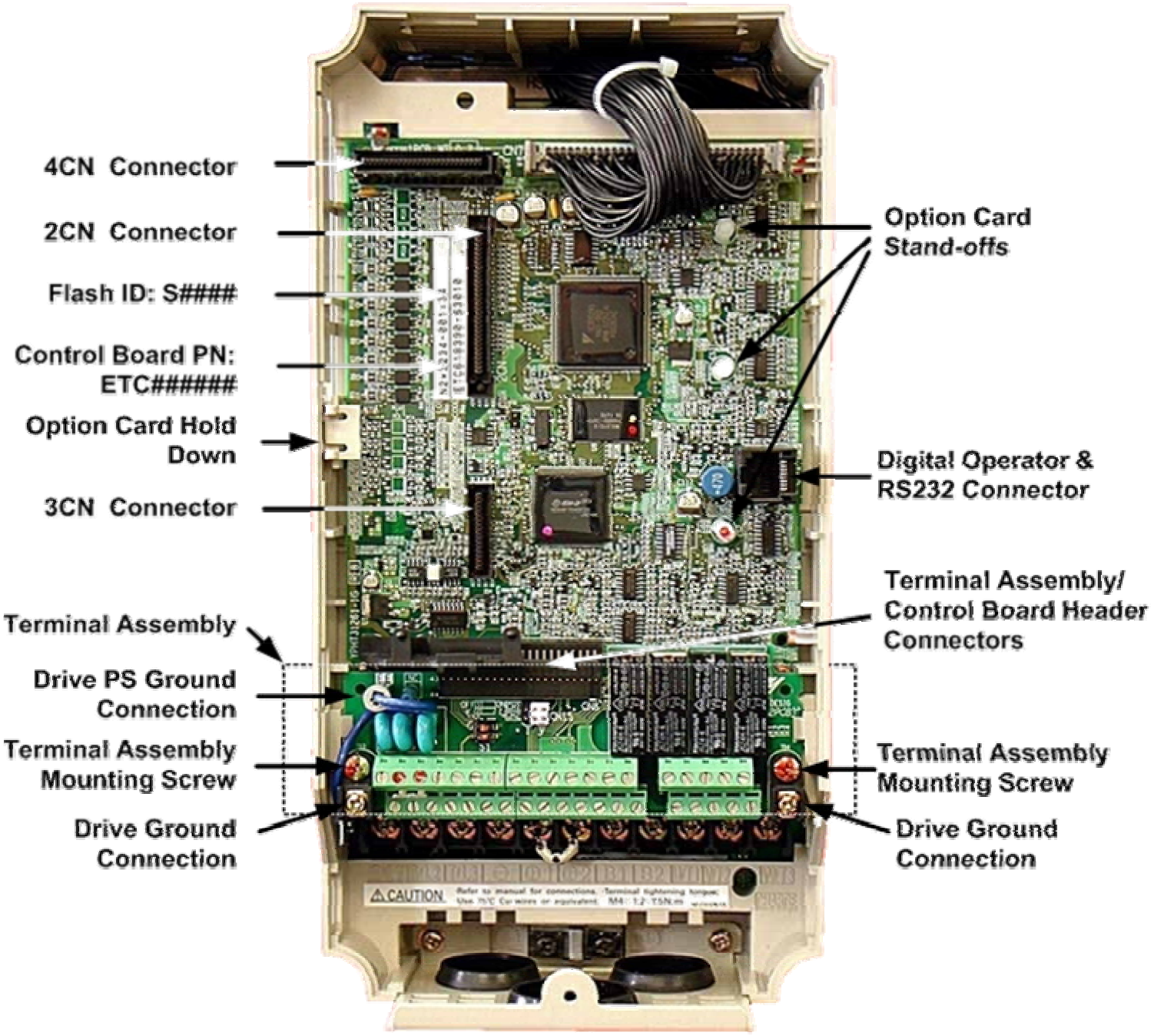


Figure 1.1 – F7U Diagram

F7U Drive Connections

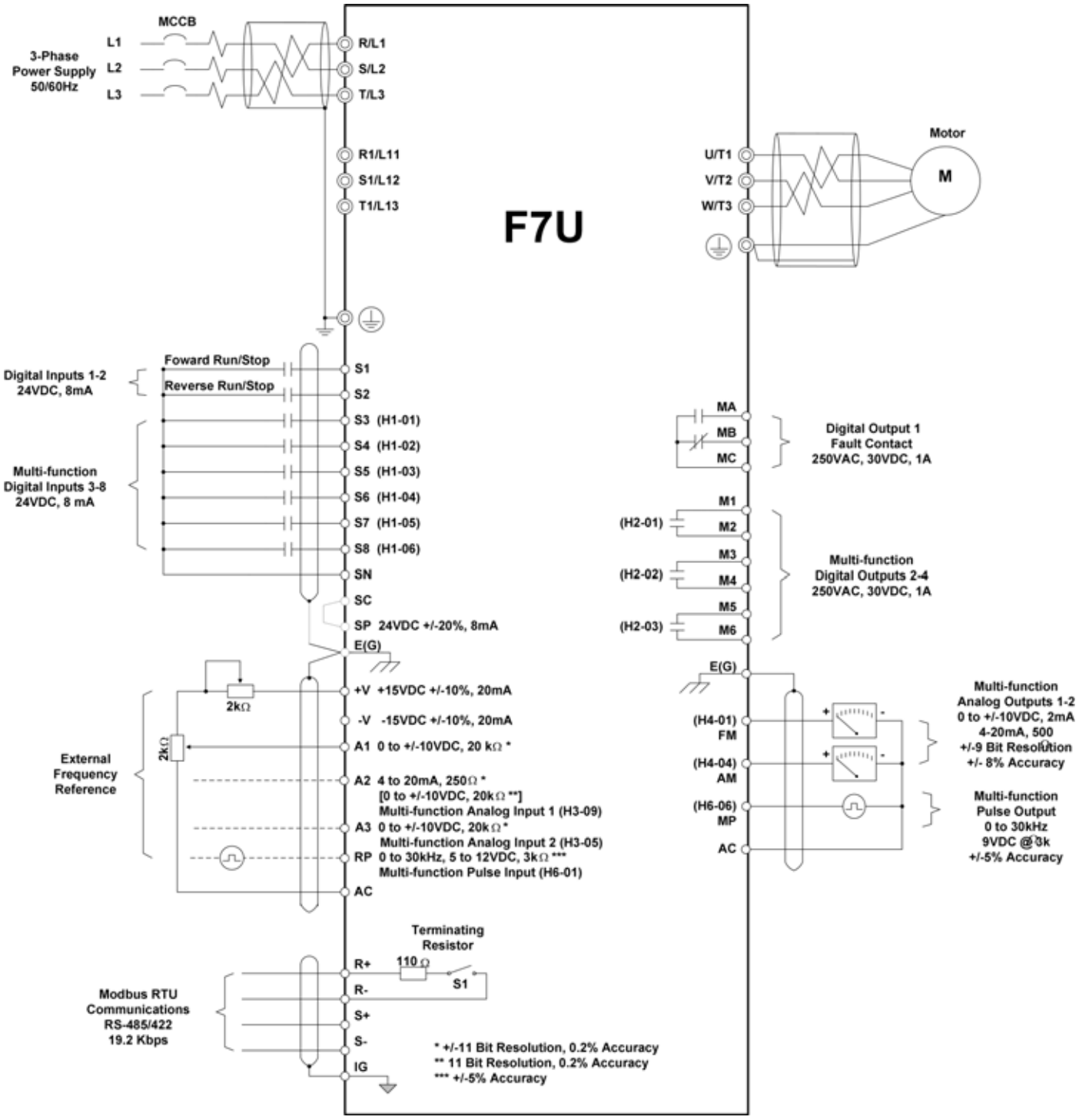


Figure 1.2 – F7U Drive Connections

Serial Network Connections

The following describes how to connect the F7 drive to an RS232, RS422 and RS485 serial network. For detailed information please refer to the appropriate sections of this manual or the ***F7 Drive User Manual.***

► RS232 Networks

The RS232 network is a single ended network with limited data transmission rates and cable lengths. The F7 drive RS232 data transmission is fixed at 9600bps, no parity, 8 data bits and 1 stop bit. The maximum cable length is 50 ft (16m). It is recommended that Yaskawa cables, UWR00468-1 or UWR00468-2 be used. The UWR00468-1 cable can be used for both standard RS232 communications and for downloading control software.

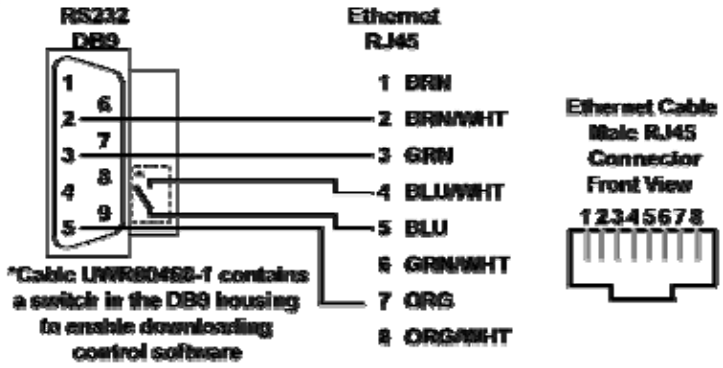


Figure 1.3 – RS232 Network Connection

► RS422/RS485 4-Wire Networks

RS422/RS485 4-wire networks allow for longer cable lengths, maximum 4000 ft (1200m), and are more immune to noise than RS232 networks. While RS422/RS485 4–wire may be used as multi-drop networks, however, single-ended networking is recommended. All RS422/RS485 4-wire communication is half-duplex. Since each device is separately connected, set the Termination Resistor S1 to ON (slide the switch to the right) on each device.

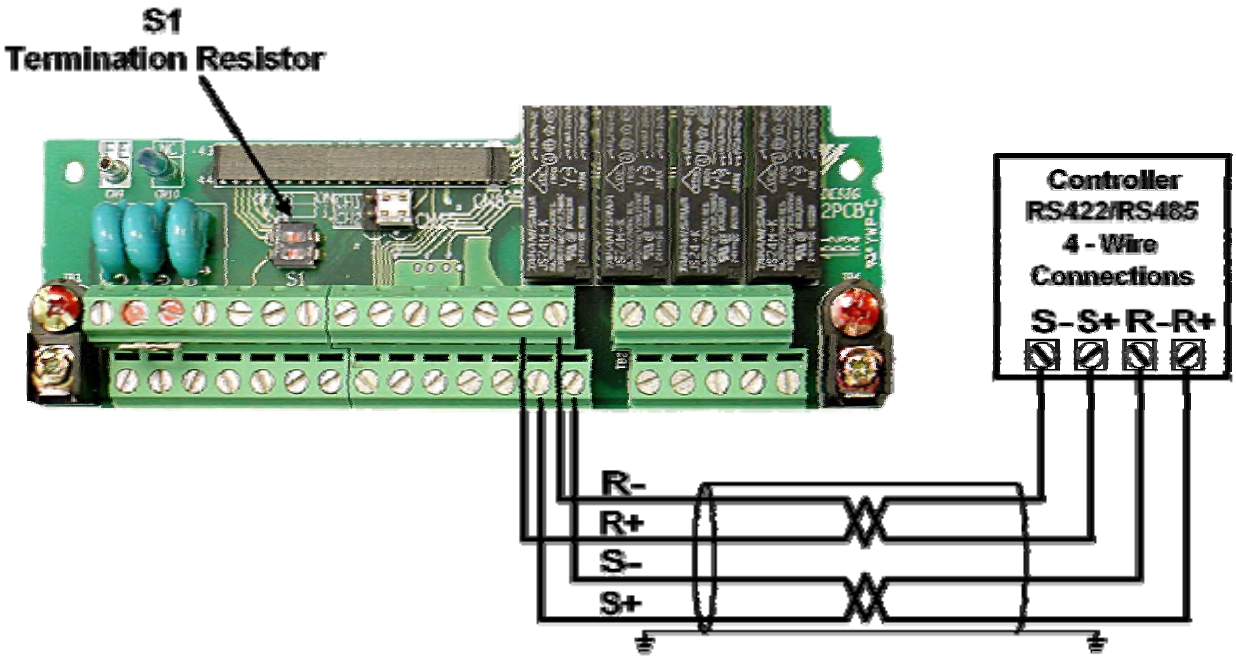


Figure 1.4 – RS422/RS485 4-Wire Network Connection

► RS485 2-Wire Networks

RS485 2-wire networks can be either single or multi-drop networks, with each slave device on the network assigned a unique node address. A maximum of 31 devices may reside on any network segment before a repeater is required. Terminating resistors must be installed on the first and last devices on each network segment. The maximum segment length is 4000ft (1200m). All RS485 communications are half-duplex

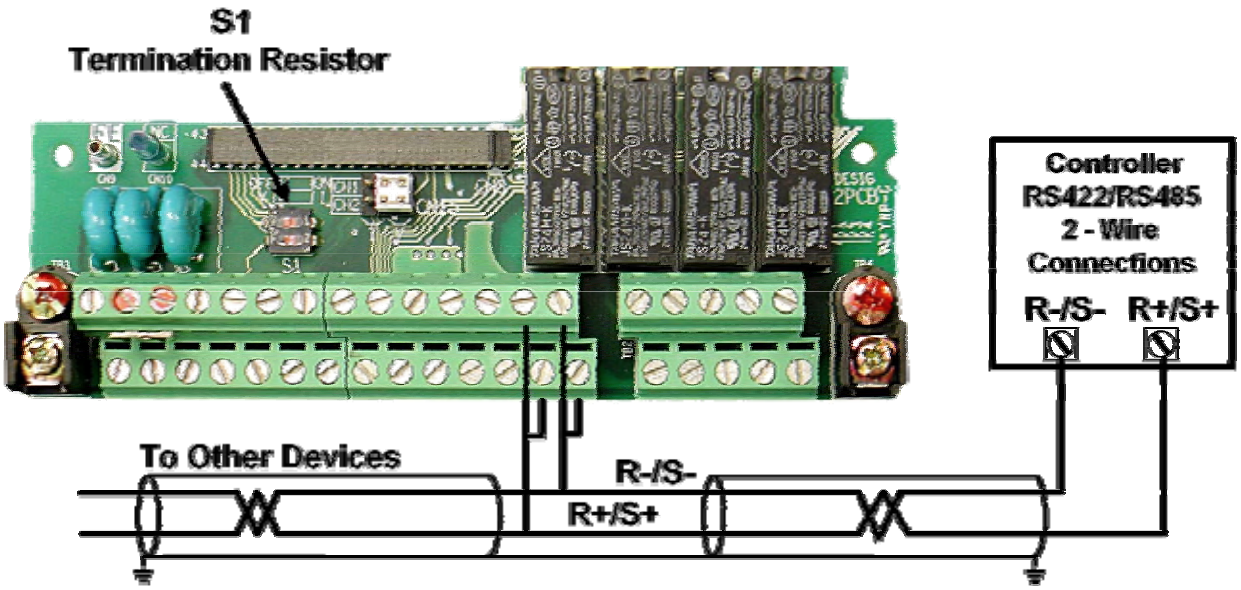


Figure 1.5 – RS485 2–Wire Network Connection

Communications Parameters

These communications parameters affect serial communications through RS232, RS422 and RS485. The RS232 communications parameters cannot be changed. Also, the node address is ignored when communicating via RS232.

All serial communications parameters can only be changed via the operator keypad.

► RS232 Communications

The RS232 communications' parameters are fixed at the values shown below. Although the node address is ignored, a node address of 1 is typically used by the master when communicating to the F7 drive in this method.

Table 1.1 – RS232 (RJ45 port) Communications' Parameters

Value	Description
Baud rate	9600
Parity	None
Stop Bits	1
Node Address	N/A

► RS422/RS485 Communications

- Node Address – H5-01

The node address is set through F7 drive parameter H5-01. When communicating via RS422 or RS485, a unique node address between 0 and 20h (32 dec), inclusive, must be entered. The default F7 drive address is 1Fh (31 dec). The address is always entered as a hexadecimal number (refer to the conversion chart in Chapter 4). Address 0 is typically reserved for global messages.

- Baud rate – H5-02

Select the baud rate that matches the controller's serial configuration. The default baud rate is 9600 (3).

Table 1.2 – Baud Rate – Parameter H5-02

Value	Description
0	1200
1	2400
2	4800
3	9600
4	19200

- Parity – H5-03

Select the parity that matches the controller's serial configuration. The default parity is None (0).

Table 1.3 – Parity – Parameter H5-03

Value	Description
0	None
1	Even
2	Odd

- Serial Fault Select – H5-04

Select the drive operation method when a serial fault (CE) is declared. The default method is Alarm Only (3).

Table 1.4 – Serial Fault Select – Parameter H5-04

Value	Description
0	Ramp to Stop (Fault)
1	Coast to Stop (Fault)
2	Fast Stop (Fault)
3	Alarm Only (Alarm)
4	Run at d1-04 frequency

■ Parity – H5-05

Select whether a serial fault is declared. The default setting is Disabled (0). Note that if set to Enabled, the F7U will display will flash **CALL** if it has not received a message within the timeout period after power up. The **CALL** display is reset at the first valid message.

Table 1.5 – Parity – Parameter H5-03	
Value	Description
0	Disabled
1	Enabled

■ Serial Communications Send Delay – H5-06

A delay can be inserted before the F7 drive responds to a command message. This allows for slower communications devices to switch transceiver state in order to get ready to receive a message. A value of 5 ~ 65 ms can be inserted, 5 ms being the default.

■ RTS Control – H5-07

This parameter determines whether RTS is continually asserted (disabled) or asserted only during send (enabled). RTS must be enabled for use with RS422/485 communications. The default is disabled (0).

Table 1.6 – RTS – Parameter H5-07	
Value	Description
0	Disable (always ON)
1	Enable (ON only during send)

Operation Method and Frequency Reference

The Run/Stop and Frequency Reference commands can originate from serial communication, the operator keypad, external terminals, or an option card. Parameter b1-01 (Operation Method Selection) allows the selection of the origin of the Run/Stop command. Parameter b1-02 (Reference Selection) allows the selection of the origin of the Frequency Reference command. The Run/Stop and Frequency Reference commands may have different origins. For example, the Run/Stop command may be set to External Terminals (b1-01 = 1) while the Frequency Reference command may be set Serial Communications (b1-02=2).

► Operation Method

Table 1.7 – Operation Method Selection

b1-01	Operation Method Selection (Run/Stop)
0	Operator keypad
1	External Terminals (Default setting is 1)
2	Serial Communication
3	Option Card
4	Pulse Input

► Frequency Reference Source

Table 1.8 – Frequency Reference Source Selection

b1-02	Frequency Reference Selection
0	Operator keypad
1	External Terminals (Default setting is 1)
2	Serial Communications (Parameter Access)
3	Option Card

Verify Communications

The following is a quick reference guide for serial communications to the F7 drive. Make a copy of this page and check-off each item as it is completed. For detailed information please refer to the detailed sections that follow.

☐ **1:** RS232 communication

☐ **1.1:** Verify that the correct cable is used to connect the controller to the F7 drive.

☐ **1.2:** Verify that the controller is set for RS232 communications and that the communications' cable is connected to the correct communications port.

☐ **1.3:** Record the controller communications' parameters

Baud Rate _____ **Parity**_____ **Data Bits**_____ **Stop Bits**__1__

☐ **1.4:** Record the F7 drive communications' parameters (H5-02, H5-03, H5-07)

Baud Rate _____ **Parity**_____ **Data Bits**_____ **Stop Bits**__1__

☐ **1.5:** Verify that the communications' parameters match.

☐ **2:** RS422/RS485 communications.

☐ **2.1:** Verify that the F7 drive is connected correctly.

☐ **2.2:** Verify that the controller is set for RS422/RS485 communications and that the communications' cable is connected to the correct communications' port.

☐ **2.3:** Record the controller communications' parameters

Baud Rate _____ **Parity**_____ **Data Bits**_____ **Stop Bits**__1__

☐ **2.4:** Record the F7 drive communications' parameters (H5-01, H5-02, H5-03, H5-07)

Baud Rate _____ **Parity**_____ **Data Bits**_____ **Stop Bits**__1__

☐ **2.5:** Verify that the communications' parameters match.

☐ **2.6:** Verify that parameter H5-07 (RTS) is set to enable.

☐ **2.7:** Verify that parameter H5-01 (Node Address) is set to the correct, unique, hexadecimal value and that it matches the node address required by the controller.

Controller Node Address _____ **F7 Drive Node Address**_____

☐ **3:** Send a command message to the F7 drive from the controller and verify the data of the command and response messages.

☐ **3.1:** Verify the contents of the command message.

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

☐ **3.2:** Verify the contents of the response message.

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

Notes:

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Chapter 2 Message Formats

This chapter provides information on the message (telegram) contents and configuration.

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Protocol

The parameter access method supported by the Yaskawa F7 drive is a subset of the MODBUS® communication protocol. The F7 drive supports functions 3, 6, 8 and 10h. The message format varies depending upon the function code of the message. For each function code, there is a command message from the master and a response message from the slave. The following sections review the format of the command and response messages for each function.

► Message Functions Supported

The following table lists the function codes available and their minimum and maximum lengths.

Table 2.1 - Supported Function Codes

Function Code	Function	Command Message		Response Message (Normal)	
		min. (bytes)	max. (bytes)	min. (bytes)	max. (bytes)
3h (3 dec)	Read Multiple Registers	8	8	7	21
6h (6 dec)	Write Single Register	8	8	8	8
8h (8 dec)	Loop-Back test	8	8	8	8
10h (16 dec)	Write Multiple Registers	11	25	8	8

Read Multiple Registers – Function Code 03H

The Read Multiple Register message is used to read the contents of from one to eight consecutive registers. The formats of the read command and response messages are shown below.

► Read Multiple Registers Command Message

Table 2.2 - Read Command Message

Description		Data
Slave Address		02h
Function Code		03h
Starting Register	Upper	00h
	Lower	20h
Quantity	Upper	00h
	Lower	04h
CRC-16	Upper	45h
	Lower	F0h

Each F7 drive slave address is set via. parameter H5-01. Valid slave addresses must be in the range of 1 to 20 hex (1 to 32 dec) and entered as a hexadecimal number. No two slaves may have the same address. The master addresses the slave by placing the slave address in the Slave Address field of the message. In the command message above, the slave is addressed at 02h. Broadcast address 0 is not valid for register read commands.

The function code of this message is 03h (read multiple registers).

The starting register is the address of the first register to be read. In the command message above the starting register address is 20h (0020h).

The quantity indicates how many consecutive registers are to be read. The quantity may range from 1 to 8 registers. If an invalid quantity is entered, error code 03h is returned in a fault response message. In this example, four consecutive registers are to be read: 20h, 21h, 22h and 23h.

A CRC-16 value is generated from a calculation including the message slave address, function code, starting register and quantity. The procedure for calculating a CRC-16 is described at the end of this chapter. When the slave receives the command message it calculates a CRC-16 value and compares it to the CRC-16 of the command message. If the two CRC-16 values are identical and the Slave Address is correct, the slave processes command message. If the two CRC-16 values are not identical, the slave will discard the command message and not respond.

If the command message has a valid slave address, function code, starting register, and quantity, the slave will respond with a normal response message. If the command message has an invalid function code, starting register, and/or quantity, the slave will respond with a fault response message. If the command message has an invalid slave address or CRC-16, no response will be returned.

► Read Multiple Registers Normal Response Message

Table 2.3 - Read Normal Response Message

Description		Data
Slave Address		02h
Function Code		03h
Number of Data Bytes		08h
Starting Register	Upper	17h
	Lower	70h
Next Register	Upper	17h
	Lower	70h
Next Register	Upper	01h
	Lower	09h
Last Register	Upper	00h
	Lower	00h
CRC-16	Upper	38h
	Lower	ACh

The normal response message contains the same slave address and function code as the command message, indicating to the master, which slave is responding and to what type of function it is responding.

The Number Of Data Bytes is the number of data bytes returned in the response message. The number of data bytes is actually the number of registers read times 2, since there are two bytes of data in each register.

The starting register is the address of the first register read.

The data section of the response message contains the data for the registers requested read. In this case registers 20h, 21h, 22h and 23h. Their data is 20h = 1770h, 21h = 1770h, 22h = 0109h and 23h = 0h.

► Read Multiple Registers Fault Response Message

Table 2.4 - Read Fault Response Message

Description		Data
Slave Address		02h
Function Code		83h
Error Code		02h
CRC-16	Upper	30h
	Lower	F1h

The fault response message contains the same slave address as the command message, indicating to the master, which slave is responding.

The function code of a fault response message is the logical OR of 80h and the original function code of 03h. This indicates to the master that the message is a fault response message, instead of a normal response message.

The error code indicates where the error occurred in the command message. The value of 02h in the error code field of this fault response message indicates that the command message requested data be read from an invalid register. Refer to section Error Codes, Table 2-14, for more information on returned error codes.

Write Single Register – Function Code 06H

The Write Single Register function allows the writing of data to one register only.

► Write Single Register Command Message

Table 2.5 - Write Command Message

Description		Data
Slave Address		01h
Function Code		06h
Register Address	Upper	00h
	Lower	01h
Data	Upper	00h
	Lower	03h
CRC-16	Upper	98h
	Lower	H0B

Each F7 drive slave address is set via. parameter H5-01. Valid slave addresses must be in the range of 1 to 20 hex (1 to 32 dec) and entered as a hexadecimal number. No two slaves may have the same address. The master addresses the slave by placing the slave address in the Slave Address field of the message. In the command message above, the slave is addressed at 01h. Broadcast address 0 is valid for register write commands.

By setting the slave address to zero (0) in the command message, the master can send a message to all the slaves on the network simultaneously. This is called simultaneous broadcasting. In a simultaneous broadcast message there is no response message.

The function code of this message is 06h (write single register).

In the command message above the register address is 01h (0001h).

The data section contains the data to be that written.

A CRC-16 value is generated from a calculation including the message slave address, function code, starting register, quantity, number of data bytes and all register data. The procedure for calculating a CRC-16 is described at the end of this chapter. When the slave receives the command message it calculates a CRC-16 value and compares it to the CRC-16 of the command message. If the two CRC-16 values are identical and the slave address is correct, the slave processes command message. If the two CRC-16 values are not identical, the slave will discard the command message and not respond.

If the command message has a valid slave address, function code, register address and data, the slave will respond with a normal response message. If the command message has an invalid function code, register address and/or data, the slave will respond with a fault response message. If the command message has an invalid slave address or CRC-16, no response will be returned.

► Write Single Register Normal Response Message

Table 2.6 - Write Registers Normal Response Message

Description		Data
Slave Address		01h
Function Code		06h
Register Address	Upper	00h
	Lower	01h
Data	Upper	00h
	Lower	03h
CRC-16	Upper	98h
	Lower	0Bh

The normal response message contains the same slave address, function code, register address and data as the command message, indicating to the master, which slave is responding and to what type of function it is responding.

In the response message above the register address is 01h (0001h).

► Write Single Register Fault Response Message

Table 2.7 - Write Registers Fault Response Message

Description		Data
Slave Address		01h
Function Code		86h
Error Code		21h
CRC-16	Upper	82h
	Lower	78h

The fault response message contains the same slave address as the command message, indicating to the master which slave is responding.

The function code of a fault response message is the logical OR of 80h and the original function code of 06h. This indicates to the master that the message is a fault response message, instead of a normal response message.

The error code indicates where the error occurred in the command message. The value of 21h in the error code field of this fault response message indicates that the command message data to be written was invalid for that register. Refer to the section Error Codes, Table 2-14, for more information on returned error codes.

Loop-Back Test – Function Code 08H

The Loop-Back Test is used to verify that the communications parameters for the F7 drive have been set correctly and that the connection is correct. The message should be constructed exactly as shown below. If everything is set and connected correctly, the received response will match the response shown below.

► Loop-Back Test - 08h

The Loop-Back test function (08h) is used for checking signal transmission between master and slaves. The command message format is shown below.

Table 2.8 - Loop-Back Command Message

Description		Data
Slave Address		01h
Function Code		08h
Test Code	Upper	00h
	Lower	00h
Data	Upper	A5h
	Lower	37h
CRC-16	Upper	DAh
	Lower	8Dh

Each F7 drive slave address is set via. parameter H5-01. Valid slave addresses must be in the range of 1 to 20 hex (1 to 32 dec) and entered as a hexadecimal number. No two slaves may have the same address. The master addresses the slave by placing the slave address in the slave address field of the message. In the command message above, the slave is addressed at 01h. Broadcast address 0 is not valid for Loop-Back test commands.

The function code of this message is 08h (Loop-Back test).

The test code must be set to 0000h. This function specifies that the data passed in the command message is to be returned (looped back) in the response message.

The Data section contains arbitrary values.

A CRC-16 value is generated from a calculation including the message slave address, function code, test code, and data. The procedure for calculating a CRC-16 is described at the end of this chapter. When the slave receives the command message it calculates a CRC-16 value and compares it to the CRC-16 of the command message. If the two CRC-16 values are identical and the Slave Address is correct, the slave processes command message. If the two CRC-16 values are not identical, the slave will discard the command message and not respond.

If the command message has a valid slave address, function code, test code, data and CRC-16, the slave will respond with the normal response message. If the command message has an invalid function code, test code, and/or data, the slave will respond with a fault response message. If the command message has an invalid slave address or CRC-16, no response will be returned.

► Loop-Back Normal Response

The normal Loop-Back Test response is identical the command message.

Table 2.9 - Loop-Back Normal Response Message		
Description		Data
Slave Address		01h
Function Code		08h
Test Code	Upper	00h
	Lower	00h
Data	Upper	A5h
	Lower	37h
CRC-16	Upper	DAh
	Lower	8Dh

► Loop-Back Fault Response

Table 2.10 - Loop-Back Fault Response Message		
Description		Data
Slave Address		01h
Function Code		88h
Error Code		01h
CRC-16	Upper	87h
	Lower	C0h

The fault response message contains the same slave address as the command message, indicating to the master which slave is responding. The function code of a fault response message is the logical OR of 80h and the original function code of 08h. This indicates to the master that the message is a fault response message, instead of a normal response message.

The error code indicates where the error occurred in the command message. Refer to the section Error Codes, Table 2-14, for more information on returned error codes.

Write Multiple Registers – Function Code 10H

The Write Multiple Register function allows the writing of data to from one to sixteen consecutive registers.

► Write Multiple Registers Command Message

Table 2.11 - Write Command Message

Description		Data
Slave Address		01h
Function Code		10h
Starting Register	Upper	00h
	Lower	01h
Quantity	Upper	00h
	Lower	02h
Number of Data Bytes		04h
First Register Data	Upper	00h
	Lower	01h
Next Register Data	Upper	02h
	Lower	58h
CRC-16	Upper	63h
	Lower	39h

Each F7 drive slave address is set via. parameter H5-01. Valid slave addresses must be in the range of 1 to 20 hex (1 to 32 dec) and entered as a hexadecimal number. No two slaves may have the same address. The master addresses the slave by placing the slave address in the Slave Address field of the message. In the command message above, the slave is addressed at 01h. Broadcast address 0 is valid for register write commands.

By setting the slave address to zero (0) in the command message, the master can send a message to all the slaves on the network simultaneously. This is called simultaneous broadcasting. In a simultaneous broadcast message there is no response message.

The function code of this message is 10h (write multiple registers).

The starting register is the address of the first register to be written. In the command message above the starting register address is 01h (0001h).

The quantity indicates how many consecutive registers are to be written. The quantity may range from 1 to 16 registers. If an invalid quantity is entered, error code of 03h is returned in a fault response message. In this command message there are two consecutive registers to be written: 01h (Operation Command) and 02h (Frequency Reference).

The Number Of Data Bytes is the number of bytes of data to be written. The Number Of Data Bytes is actually the quantity multiplied by 2, since there are two bytes of data in each register.

The data section contains the data for each register to be that written in the order in which they are to be written.

A CRC-16 value is generated from a calculation including the message slave address, function code, starting register, quantity, number of data bytes and all register data. The procedure for calculating a CRC-16 is described at the end of this chapter. When the slave receives the command message it calculates a CRC-16 value and compares it to the CRC-16 of the command message. If the two CRC-16 values are identical and the slave address is correct, the slave processes command message. If the two CRC-16 values are not identical, the slave will discard the command message and not respond.

If the command message has a valid slave address, function code, starting register, quantity, number of data bytes and data, the slave will respond with a normal response message. If the command message has an invalid function code, starting register, quantity, number of data bytes and/or data, the slave will respond with a fault response message. If the command message has an invalid slave address or CRC-16, no response will be returned.

► Write Multiple Registers Normal Response Message

Table 2.12 - Write Registers Normal Response Message

Description		Data
Slave Address		01h
Function Code		10h
Starting Register	Upper	00h
	Lower	01h
Quantity	Upper	00h
	Lower	02h
CRC-16	Upper	10h
	Lower	08h

The normal response message contains the same slave address, function code, starting register and quantity as the command message, indicating to the master which slave is responding and to what type of function it is responding.

The starting register is the address of the first register written. In the response message above the starting register address is 01h (0001h).

The quantity indicates how many consecutive registers were written. In this case the quantity is 2.

► Write Multiple Registers Fault Response Message

Table 2.13 - Write Registers Fault Response Message

Description		Data
Slave Address		01h
Function Code		90h
Error Code		02h
CRC-16	Upper	CDh
	Lower	C1h

The fault response message contains the same slave address as the command message, indicating to the master which slave is responding.

The function code of a fault response message is the logical OR of 80h and the original function code of 10h. This indicates to the master that the message is a fault response message, instead of a normal response message.

The error code indicates where the error occurred in the command message. The value of 02h in the error code field of this fault response message indicates that the command message requested data to be written to an invalid register. Refer to the section Error Codes, Table 2-14, for more information on returned error codes.

No Response

The slave disregards the command message and does not return a response message in the following cases:

1. In simultaneous broadcasting of data (slave address field is 0), all slaves execute.
2. When a communication error (overrun, framing, parity, or CRC-16) is detected in the command message.
3. When the slave address in the command message does not coincide with the address set in the slave.
4. When it takes longer than 2 seconds to send a message.
5. When the time interval between characters exceeds 3.5 ms
6. When the command message data length is not proper.

Error Codes

Table 2-14 – Fault Codes

Code	Fault	Description
1	Function error	Invalid or unsupported function code in command message
2	Invalid Register	Invalid register address
3	Invalid Number of Registers	Invalid command message quantity
21	Data Limits Exceeded	The write command message data is out range for the requested register
22	Write Failure	The register to be written is write protected

CRC-16 Calculations

The last two bytes of a message contain the CRC-16 (Cyclical Redundancy Check). The CRC-16 is one method for verifying the validity of the message contents and is part of the protocol. The CRC-16 field checks the contents of the entire message, regardless of any parity check method used for the individual characters of the message.

The CRC-16 field is a 16-bit binary value consisting of two 8 bit bytes. The CRC-16 value is calculated by the transmitting device, which appends the CRC-16 to the message. The receiving device recalculates a CRC-16 during receipt of the message, and compares this calculated value to the value received in the transmitted CRC-16 field. If the two values are not equal, the entire message is invalid.

Detailed examples of a CRC-16 generation using Quick Basic and C are shown below.

► CRC-16 Calculation Example in Basic

```
crcsum# = &HFFFF&
crcshift# = &H0&
crcconst# = &HA001&
CLS
PRINT "************************************************"
PRINT
PRINT "              CRC-16 calculator"
PRINT
PRINT "************************************************"
PRINT "If entering data in hex, preceed the data with '&H'"
PRINT "      Example:  32decimal = 20hex = &H20"
PRINT "************************************************"
PRINT
INPUT "Enter the number of bytes in the message: ", maxbyte
FOR bytenum = 1 TO maxbyte STEP 1
        PRINT "Enter byte "; bytenum; ":":
        INPUT byte&
        byte& = byte& AND &HFF&
        crcsum# = (crcsum# XOR byte&) AND &HFFFF&
        FOR shift = 1 TO 8 STEP 1
                crcshift# = (INT(crcsum# / 2)) AND &H7FFF&
                IF crcsum# AND &H1& THEN
                        crcsum# = crcshift# XOR crcconst#
                ELSE
                        crcsum# = crcshift#
                END IF
        NEXT shift
NEXT bytenum
lower& = crcsum# AND &HFF&
upper& = (INT(crcsum# / 256)) AND &HFF&

PRINT "Lower byte (1st) = ", HEX$(lower&)
PRINT "Upper byte (2nd) = ", HEX$(upper&)
```

Figure 2.1 – CRC-16 Calculation in Quick Basic

► CRC-16 Calculation Example - C

```
void        getMBCRC(char *, int, char *)                  // function prototype
void        getMBCRC(char *buf, int bufLen, char *crc) {   // Function name and parameter list returning a void
                                                           // *buf        pointer to character array used to calculate CRC
                                                           // bufLen      number of characters to calculate CRC for
                                                           // *crc        pointer to the array that contains the calculated CRC
unsigned long crc_0 = 0xffff;                              // Declare and initialize variables
unsigned long crc_1 = 0x0000;                              // Declare and initialize variables
int i,j;                                                   // Declare and initialize variables
      for (i=0; i<bufLen; i++) {                           // Loop through characters of input array
           crc_0 ^= ((unsigned long)buf[i] & 0x00ff);      // XOR current character with 0x00ff
           for (j=0;j<8;j++) {                             // Loop through characters bits
                 crc_1 = (crc_0 >> 1) & 0x7fff;            // shift result right one place and store
                 if (crc_0 & 0x0001)                       // if pre-shifted value bit 0 is set
                      crc_0 = (crc_1 ^ 0xa001);            // XOR the shifted value with 0xa001
                 else                                      // if pre-shifted value bit 0 is not set
                      crc_0 = crc_1;                       // set the pre-shifted value equal to the shifted value
                 }                                         // End for loop - Loop through characters bits
           }                                               // End for loop - Loop through characters of input array
      crc[0] = (unsigned char)((crc_0/256) & 0x00ff);      // Hi byte
      crc[1] = (unsigned char)(crc_0 & 0x00ff);            // Lo byte
return;                                                    // Return to calling function
}                                                          // End of CRC calculation function
```

Figure 2.2 – CRC-16 Calculation in C

Notes:

Chapter 3 Troubleshooting Serial COM

This chapter describes some basic troubleshooting methods for serial communications

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General Information

Please fill-in the information on this and the following pages prior to contacting customer support. If customer support is necessary, please have the information below available.

- ☐ **1: F7 Drive Model**_____
- ☐ **2: Input**_____**VAC**_____**Hz**
- ☐ **3: Serial Number**_____
- ☐ **4: Control Board ETC-**_____
- ☐ **5: Flash ID (U1-14)** _____
- ☐ **6: Initialization Type (2/3 wire control)** _____
- ☐ **7: Specification Type (o2-09)**_____
- ☐ **8: Control Method (A1-02)**_____

Please provide a sketch of the network connections in the space below.

Figure 3.1 - Connection Sketch

RS232 Communications

The following is a quick reference guide for troubleshooting RS232 serial communications to the F7 drive. Make a copy of the following pages and check-off each item as it is completed. For detailed information on the RS232 standard please refer to ***EIA RS-232-C***. or later revision For information on the F7 drive RS232 interface, refer to previous sections of this manual.

☐ **1:** For RS232 communications

☐ **1.1:** Verify that the correct cable is used to connect the controller to the F7 drive.

☐ **1.2:** Verify that the controller is set for RS232 communications and that the communications' cable is connected to the correct communications port.

☐ **1.3:** Record the controller communications' parameters

Baud Rate _____ **Parity**_____ **Data Bits**_____ **Stop Bits**_____**1**_____

☐ **1.4:** Record the F7 drive communications' parameters (H5-02, H5-03, H5-07)

Baud Rate _____ **Parity**_____ **Data Bits**_____ **Stop Bits**_____**1**_____

☐ **1.5:** Verify that the communications' parameters match.

☐ **2:** Check the controller RS232 wiring requirements

☐ **2.1:** CTS(Clear to Send)/RTS(Ready to Send) jumper required on the controller end?

☐ **2.2:** DTR(Data Terminal ready)/DSR(Data Set Ready)/RLSD(Receive Line Signal Detector) jumper required on the controller end?

☐ **2.3:** TxD(Transmit Data)/RxD(Receive Data) connections are made correctly.

☐ **3:** Send a message from the controller to the F7 drive.

☐ **3.1:** Connect an oscilloscope between the F7 drive RxD and GND.

☐ **3.1.1:** Verify that the message pulse train exists and contains the correct number of pulses. Refer to the chapter Message Formats for information on the message contents.

☐ **3.1.2:** Verify that he signal levels adhere to the RS232 standard.

☐ **3.2:** Insert a data analyzer in the RS232 circuit and capture the message sent by the controller in a hexadecimal format. Record the command message below.

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

☐ **3.3:** Verify that the contents of the message adheres to the protocol format as described previously.

☐ **3.3.1:** Verify that the node address is valid.

☐ **3.3.2:** Verify that the function code is valid

☐ **3.3.3:** Verify that the register address is valid

☐ **3.3.4:** Verify that the number of data bytes is correct is valid

☐ **3.3.5:** Verify that the CRC is correctly calculated.

☐ **3.3.6:** Verify that the message requires a response.

☐ **4:** Verify the contents of the response message.

☐ **4.1:** Connect an oscilloscope between the controller RxD and GND.

☐ **4.1.1:** Verify that the message pulse train exists and contains the correct number of pulses. Refer to the chapter Message Formats for information on the message contents.

☐ **4.1.2:** Verify that he signal levels adhere to the RS232 standard.

☐ **4.2:** Capture the response message sent by the controller in a hexadecimal format and record it below.

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

☐ **4.3:** Verify that the contents of the message adheres to the protocol format as described previously.

☐ **4.3.1:** Verify that the node address is valid.

☐ **4.3.2:** Verify that the function code is valid

☐ **4.3.4:** Verify that the number of data bytes is correct is valid

☐ **4.3.3:** Verify that the register address is valid

☐ **4.3.4:** Verify that the CRC is correctly calculated.

RS422/RS485 Communications

The following is a quick reference guide for troubleshooting RS422/RS485 serial communications to the F7 drive. Make a copy of the following pages and check-off each item as it is completed. For detailed information on the RS422/RS485 standard please refer to ***EIA RS-4222-A*** or later revision. For information on the F7 drive RS422/RS485 interface, refer to previous sections of this manual.

☐ **1:** For RS422/RS485 communications

☐ **1.1:** Verify that the correct cable is used to connect the controller to the F7 drive.

☐ **1.2:** Verify that the controller is set for RS422 or RS485 communications and that the communications' cable is connected to the correct communications port.

☐ **1.3:** Record the controller communications' parameters

☐ **1.4:** Verify that the polarity of the signal wires is correct (+ to + and - to -).

Baud Rate _____ **Parity**_____ **Data Bits**_____ **Stop Bits**_____**1**_____

☐ **1.5:** Record the F7 drive communications parameters (H5-01, H5-02, H5-03, H5-07)

Baud Rate _____ **Parity**_____ **Data Bits**_____ **Stop Bits**_____**1**_____

☐ **1.6:** Verify that the communications' parameters match.

☐ **1.7:** Verify that F7 drive parameter H5-07 (RTS) is set to Enable.

☐ **1.8:** Verify that F7 drive parameter H5-01 (Node Address) is set to the correct, unique, hexadecimal value and that it matches the node address required by the controller.

☐ **2:** Check the controller RS422/RS485 wiring requirements

☐ **2.1:** The controller transmit terminals are connected to the F7 drive receive terminals and the receive terminals connected to the F7 drive transmit terminals.

☐ **2.2:** The transmit and receive connection polarities are correct.

☐ **2.3:** The controller either asserts RTS when transmitting or utilizes send detect circuitry.

☐ **2.4:** The network is terminated only at the beginning and end of each network segment.

☐ **2.5:** `There are no more than 31 devices on any network segment, including the controller and repeater

☐ **3:** Verify that the F7 drive passes the self-test as described in the following section.

☐ **4:** Send a message from the controller to the F7 drive.

☐ **4.1:** Connect an oscilloscope between the F7 drive's R+ and R- terminals for RS422/RS485 4-wire networks or between terminals R+/S+ and R-/S- for RS485 2-wire networks.

☐ **4.1.1:** Verify that the message pulse train exists and contains the correct number of pulses. Refer to the chapter Message Formats for information on the message contents.

☐ **4.1.2:** Verify that the signal levels adhere to the RS422/RS485 standard.

☐ **4.2:** Insert a data analyzer in the RS422/RS485 circuit and capture the message sent by the controller in a hexadecimal format Record the command message below.

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

☐ 4.**3:** Verify that the contents of the message adheres to the MODBUS format as described previously.

☐ **4.3.1:** Verify that the node address is valid.

☐ **4.3.2:** Verify that the function code is valid

☐ **4.3.3:** Verify that the register address is valid

☐ **4.3.4:** Verify that the number of data bytes is correct is valid

☐ **4.3.5:** Verify that the CRC is correctly calculated.

☐ **4.3.6:** Verify that the message requires a response.

☐ **5:** Verify the contents of the response message.

☐ **5.1:** Connect an oscilloscope between the controller R+ and R- terminals for RS422 and RS485 4-Wire networks or between terminals R+/S+ and R-/S- for RS485 2-wire networks.

☐ **5.1.1:** Verify that the message pulse train exists and contains the correct number of pulses. Refer to the chapter Message Formats for information on the message contents.

☐ **5.1.2:** Verify that he signal levels adhere to the RS422/RS485 standard.

☐ **5.2:** Capture the response message in hexadecimal format and record it below.

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

[_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____] [_____]

☐ **5.3:** Verify that the contents of the message adheres to the MODBUS format as described previously.

☐ **5.3.1:** Verify that the node address is valid.

☐ **5.3.2:** Verify that the function code is valid

☐ **5.3.3:** Verify that the register address is valid

☐ **5.3.4:** Verify that the number of data bytes is correct is valid

☐ **5.3.5:** Verify that the CRC is correctly calculated.

RS422/RS485 Self-Test

The F7 drive can perform a self-test of the communications interface. To perform the self-test:

- Apply power to the F7 drive.
- Set parameter H1-01 to 67h (self-test).
- Remove power from the F7 drive and wait for the charge lamp to be completely extinguished. Wait at least five additional minutes for the F7 drive to be completely discharged. Measure the DC bus voltage and verify that it is at a safe level.
- Connect jumper wires to the F7 drive terminals as shown below.
- Reapply power to the F7 drive.

The frequency reference is displayed on the digital operator if the communications interface is functioning normally.

If “CE” is displayed on the digital operator, the F7 drive fault signal is ON and the F7 drive ready signal is OFF, the communications interface is not functioning.

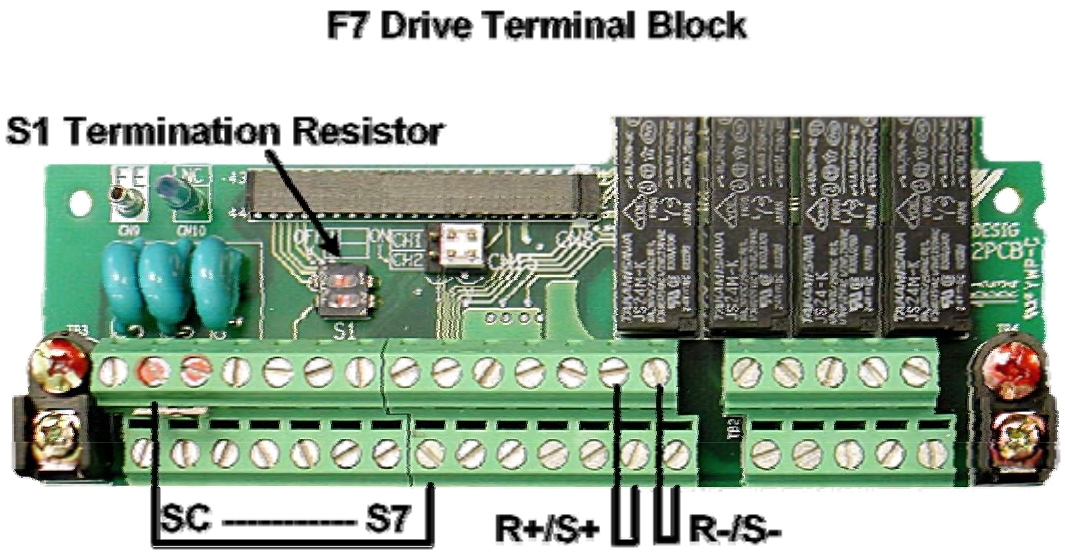


Figure 3.2 – RS422/RS485 Self-Test

Chapter 4 F7U Drive Parameters

This chapter describes some basic troubleshooting methods for serial communications

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Command Registers (Read / Write)

Command registers are those registers used to control the operation of the F7 drive either through a network interface (option card) or via serial communications. These registers are available during an active Run command. It should be noted that serially commanded multi-function inputs are logically OR'd with their external input terminal counterpart.

The "Addr" column contains the register address in hexadecimal format. F7 drive registers are always referred to in hexadecimal format. The "Function" column contains the register name. The "Bit" and "Description" columns contain the list of available bits for that register and a short description of each. If the "Bit" column is empty, the register contains word data and individual bits are meaningless.

Table 4.1 – Command Registers (Read / Write)

Addr	Function	Bit	Description	Mode			
				V/f	V/f wPG	OLV	FV
0001h	Command	0h	0 = Stop 1 = Run				
		1h	0 = Forward 1 = Reverse				
		2h	External Fault				
		3h	Fault reset				
		4h	ComNet (0 = b1-01 = pre-selected source -- 1 = b1-01 = 3 (serial communications))				
		5h	ComCtrl (0 = b1-02 = pre-selected source -- 1 = b1-02 = 3 (serial communications))				
		6h	Multi-Function Input 1 @ S3 Function set by setting of H1-01				
		7h	Multi-Function Input 2 @ S4 Function set by setting of H1-02				
		8h	Multi-Function Input 3 @ S5 Function set by setting of H1-03				
		9h	Multi-Function Input 4 @ S6 Function set by setting of H1-04				
		Ah	Multi-Function Input 5 @ S7 Function set by setting of H1-05				
		Bh	Multi-Function Input 6 @ S8 Function set by setting of H1-06				
		Ch	Reserved				
		Dh	Reserved				
		Eh	Reserved				
		Fh	Reserved				
0002h	Frequency Reference		Dependent on setting of o3-02				
0006h	PID Setpoint		PID Setpoint				
0007h	Analog Output 1 Setting		(-11 ~ 11)/726 VDC				
0008h	Analog Output 2 Setting		(-11 ~ 11)/726 VDC				
0009h	Outputs	0h	Multi-Function Output 1				
		1h	Multi-Function Output 2				
		2h	Multi-Function Output 3				
		3h	Reserved				
		4h	Reserved				
		5h	Reserved				
		6h	Fault Relay Output				
		7h	Fault Relay N.C.				
		8h-Fh	Reserved				
000Fh	Command Selection	0h	Reserved				
		1h	PID Value 0006h is used				
		2h–Bh	Reserved				
		Ch	Simultaneous Broadcast Data Terminal S5 Enable*				
		Dh	Simultaneous Broadcast Data Terminal S6 Enable*				
		Eh	Simultaneous Broadcast Data Terminal S7 Enable*				
		Fh	Simultaneous Broadcast Data Terminal S8 Enable*				

Note: * These bits must be set in order to use the Simultaneous Broadcast Register multi-function inputs 3, 4, 5 and 6 (bits 0Ch, 0Dh, 0Eh and 0Fh respectively). Refer to ***Table 4.3 - Simultaneous Broadcast Registers (Write only)***.

MODBUS TCP/IP DPRAM Interface (Read / Write)

- A maximum of 10 simultaneous connections are allowed.
- The RUN Command and Frequency Reference may only be accessed through UNIT ID 1. While the drive is in remote RUN mode, the RUN command must be continually refreshed within 5 seconds. If the RUN command is not refreshed within 5 seconds, an EF0 fault will occur. Refer to the appropriate drive manual for information on EF0 and setting the appropriate drive response. If a UNIT ID 1 connection is active, the NS/CON LED will blink at approximately a 500 ms cycle.
- The TCP/IP connection must be refreshed within 60 seconds. If it is not refreshed within 60 seconds, the connection will be closed.
- This implementation of MODBUS TCP/IP supports MODBUS functions 3 (read multiple registers), 6 (write single register) and 16 (write multiple registers).
- The table below lists those registers available via high speed DP-RAM. DP-RAM access is designed to be used as part of the standard PLC I/O or scan table, where fast response is required. Other register values should be accessed via individual messages, i.e. via an MSTR block.

Table 4.2 – MODBUS TCP/IP Interface Registers

Addr	Function	Bit	Description
0001h	Command	0h	Forward RUN Input
		1h	Reverse RUN Input
		2h	Multi-Function Digital Input S3
		3h	Multi-Function Digital Input S4
		4h	Multi-Function Digital Input S5
		5h	Multi-Function Digital Input S6
		6h	Multi-Function Digital Input S7
		7h	Multi-Function Digital Input S8 (G5, F7 & G7 only)
		8h	External Fault Input (EF0)
		9h	Fault Reset
		Ah	Multi-Function Digital Input S9 G7 only)
		Bh	Multi-Function Digital Input S10 G7 only)
		Ch	Multi-Function Digital Input S11 G7 only)
		Dh	Multi-Function Digital Input S12 G7 only)
		Eh	Fault Log Trace Clear Input
		Fh	External Base Block Input
0002h	Frequency Reference		Frequency Reference
2000h	Status	0h	@ RUN
		1h	@ Zero Speed
		2h	@ Reverse RUN
		3h	@ Reset
		4h	@ Speed Agree
		5h	@ Drive Ready
		6h	@ Minor Fault
		7h	@ Major Fault
		8h	@ OPE Fault
		9h	@Return From Sudden Stop
		Ah	@ Remote Mode
		Bh	Multi-Function Output 1
		Ch	Multi-Function Output 2
		Dh	Multi-Function Output 3 (G5, F7 & G7 only)
		Eh	@ Motor 2 Selected
		Fh	@ Zero Servo Complete
2001h	Speed		U1-05
2002h	Torque		U1-09
2003h	PG Count Channel 1		PG Count Channel 1
2004h	Frequency Reference		U1-01
2005h	Output Frequency		U1-02
2006h	Current		U1-03
2007h	Terminal 14 Output		Terminal 14 Output
2008h	DC BUS Voltage		DC BUS Voltage
2009h	Error 1	0h	PUF Fuse Fault
		1h	UV1 Main Circuit Undervoltage
		2h	UV2 Control Power Undervoltage
		3h	UV3 MC Fail
		4h	Reserved
		5h	GF Ground Fault
		6h	OC Overcurrent
		7h	OV Overvoltage
		8h	OH Drive Overheat
		9h	OH1 Motor Overheat Alarm
		Ah	OL1 Motor Overload
		Bh	OL2 Drive Overload
		Ch	OL3 Overtorque 1
		Dh	OL4 Overtorque 2
		Eh	RR Braking Resistor Fault

Table 4.2 – MODBUS TCP/IP Interface Registers			
Addr	**Function**	**Bit**	**Description**
		Fh	RH Braking Resistor Overheat
200Ah	Error 2	0h	EF3 External Fault 3
		1h	EF4 External Fault 4
		2h	EF5 External Fault 5
		3h	EF6 External Fault 6
		4h	EF7 External Fault 7
		5h	Reserved
		6h	Reserved
		7h	OS Overspeed
		8h	DEV Excessive Speed Deviation
		9h	PGO PG Disconnect
		Ah	PF Input Phase Fault
		Bh	LF Output Phase Fault
		Ch	OH3 Motor Overheat 1
		Dh	OPR Operator Disconnected
		Eh	ERR EEPROM Write Fault
		Fh	OH4 Motor Overheat 2
200Bh	Error 3	0h	CE Communications Fault
		1h	BUS Option Error
		2h	Reserved
		3h	Reserved
		4h	CF Control Fault
		5h	SVE Zero Servo Fault
		6h	EF0 Option External Error
		7h	FBL PID Feedback Fault
		8h	UL3 Undertorque Detect 1
		9h	UL4 Undertorque Detect 2
		Ah	OL7 High Slip Brake Overload
		Bh	Reserved
		Ch	Reserved
		Dh	Reserved
		Eh	Reserved
		Fh	CPF Hardware Fault
200Ch	Analog Input A1 Value		Analog Input A1 Value
200Dh	Digital Input Terminals Value (Bit Field)		Digital Input Terminals Value (Bit Field)
200Eh	Analog Input A3 Value		Analog Input A3 Value
200Fh	PG Count Channel 2		PG Count Channel 2
2010h	Inverter Flash ID		Inverter Flash ID

Simultaneous Broadcast Registers (Write only)

Simultaneous Broadcast Registers are those registers used to control the simultaneous operation of multiple devices either through a network interface (option card) or via serial communications. These registers are available during drive RUN.

The “Addr” column contains the register address in hexadecimal format. Drive registers are always referenced in hexadecimal format. The “Function” column contains the register name. The “Bit” and “Description” columns contain the list of available bits for that register and a short description of each. If the “Bit” column is empty, the register contains word data and individual bits are meaningless.

Table 4.3– Simultaneous Broadcast Registers

Addr	Function	Bit	Description	Mode			
				V/f	V/f wPG	OLV	FV
0000h	Reserved		Reserved	NA	NA	NA	NA
0001h	Command	0h	0 = Stop 1 = Run				
		1h	0 = Forward 1 = Reverse				
		2h	Reserved				
		3h	Reserved				
		4h	Reserved				
		5h	Multi-Function Input 1 @ S3 (default = External Fault) Function set by setting of H1-01				
		6h	Multi-Function Input 2 @ S4 (default = Fault Reset) Function set by setting of H1-02				
		7h	Reserved				
		8h	Reserved				
		9h	Reserved				
		Ah	Reserved				
		Bh	Reserved				
		Ch	Multi-Function Input 3 @ S5* Function set by setting of H1-03				
		Dh	Multi-Function Input 4 @ S6* Function set by setting of H1-04				
		Eh	Multi-Function Input 5 @ S7* Function set by setting of H1-05				
		Fh	Multi-Function Input 6 @ S8* Function set by setting of H1-06				
0002h	Frequency Reference		30000/100 %**				

Note: * Use of these bits is dependent on the setting of register 0Fh bits 0Ch, 0Dh, 0Eh and 0Fh. Refer to ***Table 4.1 – Command Registers (Read / Write).***

** This value must be sent to the drive as a hexadecimal value. Example: 4096 = 1000h.
The scaling is fixed at 30000/100 %. and is not affected by parameter o1-03.
It is affected by the maximum frequency of the drive receiving the command. Simply it is ((decimal freq ref)/30000)* (drive’s maximum frequency).
Example: Send 1000h to drive. 1000h = 4096 decimal.
(4096*100 %)/30000 = 13.65 %.
If drive’s maximum frequency is 60 Hz, then the frequency reference command to the drive is 60*13.65 % or 8.19 Hz.

Monitor Registers (Read only)

The following table lists monitor parameters for the F7 drive. These parameters are used to monitor F7 drive information and cannot be written.

- The “U-##” column contains the reference, if it exists, to the “U”, monitor, parameter displayed via the operator keypad.
- The “Addr” column contains the register addresses for that parameter in hexadecimal format. F7 drive registers are always referred to in hexadecimal format.
- The “Function” column contains the register name.
- The “Bit” column contains the list of available bits for that register. If the “Bit” column is empty, the register contains word data and the individual bits are meaningless.
- The “Description” column contains a short description of each register or register bit.
- The “Mode” columns describe the parameter’s accessibility under a given control mode (see A1-02 for control modes). The column contains an “NA” if the parameter is not accessible for that control mode.
- Reserved registers and data are meaningless and should be ignored

Table 4.4 – Monitor Registers (Read)

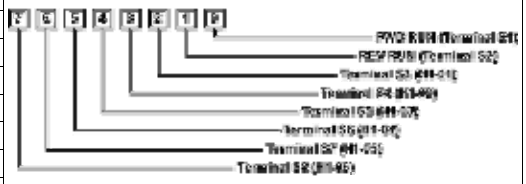
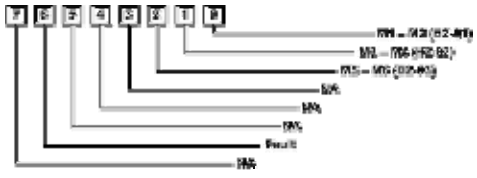
Name	Addr	Function	Bit	Description	Mode				Dep
					V/f	V/f wPG	OLV	FV	
U1-01	0040h	Frequency Ref		Frequency Ref	Q	Q	Q	Q	
U1-02	0041h	Output Freq		Output Freq	Q	Q	Q	Q	
U1-03	0042h	Output Current		Output Current	Q	Q	Q	Q	o2-04
U1-04	0043h	Control Method		Control Method	Q	Q	Q	Q	
U1-05	0044h	Motor Speed		Motor Speed	NA	Q	Q	Q	
U1-06	0045h	Output Voltage		Output Voltage	Q	Q	Q	Q	
U1-07	0046h	DC Bus Voltage		DC Bus Voltage	Q	Q	Q	Q	
U1-08	0047h	Output kWatts		Output kWatts	Q	Q	Q	Q	
U1-09	0048h	Torque Reference		Torque Reference	NA	NA	Q	Q	
U1-10	0049h	Input Term Sts	0h 1h 2h 3h 4h 5h 6h 7h 8h 9h Ah Bh Ch Dh Eh Fh		Q	Q	Q	Q	
U1-11	004Ah	Output Term Sts	0h 1h 2h 3h 4h 5h 6h 7h 8h 9h Ah Bh Ch Dh Eh Fh		Q	Q	Q	Q	

Table 4.4 – Monitor Registers (Read)

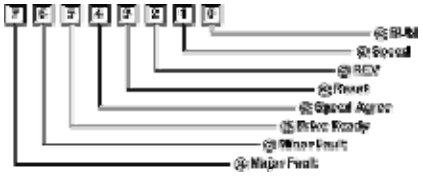
Name	Addr	Function	Bit	Description	Mode				Dep
					V/f	V/f wPG	OLV	FV	
U1-12	004Bh	Int Ctl Sts 1	0h 1h 2h 3h 4h 5h 6h 7h 8h 9h Ah Bh Ch Dh Eh Fh		Q	Q	Q	Q	
U1-13	004Ch	Elapsed Time		Elapsed Time	Q	Q	Q	Q	
U1-14	004Dh	FLASH ID		FLASH ID	Q	Q	Q	Q	
U1-15	004Eh	Term A1 Level		Term A1 Level	B	B	B	B	
U1-16	004Fh	Term A2 Level		Term A2 Level	B	B	B	B	
U1-17	0050h	Term A3 Level		Term A3 Level	A	A	A	A	
U1-18	0051h	Mot SEC Current		Mot SEC Current	B	B	B	B	
U1-19	0052h	Mot EXC Current		Mot EXC Current	NA	NA	B	B	
U1-20	0053h	SFS Output		SFS Output	A	A	A	A	
U1-21	0054h	ASR Input		ASR Input	NA	A	NA	A	
U1-22	0055h	ASR Output		ASR Output	NA	A	NA	A	
U1-24	0057h	PID Feedback		PID Feedback	A	A	A	A	
U1-25	0058h	DI-16 Reference		DI-16 Reference	A	A	A	A	
U1-26	0059h	Voltage Ref (Vq)		Voltage Ref (Vq)	NA	NA	A	A	
U1-27	005Ah	Voltage Ref (Vd)		Voltage Ref (Vd)	NA	NA	A	A	
U1-28	005Bh	CPU ID		CPU ID	A	A	A	A	
U1-29	005Ch	kWh Lower 4 dig		kWh Lower 4 dig	A	A	A	A	
U1-30	005Dh	kWh Upper 5 dig		kWh Upper 5 dig	A	A	A	A	
U1-31	003Ch	LED Oper Check		LED Oper Check	A	A	A	A	
U1-32	005Fh	ACR(q) Output		ACR(q) Output	NA	NA	A	A	
U1-33	0060h	ACR(d) Output		ACR(d) Output	NA	NA	A	A	
U1-34	0061h	OPE Detected		OPE Detected	A	A	A	A	
U1-35	0062h	Zero Servo Pulse		Zero Servo Pulse	NA	NA	NA	A	
U1-36	0063h	PID Input		PID Input	A	A	A	A	
U1-37	0064h	PID Output		PID Output	A	A	A	A	
U1-38	0065h	PID Setpoint		PID Setpoint	A	A	A	A	
U1-39	0066h	Transmit Err		Transmit Err	A	A	A	A	
U1-40	0067h	FAN Elapsed Time		FAN Elapsed Time	A	A	A	A	
U1-44	006Bh	ASR Out w/o Fil		ASR Out w/o Fil	NA	NA	NA	A	
U1-45	006Ch	FF Cout Output		FF Cout Output	NA	NA	NA	A	
U1-90	0720h	CASE Monitor 1		CASE Monitor 1	A	A	A	A	
U1-91	0721h	CASE Monitor 2		CASE Monitor 2	A	A	A	A	
U1-92	0722h	CASE Monitor 3		CASE Monitor 3	A	A	A	A	
U1-93	0723h	CASE Monitor 4		CASE Monitor 4	A	A	A	A	
U1-94	0724h	CASE Monitor 5		CASE Monitor 5	A	A	A	A	
U1-95	0725h	CASE Monitor 6		CASE Monitor 6	A	A	A	A	
U1-96	0726h	CASE Monitor 7		CASE Monitor 7	A	A	A	A	
U1-97	0727h	CASE Monitor 8		CASE Monitor 8	A	A	A	A	
U1-98	0728h	CASE Monitor 9		CASE Monitor 9	A	A	A	A	
U1-99	0729h	CASE Monitor 10		CASE Monitor 10	A	A	A	A	
U2-01	0080h	Current Fault		Current Fault	Q	Q	Q	Q	
U2-02	0081h	Last Fault		Last Fault	Q	Q	Q	Q	
U2-03	0082h	Frequency Ref		Frequency Ref	Q	Q	Q	Q	
U2-04	0083h	Output Freq		Output Freq	Q	Q	Q	Q	
U2-05	0084h	Output Current		Output Current	Q	Q	Q	Q	o2-04
U2-06	0085h	Motor Speed		Motor Speed	NA	Q	Q	Q	
U2-07	0086h	Output Voltage		Output Voltage	Q	Q	Q	Q	

Table 4.4 – Monitor Registers (Read)									
Name	**Addr**	**Function**	**Bit**	**Description**	**Mode**				**Dep**
					V/f	**V/f wPG**	**OLV**	**FV**	
U2-08	0087h	DC Bus Voltage		DC Bus Voltage	Q	Q	Q	Q	
U2-09	0088h	Output kWatts		Output kWatts	Q	Q	Q	Q	
U2-10	0089h	Torque Reference		Torque Reference	NA	NA	Q	Q	
U2-11	008Ah	Input Term Sts		Input Term Sts	Q	Q	Q	Q	
U2-12	008Bh	Output Term Sts		Output Term Sts	Q	Q	Q	Q	
U2-13	008Ch	Inverter Status		Inverter Status	Q	Q	Q	Q	
U2-14	008Dh	Elapsed time		Elapsed time	Q	Q	Q	Q	
U3-01	0090h	Last Fault		Last Fault	Q	Q	Q	Q	
U3-02	0091h	Fault Message 2		Fault Message 2	Q	Q	Q	Q	
U3-03	0092h	Fault Message 3		Fault Message 3	Q	Q	Q	Q	
U3-04	0093h	Fault Message 4		Fault Message 4	Q	Q	Q	Q	
U3-05	0094h	Elapsed Time 1		Elapsed Time 1	Q	Q	Q	Q	
U3-06	0095h	Elapsed Time 2		Elapsed Time 2	Q	Q	Q	Q	
U3-07	0096h	Elapsed Time 3		Elapsed Time 3	Q	Q	Q	Q	
U3-08	0097h	Elapsed Time 4		Elapsed Time 4	Q	Q	Q	Q	
U3-09	0804h	Fault Message 5		Fault Message 5	A	A	A	A	
U3-10	0805h	Fault Message 6		Fault Message 6	A	A	A	A	
U3-11	0806h	Fault Message 7		Fault Message 7	A	A	A	A	
U3-12	0807h	Fault Message 8		Fault Message 8	A	A	A	A	
U3-13	0808h	Fault Message 9		Fault Message 9	A	A	A	A	
U3-14	0809h	Fault Message 10		Fault Message 10	A	A	A	A	
U3-15	080Eh	Elapsed Time 5		Elapsed Time 5	A	A	A	A	
U3-16	080Fh	Elapsed Time 6		Elapsed Time 6	A	A	A	A	
U3-17	0810h	Elapsed Time 7		Elapsed Time 7	A	A	A	A	
U3-18	0811h	Elapsed Time 8		Elapsed Time 8	A	A	A	A	
U3-19	0812h	Elapsed Time 9		Elapsed Time 9	A	A	A	A	
U3-20	0813h	Elapsed Time 10		Elapsed Time 10	A	A	A	A	

Parameters (Read/Write)

The following table lists user accessible parameters for the F7 drive.

- The “Prm” column contains the parameter name.
- The “Addr” column contains the register address in hexadecimal format. F7 drive registers are always referred in hexadecimal format.
- If the parameter values are chosen from a list of possible values, the list of choices can be found in the “Data” column. Parameter limits and a short description of the parameter function is contained in the “+/- Limits - Description” column.
- The “RUN” column describes whether the parameter is able to be written while the RUN command is active.
  - “R” - the parameter is writable during RUN
  - Blank - the parameter is Read Only during RUN.
- The “Mode” columns describe the accessibility and access level for a given control mode (see A1-01 for access levels and A1-02 for control modes).
  - “A” - the parameter requires Advanced access (A1-01 = 2)
  - “Q” - the parameter has Quick access
  - “NA” – the parameter is not accessible
- The “Dep” column shows whether the value, definition or function of the selected parameter is dependent on the setting of another parameter. If there is an “*” in the “Dep” column, refer to the appropriate table at the end of this section.

► A Parameters

Table 4.5 – A Parameters

Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
A1-00	0100h	Select Language	0	English	1	0	R	Q	Q	Q	Q	A1-03
			1	(Japanese)								
			2	Deutsch								
			3	Français								
			4	Italiano								
			5	Español								
			6	Português								
A1-01	0101h	Access Level	0	Operation Only	1	2	R	Q	Q	Q	Q	A1-03
			1	User Level								
			2	Advanced Level								
			3	Basic Level								
			4	Standard Level								
			5	Factory Level								
A1-02	0102h	Control Method	0	V/f	1	2		Q	Q	Q	Q	A1-03
			1	V/f w/ PG								
			2	Open Loop Vector (OLV)								
			3	Flux Vector (FV)								
A1-03	0103h	Init Parameters	0	No Initialize	1	0		Q	Q	Q	Q	A1-03
			1	User Initialize								
			2	2-Wire Initial								
			3	3-Wire Initial								
A1-04	0104h	Enter Password		0 ~ 9999	1	0		Q	Q	Q	Q	A1-03
A1-05	0105h	Select Password		0 ~ 9999	1	0		NA	NA	NA	NA	A1-03
A2-01	0106h	User Param 1		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-02	0107h	User Param 2		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-03	0108h	User Param 3		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-04	0109h	User Param 4		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-05	010Ah	User Param 5		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-06	010Bh	User Param 6		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-07	010Ch	User Param 7		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-08	010Dh	User Param 8		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-09	010Eh	User Param 9		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-10	010Fh	User Param 10		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-11	0110h	User Param 11		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-12	0111h	User Param 12		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-13	0112h	User Param 13		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-14	0113h	User Param 14		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-15	0114h	User Param 15		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-16	0115h	User Param 16		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-17	0116h	User Param 17		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-18	0117h	User Param 18		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-19	0118h	User Param 19		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-20	0119h	User Param 20		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-21	011Ah	User Param 21		0h ~ 5ffh	1h	0h		A	A	A	A	

Table 4.5 – A Parameters

Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
A2-22	011Bh	User Param 22		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-23	011Ch	User Param 23		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-24	011Dh	User Param 24		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-25	011Eh	User Param 25		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-26	011Fh	User Param 26		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-27	0120h	User Param 27		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-28	0121h	User Param 28		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-29	0122h	User Param 29		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-30	0123h	User Param 30		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-31	0124h	User Param 31		0h ~ 5ffh	1h	0h		A	A	A	A	
A2-32	0125h	User Param 32		0h ~ 5ffh	1h	0h		A	A	A	A	

► B Parameters

Table 4.6 – B Parameters

Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
b1-01	0180h	Reference Source	0	Operator	1	1		Q	Q	Q	Q	
			1	Terminals								
			2	Serial Com								
			3	Option PCB								
			4	Pulse Input								
			5	CASE Reference*								
b1-02	0181h	Run Source	0	Operator	1	1		Q	Q	Q	Q	
			1	Terminals								
			2	Serial Com								
			3	Option PCB								
			4	EWS								
			5	CASE Sequence*								
b1-03	0182h	Stopping Method	0	Ramp to Stop	1	0		Q	Q	Q	Q	
			1	Coast to Stop								
			2	DCInj to Stop								
			3	Coast w/Timer								
b1-04	0183h	Reverse Oper	0	Enabled	1	0		A	A	A	A	
			1	Disabled								
b1-05	0184h	Zero-Speed Oper	0	RUN at Freq Ref	1	0		NA	NA	NA	A	
			1	STOP								
			2	RUN at Min Freq								
			3	RUN at Zero RPM								
b1-06	0185h	Cntl Input Scans	0	2mS - 2 Scans	1	1		A	A	A	A	
			1	5mS - 2 Scans								
b1-07	0186h	LOC/REM RUN Sel	0	Cycle Extrn RUN	1	0		A	A	A	A	
			1	Accept Extrn RUN								
b1-08	0187h	RUN CMD at PRG	0	Disabled	1	0		A	A	A	A	
			1	Enabled								
b2-01	0189h	DCInj Start Freq		0.0 ~ 10.0 Hz	0.1 Hz	0.5 Hz		A	A	A	A	
b2-02	018Ah	DCInj Current		0 ~ 100 %	1 %	50 %		A	A	A	NA	
b2-03	018Bh	DCInj Time@Start		0.0 ~ 10.0 Sec	0.01 Sec	0.0 Sec		A	A	A	A	
b2-04	018Ch	DCInj Time@Stop		0.0 ~ 10.0 Sec	0.01 Sec	0.5 Sec		A	A	A	A	
b2-08	0190h	Field Comp		0 ~ 1000 %	1 %	0 %		NA	NA	A	NA	
b3-01	0191h	SpdSrch at Start	0	SpdsrchF Disable	1	2		A	A	A	NA	A1-02
			1	SpdsrchF Enable								
			2	SpdsrchI Disable								
			3	SpdsrchI Enable								
b3-02	0192h	SpdSrch Current		0 ~ 200 %	1 %	120 %		A	NA	A	NA	A1-02
b3-03	0193h	SpdSrch Dec Time		0.1 ~ 10.0 Sec	0.1 Sec	2.0 Sec		A	NA	A	NA	
b3-04	0194h	SpdSrch V/F		10 ~ 100 %	1 %	100 %		NA	NA	NA	NA	
b3-05	0195h	Search Delay		0.0 ~ 20.0 Sec	0.1 Sec	0.2 Sec		A	A	A	A	
b3-10	019Ah	Srch Detect Comp		1.0 ~ 1.2	0.01	1.1		A	NA	A	NA	
b3-14	019Eh	Bidir Search Sel	0	Disabled	1	1		A	A	A	NA	
			1	Enabled								
b4-01	01A3h	Delay-ON Timer		0.0 ~ 3000.0 Sec	0.1 Sec	0.0 Sec		A	A	A	A	
b4-02	01A4h	Delay-OFF Timer		0.0 ~ 3000.0 Sec	0.1 Sec	0.0 Sec		A	A	A	A	
b5-01	01A5h	PID Mode	0	Disabled	1	0		A	A	A	A	
			1	Enabled								
			2	Enabled								
			3	Fref+PI								
			4	Fref+PI								
b5-02	01A6h	PID Gain		0.0 ~ 25.0	0.01	1	R	A	A	A	A	
b5-03	01A7h	PID I Time		0.0 ~ 360.0 Sec	0.1 Sec	1.0 Sec	R	A	A	A	A	

Table 4.6 – B Parameters

Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
b5-04	01A8h	PID I Limit		0.0 ~ 100.0 %	0.1 %	100.00 %	R	A	A	A	A	
b5-05	01A9h	PID D Time		0.0 ~ 10.0 Sec	0.01 Sec	0.0 Sec	R	A	A	A	A	
b5-06	01AAh	PID Limit		0.0 ~ 100.0 %	0.1 %	100.00 %	R	A	A	A	A	
b5-07	01ABh	PID Offset		-100.0 ~ 100.0 %	0.1 %	0.00 %	R	A	A	A	A	
b5-08	01ACh	PID Delay Time		0.0 ~ 10.0 Sec	0.01 Sec	0.0 Sec	R	A	A	A	A	
b5-09	01ADh	Output Level Sel	0	Normal Output	1	0		A	A	A	A	
			1	Reverse Output								
b5-10	01AEh	Output Gain		0.0 ~ 25.0	0.1	1		A	A	A	A	
b5-11	01AFh	Output Rev Sel	0	0 limit	1	0		A	A	A	A	
			1	Reverse								
b5-12	01B0h	Fb los Det Sel	0	Disabled	1	0		A	A	A	A	
			1	Alarm								
			2	Fault								
b5-13	01B1h	Fb los Det Lvl		0 ~ 100 %	1 %	0 %		A	A	A	A	
b5-14	01B2h	Fb los Det Time		0.0 ~ 25.5 Sec	0.1 Sec	1.0 Sec		A	A	A	A	
b5-15	01B3h	PID Sleep Level		0.0 ~ 400.0 Hz	0.1 Hz	0.0 Hz		A	A	A	A	
b5-16	01B4h	PID Sleep Time		0.0 ~ 25.5 Sec	0.1 Sec	0.0 Sec		A	A	A	A	
b5-17	01B5h	PID Acc/Dec Time		0.0 ~ 25.5 Sec	0.1 Sec	0.0 Sec		A	A	A	A	
b5-18	01DCh	PID Setpoint Sel	0	Disabled	1	0		A	A	A	A	
			1	Enabled								
b5-19	01DDh	PID Setpoint		0.0 ~ 100.0 %	0.1 %	0.00 %		A	A	A	A	
b6-01	01B6h	Dwell Ref @Start		0.0 ~ 400.0 Hz	0.1 Hz	0.0 Hz		A	A	A	A	
b6-02	01B7h	Dwell Time@Start		0.0 ~ 10.0 Sec	0.1 Sec	0.0 Sec		A	A	A	A	
b6-03	01B8h	Dwell Ref @Stop		0.0 ~ 400.0 Hz	0.1 Hz	0.0 Hz		A	A	A	A	
b6-04	01B9h	Dwell Time @Stop		0.0 ~ 10.0 Sec	0.1 Sec	0.0 Sec		A	A	A	A	
b7-01	01CAh	Droop Quantity		0.0 ~ 100.0 %	0.1 %	0.00 %	R	NA	NA	NA	A	
b7-02	01CBh	Droop Delay Time		0.03 ~ 2.0 Sec	0.01 Sec	0.05 Sec	R	NA	NA	NA	A	
b8-01	01CCh	Energy Save Sel	0	Disabled	1	0		A	A	A	A	
			1	Enabled								
b8-02	01CDh	Energy Save Gain		0.0 ~ 10.0	0.1	0.7	R	NA	NA	A	A	A1-02
b8-03	01CEh	Energy Save F.T		0.0 ~ 10.0 Sec	0.01 Sec	0.5 Sec	R	NA	NA	A	A	A1-02
b8-04	01CFh	Energy Save COEF		0.0 ~ 655.0	0.01	288.2		A	A	NA	NA	
b8-05	01D0h	kW Filter Time		0 ~ 2000 ms	1 ms	20 ms		A	A	NA	NA	
b8-06	01D1h	Search V Limit		0 ~ 100 %	1 %	0 %		A	A	NA	NA	
b9-01	01DAh	Zero Servo Gain		0 ~ 100	1	5		NA	NA	NA	A	
b9-02	01DBh	Zero Servo Count		0 ~ 16383	1	10		NA	NA	NA	A	

* Available only when enabled via CASE

► C Parameters

Table 4.7 – C Parameters

Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
C1-01	0200h	Accel Time 1		0.0 ~ 6000.0 Sec	0.1 Sec	10.0 Sec	R	Q	Q	Q	Q	C1-10
C1-02	0201h	Decel Time 1		0.0 ~ 6000.0 Sec	0.1 Sec	10.0 Sec	R	Q	Q	Q	Q	C1-10
C1-03	0202h	Accel Time 2		0.0 ~ 6000.0 Sec	0.1 Sec	10.0 Sec	R	A	A	A	A	C1-10
C1-04	0203h	Decel Time 2		0.0 ~ 6000.0 Sec	0.1 Sec	10.0 Sec	R	A	A	A	A	C1-10
C1-05	0204h	Accel Time 3		0.0 ~ 6000.0 Sec	0.1 Sec	10.0 Sec		A	A	A	A	C1-10
C1-06	0205h	Decel Time 3		0.0 ~ 6000.0 Sec	0.1 Sec	10.0 Sec		A	A	A	A	C1-10
C1-07	0206h	Accel Time 4		0.0 ~ 6000.0 Sec	0.1 Sec	10.0 Sec		A	A	A	A	C1-10
C1-08	0207h	Decel Time 4		0.0 ~ 6000.0 Sec	0.1 Sec	10.0 Sec		A	A	A	A	C1-10
C1-09	0208h	Fast Stop Time		0.0 ~ 6000.0 Sec	0.1 Sec	10.0 Sec		A	A	A	A	C1-10
C1-10	0209h	Acc/Dec Units	0	0.01 Seconds	1	1		A	A	A	A	
			1	0.1 Seconds								
C1-11	020Ah	Acc/Dec SW Freq		0.0 ~ 400.0 Hz	0.1 Hz	0.0 Hz		A	A	A	A	
C2-01	020Bh	SCrv Acc @ Start		0.0 ~ 2.5 Sec	0.01 Sec	0.2 Sec		A	A	A	A	
C2-02	020Ch	SCrv Acc @ End		0.0 ~ 2.5 Sec	0.01 Sec	0.2 Sec		A	A	A	A	
C2-03	020Dh	SCrv Dec @ Start		0.0 ~ 2.5 Sec	0.01 Sec	0.2 Sec		A	A	A	A	
C2-04	020Eh	SCrv Dec @ End		0.0 ~ 2.5 Sec	0.01 Sec	0.0 Sec		A	A	A	A	
C3-01	020Fh	Slip Comp Gain		0.0 ~ 2.5	0.1	1	R	A	NA	A	A	A1-02
C3-02	0210h	Slip Comp Time		0 ~ 10000 ms	1 ms	200 ms		A	NA	A	NA	A1-02
C3-03	0211h	Slip Comp Limit		0 ~ 250 %	1 %	200 %		A	NA	A	NA	
C3-04	0212h	Slip Comp Regen	0	Disabled	1	0		A	NA	A	NA	
			1	Enabled								
C3-05	0213h	V/F Slip Cmp Sel	0	Disabled	1	0		NA	NA	A	A	
			1	Enabled								
C4-01	0215h	Torq Comp Gain		0.0 ~ 2.5	0.01	1	R	A	A	A	NA	
C4-02	0216h	Torq Comp Time		0 ~ 10000 ms	1 ms	20 ms		A	A	A	NA	A1-02
C4-03	0217h	F TorqCmp@start		0.0 ~ 200.0 %	0.1 %	0.00 %		NA	NA	A	NA	

Table 4.7 – C Parameters

Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
C4-04	0218h	R TorqCmp@start		-200.0 ~ 0.0 %	0.1 %	0.00 %		NA	NA	A	NA	
C4-05	0219h	TorqCmp Delay T		0 ~ 200 ms	1 ms	10 ms		NA	NA	A	NA	
C5-01	021Bh	ASR P Gain 1		1.00 ~ 300.00	0.01	20.00	R	NA	A	NA	A	A1-02
C5-02	021Ch	ASR I Time 1		0.0 ~ 10.000 Sec	0.001 Sec	0.500 Sec	R	NA	A	NA	A	A1-02
C5-03	021Dh	ASR P Gain 2		1.00 ~ 300.00	1	20.00	R	NA	A	NA	A	A1-02
C5-04	021Eh	ASR I Time 2		0.0 ~ 10.000 Sec	0.001 Sec	0.500 Sec	R	NA	A	NA	A	A1-02
C5-06	0220h	ASR Delay Time		0.000~ 0.500 Sec	0.001 Sec	0.004 Sec		NA	NA	NA	A	A1-02
C5-07	0221h	ASR Gain SW Freq		0.0 ~ 400.0 Hz	0.1 Hz	0.0 Hz		NA	NA	NA	A	A1-02
C5-08	0222h	ASR I Limit		0 ~ 400 %	1 %	400 %		NA	NA	NA	A	
C6-01	0223h	Heavy/NormalDuty	0	Heavy Duty	1	1		A	A	A	A	
			1	Normal Duty 1								
			2	Normal Duty 2								
C6-02	0224h	CarrierFreq Sel	0	Low Noise	1	6h		Q	Q	Q	Q	C6-03 C6-04 o2-04
			1	Fc=2.0 kHz								
			2	Fc=5.0 kHz								
			3	Fc=8.0 kHz								
			4	Fc=10.0 kHz								
			5	Fc=12.5 kHz								
			6	Fc=15.0 kHz								
			15	Program								
C6-03	0225h	CarrierFreq Max		0.4 ~ 15.0 kHz	0.1 kHz	2.0 kHz		A	A	A	A	o2-04
C6-04	0226h	CarrierFreq Min	0	Heavy Duty	0.1 kHz	2.0 kHz		A	A	NA	NA	o2-04
			1	Normal Duty								
C6-05	0227h	CarrierFreq Gain		0 ~ 99	1	0		A	A	NA	NA	

► D Parameters

Table 4.8 – D Parameters

Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
d1-01	0280h	Reference 1		0.0 ~ 400.0 Hz	0.01 Hz	0.0 Hz	R	Q	Q	Q	Q	
d1-02	0281h	Reference 2		0.0 ~ 400.0 Hz	0.01 Hz	0.0 Hz	R	Q	Q	Q	Q	
d1-03	0282h	Reference 3		0.0 ~ 400.0 Hz	0.01 Hz	0.0 Hz	R	Q	Q	Q	Q	
d1-04	0283h	Reference 4		0.0 ~ 400.0 Hz	0.01 Hz	0.0 Hz	R	Q	Q	Q	Q	
d1-05	0284h	Reference 5		0.0 ~ 400.0 Hz	0.01 Hz	0.0 Hz	R	A	A	A	A	
d1-06	0285h	Reference 6		0.0 ~ 400.0 Hz	0.01 Hz	0.0 Hz	R	A	A	A	A	
d1-07	0286h	Reference 7		0.0 ~ 400.0 Hz	0.01 Hz	0.0 Hz	R	A	A	A	A	
d1-08	0287h	Reference 8		0.0 ~ 400.0 Hz	0.01 Hz	0.0 Hz	R	A	A	A	A	
d1-09	0288h	Reference 9		0.0 ~ 400.0 Hz	0.01 Hz	0.0 Hz	R	A	A	A	A	
d1-10	028Bh	Reference 10		0.0 ~ 400.0 Hz	0.01 Hz	0.0 Hz	R	A	A	A	A	
d1-11	028Ch	Reference 11		0.0 ~ 400.0 Hz	0.01 Hz	0.0 Hz	R	A	A	A	A	
d1-12	028Dh	Reference 12		0.0 ~ 400.0 Hz	0.01 Hz	0.0 Hz	R	A	A	A	A	
d1-13	028Eh	Reference 13		0.0 ~ 400.0 Hz	0.01 Hz	0.0 Hz	R	A	A	A	A	
d1-14	028Fh	Reference 14		0.0 ~ 400.0 Hz	0.01 Hz	0.0 Hz	R	A	A	A	A	
d1-15	0290h	Reference 15		0.0 ~ 400.0 Hz	0.01 Hz	0.0 Hz	R	A	A	A	A	
d1-16	0291h	Reference 16		0.0 ~ 400.0 Hz	0.01 Hz	0.0 Hz	R	A	A	A	A	
d1-17	0292h	Jog Reference		0.0 ~ 400.0 Hz	0.01 Hz	6.0 Hz	R	Q	Q	Q	Q	
d2-01	0289h	Ref Upper Limit		0.0 ~ 110.0 %	0.1 %	100.00 %		A	A	A	A	
d2-02	028Ah	Ref Lower Limit		0.0 ~ 110.0 %	0.1 %	0.00 %		A	A	A	A	
d2-03	0293h	Ref1 Lower Limit		0.0 ~ 110.0 %	0.1 %	0.00 %		A	A	A	A	
d3-01	0294h	Jump Freq 1		0.0 ~ 400.0 Hz	0.1 Hz	0.0 Hz		A	A	A	A	
d3-02	0295h	Jump Freq 2		0.0 ~ 400.0 Hz	0.1 Hz	0.0 Hz		A	A	A	A	
d3-03	0296h	Jump Freq 3		0.0 ~ 400.0 Hz	0.1 Hz	0.0 Hz		A	A	A	A	
d3-04	0297h	Jump Bandwidth		0.0 ~ 20.0 Hz	0.1 Hz	1.0 Hz		A	A	A	A	
d4-01	0298h	MOP Ref Memory	0	Disabled	1	0		A	A	A	A	
			1	Enabled								
d4-02	0299h	Trim Control Lvl		0 ~ 100 %	1 %	10 %		A	A	A	A	
d5-01	029Ah	Torq Control Sel	0	Speed Control	1	0 ms		NA	NA	NA	A	
			1	Torque Control								
d5-02	029Bh	Torq Ref Filter		0 ~ 1000 ms	1 ms	0 ms		NA	NA	NA	A	A1-02
d5-03	029Ch	Speed Limit Sel	0	Disabled	1	1		NA	NA	NA	A	
			1	Analog Input								
			2	Program Setting								
d5-04	029Dh	Speed Lmt Value		-120 ~ 120 %	1 %	0 %		NA	NA	NA	A	
d5-05	029Eh	Speed Lmt Bias		0 ~ 120 %	1 %	10 %		NA	NA	NA	A	
d5-06	029Fh	Ref Hold Time		0 ~ 1000 ms	1 ms	0 ms		NA	NA	NA	A	
d6-01	02A0h	Field-Weak Lvl		0 ~ 100 %	1 %	80 %		A	A	NA	NA	
d6-02	02A1h	Field-Weak Freq		0.0 ~ 400.0 Hz	0.1 Hz	0.0 Hz		A	A	NA	NA	
d6-03	02A2h	Field Force Sel	0	Disabled	1	0		NA	NA	A	A	
			1	Enabled								

Table 4.8 – D Parameters												
Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
d6-06	02A5h	FieldForce Limit		100 ~ 400 %	1 %	400 %		NA	NA	A	A	

► E Parameters

Table 4.9 – E Parameters												
Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
E1-01	0300h	Input Voltage		155 ~ 255 VAC	1 VAC	200 VAC		Q	Q	Q	Q	A1-02
E1-03	0302h	V/F Selection	0h	50 Hz	1	0fh		Q	Q	NA	NA	A1-03 A1-02
			1h	60 Hz Saturation								
			2h	50 Hz Saturation								
			3h	72 Hz								
			4h	50 Hz VT1								
			5h	50 Hz VT2								
			6h	60 Hz VT1								
			7h	60 Hz VT2								
			8h	50 Hz HST1								
			9h	50 Hz HST2								
			Ah	60 Hz HST1								
			Bh	60 Hz HST2								
			Ch	90 Hz								
			Dh	120 Hz								
			Eh	180 Hz								
			Fh	Custom V/F								
			FFh	Custom w/o limit								
E1-04	0303h	Max Frequency		40.0 ~ 400.0 Hz	0.1 Hz	60.0 Hz		Q	Q	Q	Q	A1-02
E1-05	0304h	Max Voltage		0.0 ~ 255.0 VAC	0.1 VAC	230.0 VAC		Q	Q	Q	Q	A1-02
E1-06	0305h	Base Frequency		0.0 ~ 400.0 Hz	0.1 Hz	60.0 Hz		Q	Q	Q	Q	A1-02
E1-07	0306h	Mid Frequency A		0.0 ~ 400.0 Hz	0.1 Hz	3.0 Hz		A	A	A	NA	A1-02
E1-08	0307h	Mid Voltage A		0.0 ~ 255.0 VAC	0.1 VAC	13.0 VAC		A	A	A	NA	A1-02
E1-09	0308h	Min Frequency		0.0 ~ 400.0 Hz	0.1 Hz	1.5 Hz		Q	Q	Q	A	A1-02
E1-10	0309h	Min Voltage		0.0 ~ 255.0 VAC	0.1 VAC	9.0 VAC		A	A	A	NA	A1-02
E1-11	030Ah	Mid Frequency B		0.0 ~ 400.0 Hz	0.1 Hz	0.0 Hz		A	A	A	A	A1-02
E1-12	030Bh	Mid Voltage B		0.0 ~ 255.0 VAC	0.1 VAC	0.0 VAC		A	A	A	A	A1-02
E1-13	030Ch	Base Voltage		0.0 ~ 255.0 VAC	0.1 VAC	230.0 VAC		A	A	Q	Q	A1-02
E2-01	030Eh	Motor Rated FLA		0.1 ~ 1500.0 A	0.1 A	14.0 A		Q	Q	Q	Q	o2-04
E2-02	030Fh	Motor Rated Slip		0.0 ~ 20.0 Hz	0.01 Hz	3.3 Hz		A	A	A	A	
E2-03	0310h	No-Load Current		0.0 ~ 1500.0 A	0.1 A	4.5 A		A	A	A	A	o2-04
E2-04	0311h	Number of Poles		2 ~ 48	1	4		NA	Q	NA	Q	
E2-05	0312h	Term Resistance		0.0 ~ 65.0 Ohm	0.1 Ohm	0.771 Ohm		A	A	A	A	
E2-06	0313h	Leak Inductance		0.0 ~ 40.0 %	0.1 %	19.60 %		NA	NA	A	A	
E2-07	0314h	Saturation Comp1		0.0 ~ 0.5	0.01	0		NA	NA	A	A	
E2-08	0315h	Saturation Comp2		0.0 ~ 0.75	0.01	0		NA	NA	A	A	
E2-09	0316h	Mechanical Loss		0.0 ~ 10.0 %	0.1 %	0.00 %		NA	NA	A	A	
E2-10	0317h	Tcomp Iron Loss		0 ~ 65535 W	1 W	0 W		A	A	NA	NA	
E2-11	0318h	Mtr Rated Power		0.0 ~ 650.0 kW	0.01 kW	0.4 kW		Q	Q	Q	Q	
E2-12	0328h	Saturation Comp3		1.3 ~ 1.6	0.01	1.3		NA	NA	A	A	
E3-01	0319h	Control Method	0	V/f	1	2		A	A	A	A	
			1	V/f w/ PG								
			2	Open Loop Vector(OLV)								
			3	Flux Vector (FV)								
E3-02	031Ah	Max Frequency		40.0 ~ 400.0 Hz	0.1 Hz	60.0 Hz		A	A	A	A	
E3-03	031Bh	Max Voltage		0.0 ~ 255.0 VAC	0.1 VAC	230.0 VAC		A	A	A	A	E3-01
E3-04	031Ch	Base Frequency		0.0 ~ 400.0 Hz	0.1 Hz	60.0 Hz		A	A	A	A	
E3-05	031Dh	Mid Frequency		0.0 ~ 400.0 Hz	0.1 Hz	3.0 Hz		A	A	A	NA	
E3-06	031Eh	Mid Voltage		0.0 ~ 255.0 VAC	0.1 VAC	10.0 VAC		A	A	A	NA	E3-01
E3-07	031Fh	Min Frequency		0.0 ~ 400.0 Hz	0.1 Hz	0.5 Hz		A	A	A	A	
E3-08	0320h	Min Voltage		0.0 ~ 255.0 VAC	0.1 VAC	1.7 VAC		A	A	A	NA	E3-01
E4-01	0321h	Motor Rated FLA		0.0 ~ 1500.0 A	0.1 A	0.0 A		A	A	A	A	o2-04
E4-02	0322h	Motor Rated Slip		0.0 ~ 20.0 Hz	0.01 Hz	0.0 Hz		A	A	A	A	
E4-03	0323h	No-Load Current		0.0 ~ 1500.0 A	0.1 A	0.0 A		A	A	A	A	o2-04
E4-04	0324h	Number of Poles		2 ~ 48	1	4		NA	A	NA	A	
E4-05	0325h	Term Resistance		0.0 ~ 65.0 Ohm	0.1 Ohm	0.0 Ohm		A	A	A	A	
E4-06	0326h	Leak Inductance		0.0 ~ 40.0 %	0.1 %	0.00 %		NA	NA	A	A	
E4-07	0327h	Mtr Rated Power		0.0 ~ 650.0 kW	0.01 kW	0.4 kW		A	A	A	A	

► F Parameters

Table 4.10 F Parameters

Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
F1-01	0380h	PG Pulses/Rev		0 ~ 60000	1	600		NA	Q	NA	Q	
F1-02	0381h	PG Fdbk Loss Sel	0	Ramp to Stop	1	1		NA	A	NA	A	
			1	Coast to Stop								
			2	Fast-Stop								
			3	Alarm Only								
F1-03	0382h	PG Overspeed Sel	0	Ramp to Stop	1	1		NA	A	NA	A	
			1	Coast to Stop								
			2	Fast-Stop								
			3	Alarm Only								
F1-04	0383h	PG Deviation Sel	0	Ramp to Stop	1	3		NA	A	NA	A	
			1	Coast to Stop								
			2	Fast-Stop								
			3	Alarm Only								
F1-05	0384h	PG Rotation Sel	0	Fwd = C.C.W.	1	0		NA	A	NA	A	
			1	Fwd = C.W.								
F1-06	0385h	PG Output Ratio		1 ~ 132	1	1		NA	A	NA	A	
F1-07	0386h	PG Ramp PI/I Sel	0	Disabled	1	0		NA	A	NA	NA	
			1	Enabled								
F1-08	0387h	PG Overspd Level		0 ~ 120 %	1 %	115 %		NA	A	NA	A	
F1-09	0388h	PG Overspd Time		0.0 ~ 2.0 Sec	0.1 Sec	1.0 Sec		NA	A	NA	A	A1-02
F1-10	0389h	PG Deviate Level		0 ~ 50 %	1 %	10 %		NA	A	NA	A	
F1-11	038Ah	PG Deviate Time		0.0 ~ 10.0 Sec	0.1 Sec	0.5 Sec		NA	A	NA	A	
F1-12	038Bh	PG # Gear Teeth1		0 ~ 1000	1	0		NA	A	NA	NA	
F1-13	038Ch	PG # Gear Teeth2		0 ~ 1000	1	0		NA	A	NA	NA	
F1-14	038Dh	PGO Detect Time		0.0 ~ 10.0 Sec	0.1 Sec	2.0 Sec		NA	A	NA	A	
F2-01	038Fh	AI-14 Input Sel	0	A Display	1	0		A	A	A	A	
			1	100 % / 8192								
F3-01	0390h	DI Input	0	BCD	1 %	0		A	A	A	A	
			1	BCD	0.1 %							
			2	BCD	0.01 %							
			3	BCD	1 Hz							
			4	BCD	0.1 Hz							
			5	BCD	0.01 Hz							
			6	BCD(5DG)	0.01 Hz							
			7	Binary	1 Bit							
			8	Bin	0.01 Hz							
F4-01	0391h	AO Ch1 Select	0	Std Fan Cooled	1	02h		A	A	A	A	
			1	Std BlowerCooled								
			2	Vector Motor								
			3	Frequency Ref								
			4	Output Freq								
			5	Output Current								
			6	Control Method								
			7	Motor Speed								
			8	Output Voltage								
			9	DC Bus Voltage								
			10	Output kWatts								
			11	Torque Reference								
			12	Input Term Sts								
			13	Output Term Sts								
			14	Int Ctl Sts 1								
			15	Elapsed Time								
			16	FLASHID								
			17	Term A1 Level								
			18	Term A2 Level								
			19	Term A3 Level								
			20	Mot SEC Current								
			21	Mot EXC Current								
			22	SFS Output								
			23	ASR Input								
			24	ASR Output								
			25	Speed Deviation								
			26	PI Feedback								
			27	DI-16 Reference								
			28	Voltage Ref (Vq)								
			29	Voltage Ref (Vd)								
			30	CPU ID								
			31	LCD Oper Check								
			32	Not Used								
			33	ACR(q) Output								
			34	ACR(d) Output								

Table 4.10 F Parameters

Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
			35	OPE Detected								
			36	Zero Servo Pulse								
			37	PI Input								
			38	PI Output								
			39	PI Setpoint								
			40	Transmit Err								
			41	FAN Elapsed Time								
			42	Actual Fin Temp								
			43	C Elapsed Time								
			44	Auto Mode Fref								
			45	Hand Mode Fref								
			46	PI Feedback 2								
			47	Reserved Mon 1								
			48	Reserved Mon 2								
			49	Reserved Mon 3								
			50	Reserved Mon 4								
			51	Reserved Mon 5								
F4-01	0391h	AO Ch1 Select	52	Reserved Mon 6	1	02h		A	A	A	A	
			53	Reserved Mon 7								
			54	Reserved Mon 8								
			55	Reserved Mon 9								
			56	Reserved Mon 10								
			57	Reserved Mon 11								
			58	Reserved Mon 4								
			59	Reserved Mon 4								
			60	Reserved Mon 4								
			61	Reserved Mon 4								
			62	Reserved Mon 4								
			63	Reserved Mon 4								
			64	Reserved Mon 4								
			65	CASE Monitor 1								
			66	CASE Monitor 2								
			67	CASE Monitor 3								
			68	CASE Monitor 4								
			69	CASE Monitor 5								
F4-02	0392h	AO Ch1 Gain		0.0 ~ 1000.0 %	0.1 %	100.00 %	R	A	A	A	A	
F4-03	0393h	AO Ch2 Select		See F4-01	1	03h		A	A	A	A	
F4-04	0394h	AO Ch2 Gain		0.0 ~ 1000.0 %	0.1 %	50.00 %	R	A	A	A	A	
F4-05	0395h	AO Ch1 Bias		-110.0 ~ 110.0 %	0.1 %	0.00 %	R	A	A	A	A	
F4-06	0396h	AO Ch2 Bias		-110.0 ~ 110.0 %	0.1 %	0.00 %	R	A	A	A	A	
F4-07	0397h	AO Opt Level Ch1	0	0-10 VDC	1	0		A	A	A	A	
			1	-10 +10 VDC								
F4-08	0398h	AO Opt Level Ch2	0	0-10 VDC	1	0		A	A	A	A	
			1	-10 +10 VDC								
			0	During RUN 1								
			1	Zero Speed								
			2	Fref/Fout Agree1								
			3	Fref/Set Agree 1								
			4	Freq Detect 1								
			5	Freq Detect 2								
			6	Inverter Ready								
			7	DC Bus Undervolt								
			8	BaseBlk 1								
			9	Option Reference								
			10	Remote/Auto Oper								
			11	Trq Det 1 N.O.								
			12	Loss of Ref								
			13	DB Overheat								
F5-01	0399h	DO Ch1 Select	14	Fault	1	00h		A	A	A	A	
			15	Not Used								
			16	Minor Fault								
			17	Reset Cmd Active								
			18	Timer Output								
			19	Fref/Fout Agree2								
			20	Fref/Set Agree 2								
			21	Freq Detect 3								
			22	Freq Detect 4								
			23	Trq Det 1 N.C.								
			24	Trq Det 2 N.O.								
			25	Trq Det 2 N.C.								
			26	Reverse Dir								
			27	BaseBlk 2								
			28	Motor 2 Selected								
			29	Regenerating								

Table 4.10 F Parameters

Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
F5-01	0399h	DO Ch1 Select	30	Restart Enabled	1	00h		A	A	A	A	
			31	Overload (OL1)								
			32	OHPrealarm								
			33	Torque Limit								
			34	Speed Limit								
			35	Zero Servo End								
			36	During RUN 2								
			37	Drive Enable								
			38	Waiting to Run								
			39	OHFreq Reduce								
			40	Run Src Com/Opt								
			41	Reserved 1								
			42	Reserved 2								
F5-02	039Ah	DO Ch2 Select		See F5-01	1	01h		A	A	A	A	
F5-03	039Bh	DO Ch3 Select		See F5-01	1	02h		A	A	A	A	
F5-04	039Ch	DO Ch4 Select		See F5-01	1	04h		A	A	A	A	
F5-05	039Dh	DO Ch5 Select		See F5-01	1	06h		A	A	A	A	
F5-06	039Eh	DO Ch6 Select		See F5-01	1	37h		A	A	A	A	
F5-07	039Fh	DO Ch7 Select		See F5-01	1	0fh		A	A	A	A	
F5-08	03A0h	DO Ch8 Select		See F5-01	1	0fh		A	A	A	A	
F5-09	03A1h	DO-08 Selection	0	8ch Individual	1	0		A	A	A	A	
			1	Binary Output								
			2	8ch Selected								
F6-01	03A2h	Comm Bus Flt Sel	0	Ramp to Stop	1	1		A	A	A	A	
			1	Coast to Stop								
			2	Fast-Stop								
			3	Alarm Only								
F6-02	03A3h	EF0 Detection	0	Always Detected	1	0		A	A	A	A	
			1	Only During Run								
F6-03	03A4h	EF0 Fault Action	0	Ramp to Stop	1	1		A	A	A	A	
			1	Coast to Stop								
			2	Fast-Stop								
			3	Alarm Only								
F6-04	03A5h	Trace Sample Tim		0 ~ 60000	1	0		A	A	A	A	
F6-05	03A6h	Current Unit Sel	0	A Display	1	0		A	A	A	A	
			1	100 %/8192								
F6-06	03A7h	Torq Ref/Lmt Sel	0	Disabled	1	0		NA	NA	NA	A	
			1	Enabled								

► H Parameters

Table 4.11 – H Parameters

Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
H1-01	0400h	Terminal S3 Sel	0	3-Wire Control	1	24h		A	A	A	A	
			1	Local/Remote Sel								
			2	Option/Inv Sel								
			3	Multi-Step Ref 1								
			4	Multi-Step Ref 2								
			5	Multi-Step Ref 3								
			6	Jog Freq Ref								
			7	Multi-Acc/Dec 1								
			8	Ext BaseBlk N.O.								
			9	Ext BaseBlk N.C.								
			10	Acc/Dec RampHold								
			11	OH2 Alarm Signal								
			12	Term A2 Enable								
			13	V/F Mode Select								
			14	ASR Intgrl Reset								
			15	Term Not Used								
			16	MOP Increase								
			17	MOP Decrease								
			18	Forward Jog								
			19	Reverse Jog								
			20	Fault Reset								
			21	Fast-Stop N.O.								
			22	Motor 2 Select								
			23	Fast-Stop N.C.								
			24	Timer Function								
			25	PI Disable								
			26	Multi-Acc/Dec 2								
			27	Program Lockout								
			28	TrimCtl Increase								
			29	TrimCtl Decrease								
			30	Ref Sample Hold								
			31	Term A1/A2 Swtch								
			32	External Fault								
			33	External Fault								
			34	External Fault								
			35	External Fault								
			36	External Fault								
			37	External Fault								
			38	External Fault								
			39	External Fault								
			40	External Fault								
			41	External Fault								
			42	External Fault								
			43	External Fault								
			44	External Fault								
			45	External Fault								
			46	External Fault								
			47	External Fault								
			48	PI Intgrl Reset								
			49	PI Intgrl Hold								
			50	Multi-Step Ref 4								
			51	NA								
			52	PI SFS Cancel								
			53	Input Level Sel								
			54	Option/Inv Sel 2								
			55	NA								
			56	Motor Preheat								
			57	Speed Search 1								
			58	Speed Search 2								
			59	Energy Save Mode								
			60	Speed Search 3								
			61	KEB Ridethru NC								
			62	KEB Ridethru NO								
			63	Comm Test Mode								
			64	HighSlipBraking								
			65	JOG2								
			66	Drive Enable								
			67	Com/Inv Sel								
			68	Com/Inv Sel 2								
			69	AUTO Mode Sel								
			70	HAND Mode Sel								

Table 4.11 – H Parameters

Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
H1-01	0400h	Terminal S3 Sel	71	Meintenance Sel	1	24h		A	A	A	A	
			72	Bypass Drv Enbl								
			73	Spd/Trq Ctl Chng								
			74	Zero Servo Cmd								
			75	NA								
			76	ASR Intgrl Hold								
			77	NA								
			78	NA								
			79	ASR Gain Switch								
			80	CASE DI 1								
			81	CASE DI 2								
			82	CASE DI 3								
			83	CASE DI 4								
			84	CASE DI 5								
			85	CASE DI 6								
			86	CASE DI 7								
			87	CASE DI 8								
H1-02	0401h	Terminal S4 Sel		See H1-01	1	14h		A	A	A	A	
H1-03	0402h	Terminal S5 Sel		See H1-01	1	03h		A	A	A	A	
H1-04	0403h	Terminal S6 Sel		See H1-01	1	04h		A	A	A	A	
H1-05	0404h	Terminal S7 Sel		See H1-01	1	06h		A	A	A	A	
H1-06	0405h	Terminal S8 Sel		See H1-01	1	08h		A	A	A	A	
H2-01	040Bh	Term M1-M2 Sel	0	During RUN 1	1	0h		A	A	A	A	
			1	Zero Speed								
			2	Fref/Fout Agree1								
			3	Fref/Set Agree 1								
			4	Freq Detect 1								
			5	Freq Detect 2								
			6	Inverter Ready								
			7	DC Bus Undervolt								
			8	BaseBlk 1								
			9	Option Reference								
			10	Remote/Auto Oper								
			11	Trq Det 1 N.O.								
			12	Loss of Ref								
			13	DB Overheat								
			14	Fault								
			15	Not Used								
			16	Minor Fault								
			17	Reset Cmd Active								
			18	Timer Output								
			19	Fref/Fout Agree2								
			20	Fref/Set Agree 2								
			21	Freq Detect 3								
			22	Freq Detect 4								
			23	Trq Det 1 N.C.								
			24	Trq Det 2 N.O.								
			25	Trq Det 2 N.C.								
			26	Reverse Dir								
			27	BaseBlk 2								
			28	Motor 2 Selected								
			29	Regenerating								
			30	Restart Enabled								
			31	Overload (OL1)								
			32	OHPrealarm								
			33	Torque Limit								
			34	Speed Limit								
			35	Zero Servo End								
			36	During RUN 2								
			37	Drive Enable								
			38	Waiting to Run								
			39	OHFreq Reduce								
			40	Run Src Com/Opt								
			41	Reserved 1								
			42	Reserved 2								
H2-02	040Ch	Term M3-M4 Sel	0	See H2-01	1	1h		A	A	A	A	
H2-03	040Dh	Term M5-M6 Sel	0	See H2-01	1	2h		A	A	A	A	
H2-04	040Eh	Term P3 Sel	0	See H2-01	1	06h		NA	NA	NA	NA	
H2-05	040Fh	Term P4 Sel	0	See H2-01	1	10h		NA	NA	NA	NA	
H3-01	0410h	Term A1 Lvl Sel	0	0-10 VDC	1	0		A	A	A	A	
			1	-10 +10 VDC								
H3-02	0411h	Terminal A1 Gain		0.0 ~ 1000.0 %	0.1 %	100.00 %	R	A	A	A	A	
H3-03	0412h	Terminal A1 Bias		-100.0 ~ 100.0 %	0.1 %	0.00 %	R	A	A	A	A	

Table 4.11 – H Parameters

Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
H3-04	0413h	Term A3 Signal	0	0-10 VDC	1	0		A	A	A	A	
			1	-10 +10 VDC								
H3-05	0414h	Terminal A3 Sel	0	Frequency Bias	1	02h		A	A	A	A	
			1	Frequency Gain								
			2	Aux Reference								
			3	Voltage Bias								
			4	Acc/Dec Change								
			5	DC Brake Current								
			6	Overtorque Level								
			7	Stall Prev Level								
			8	Ref Lower Limit								
			9	Jump Frequency								
			10	PI Feedback								
			11	PI Set Point								
			12	Frequency Bias 2								
			13	MotorTemperature								
			14	Fwd Torque Limit								
			15	Rev Torque Limit								
			16	Regen Torq Limit								
			17	Torque Reference								
			18	Torque Comp								
			19	Torque Limit								
			20	PI Differential								
			21	Not Used								
			22	CASE AI 1								
			23	CASE AI 2								
H3-06	0415h	Terminal A3 Gain		0.0 ~ 1000.0 %	0.1 %	100.00 %	R	A	A	A	A	
H3-07	0416h	Terminal A3 Bias		-100.0 ~ 100.0 %	0.1 %	0.00 %	R	A	A	A	A	
H3-08	0417h	Term A2 Signal	0	0-10 VDC	1	2		A	A	A	A	
			1	-10 +10 VDC								
			2	4-20 mA								
H3-09	0418h	Terminal A2 Sel	0	Frequency Bias	1	0h		A	A	A	A	
			1	Frequency Gain								
			2	Aux Reference								
			3	Voltage Bias								
			4	Acc/Dec Change								
			5	DC Brake Current								
			6	Overtorque Level								
			7	Stall Prev Level								
			8	Ref Lower Limit								
			9	Jump Frequency								
			10	PI Feedback								
			11	PI Set Point								
			12	Frequency Bias 2								
			13	MotorTemperature								
			14	Fwd Torque Limit								
			15	Rev Torque Limit								
			16	Regen Torq Limit								
			17	Torque Reference								
			18	Torque Comp								
			19	Torque Limit								
			20	PI Differential								
			21	Not Used								
			22	CASE AI 1								
			23	CASE AI 2								
H3-10	0419h	Terminal A2 Gain		0.0 ~ 1000.0 %	0.1 %	100.00 %	R	A	A	A	A	
H3-11	041Ah	Terminal A2 Bias		-100.0 ~ 100.0 %	0.1 %	0.00 %	R	A	A	A	A	
H3-12	041Bh	Filter Avg Time		0.0 ~ 2.0 Sec	0.01 Sec	0.03 Sec		A	A	A	A	
H4-01	041Dh	Terminal FM Sel	0	Std Fan Cooled	1	02h		A	A	A	A	
			1	Std BlowerCooled								
			2	Vector Motor								
			3	Frequency Ref								
			4	Output Freq								
			5	Output Current								
			6	Control Method								
			7	Motor Speed								
			8	Output Voltage								
			9	DC Bus Voltage								
			10	Output kWatts								
			11	Torque Reference								
			12	Input Term Sts								
			13	Output Term Sts								
			14	Int Ctl Sts 1								
			15	Elapsed Time								

Table 4.11 – H Parameters

Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
H4-01	041Dh	Terminal FM Sel	16	FLASHID	1	02h		A	A	A	A	
			17	Term A1 Level								
			18	Term A2 Level								
			19	Term A3 Level								
			20	Mot SEC Current								
			21	Mot EXC Current								
			22	SFS Output								
			23	ASR Input								
			24	ASR Output								
H4-01	041Dh	Terminal FM Sel	25	Speed Deviation	1	02h		A	A	A	A	
			26	PI Feedback								
			27	DI-16 Reference								
			28	Voltage Ref (Vq)								
			29	Voltage Ref (Vd)								
			30	CPU ID								
			31	LCD Oper Check								
			32	Not Used								
			33	ACR(q) Output								
			34	ACR(d) Output								
			35	OPE Detected								
			36	Zero Servo Pulse								
			37	PI Input								
			38	PI Output								
			39	PI Setpoint								
			40	Transmit Err								
			41	FAN Elapsed Time								
			42	Actual Fin Temp								
			43	C Elapsed Time								
			44	Auto Mode Fref								
			45	Hand Mode Fref								
			46	PI Feedback 2								
			47	Reserved Mon 1								
			48	Reserved Mon 2								
			49	Reserved Mon 3								
			50	Reserved Mon 4								
			51	Reserved Mon 5								
			52	Reserved Mon 6								
			53	Reserved Mon 7								
			54	Reserved Mon 8								
			55	Reserved Mon 9								
			56	Reserved Mon 10								
			57	Reserved Mon 11								
			58	Reserved Mon 4								
			59	Reserved Mon 4								
			60	Reserved Mon 4								
			61	Reserved Mon 4								
			62	Reserved Mon 4								
			63	Reserved Mon 4								
			64	Reserved Mon 4								
			65	CASE Monitor 1								
			66	CASE Monitor 2								
			67	CASE Monitor 3								
			68	CASE Monitor 4								
			69	CASE Monitor 5								
H4-02	041Eh	Terminal FM Gain		0.0 ~ 1000.0 %	0.1 %	100.00 %	R	Q	Q	Q	Q	
H4-03	041Fh	Terminal FM Bias		-110.0 ~ 110.0 %	0.1 %	0.00 %	R	A	A	A	A	
H4-04	0420h	Terminal AM Sel		See H4-01	1	03h		A	A	A	A	
H4-05	0421h	Terminal AM Gain		0.0 ~ 1000.0 %	0.1 %	50.00 %	R	Q	Q	Q	Q	
H4-06	0422h	Terminal AM Bias		-110.0 ~ 110.0 %	0.1 %	0.00 %	R	A	A	A	A	
H4-07	0423h	AO Level Select1	0	0-10 VDC	1	0		A	A	A	A	
			1	-10 +10 VDC								
			2	4-20 mA								
H4-08	0424h	AO Level Select2	0	0-10 VDC	1	0		A	A	A	A	
			1	-10 +10 VDC								
			2	4-20 mA								
H5-01	0425h	Serial Comm Adr		0h ~ 20h	1	1Fh		A	A	A	A	
H5-02	0426h	Serial Baud Rate	0	1200 Baud	1	3		A	A	A	A	
			1	2400 Baud								
			2	4800 Baud								
			3	9600 Baud								
			4	19200 Baud								
H5-03	0427h	Serial Com Sel	0	No Parity	1	0		A	A	A	A	
			1	Even Parity								
			2	Odd Parity								

Table 4.11 – H Parameters

Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
H5-04	0428h	Serial Fault Sel	0	Ramp to Stop	1	3		A	A	A	A	
			1	Coast to Stop								
			2	Fast-Stop								
			3	Alarm Only								
H5-05	0429h	Serial Flt Dtct	0	Disabled	1	1		A	A	A	A	
			1	Enabled								
H5-06	042Ah	Transmit WaitTIM		5 ~ 65 ms	1 ms	5 ms		A	A	A	A	
H5-07	042Bh	RTS Control Sel	0	Disabled	1	1		A	A	A	A	
			1	Enabled								
H6-01	042Ch	Pulse Input Sel	0	Frequency Ref	1	0		A	A	A	A	
			1	PI Feedback								
			2	PI Set Point								
H6-02	042Dh	Pulse In Scaling		1000 ~ 32000 Hz	1 Hz	1440 Hz	R	A	A	A	A	
H6-03	042Eh	Pulse Input Gain		0.0 ~ 1000.0 %	0.1 %	100.00 %	R	A	A	A	A	
H6-04	042Fh	Pulse Input Bias		-100.0 ~ 100.0 %	0.1 %	0.00 %	R	A	A	A	A	
H6-05	0430h	Pulse In Filter		0.0 ~ 2.0 Sec	0.01 Sec	0.1 Sec	R	A	A	A	A	
H6-06	0431h	Pulse Moni Sel		See H4-01	1	02h	R	A	A	A	A	
H6-07	0432h	Pulse Moni Scale		0 ~ 32000 Hz	1 Hz	1440 Hz	R	A	A	A	A	

► L Parameters - Protection

Table 4.12 – L Parameters

Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
L1-01	0480h	MOL Fault Select	0	120 Hz	1	1		Q	Q	Q	Q	
			1	180 Hz								
			2	Custom V/F								
			3	Custom w/o limit								
L1-02	0481h	MOL Time Const		0.1 ~ 5.0 min	0.1 min	1.0 min		A	A	A	A	
L1-03	0482h	Mtr OH Alarm Sel	0	Ramp to Stop	1	3		A	A	A	A	
			1	Coast to Stop								
			2	Fast-Stop								
			3	Alarm Only								
L1-04	0483h	Mtr OH Fault Sel	0	Ramp to Stop	1	1		A	A	A	A	
			1	Coast to Stop								
			2	Fast-Stop								
L1-05	0484h	Mtr Temp Filter		0.0 ~ 10.0 Sec	0.01 Sec	0.2 Sec		A	A	A	A	
L2-01	0485h	PwrL Selection	0	Disabled	1	0		A	A	A	A	
			1	PwrL RideThru t								
			2	CPU Power Active								
L2-02	0486h	PwrL Ridethru t		0.0 ~ 25.5 Sec	0.1 Sec	0.1 Sec		A	A	A	A	
L2-03	0487h	PwrL Baseblock t		0.1 ~ 5.0 Sec	0.1 Sec	0.5 Sec		A	A	A	A	
L2-04	0488h	PwrL V/F Ramp t		0.0 ~ 5.0 Sec	0.1 Sec	0.3 Sec		A	A	A	A	
L2-05	0489h	PUV Det Level		150 ~ 210 VDC	1 VDC	190 VDC		A	A	A	A	A1-02
L2-06	048Ah	KEB Decel Time		0.0 ~ 200.0 Sec	0.1 Sec	0.0 Sec		A	A	A	A	
L2-07	048Bh	UV Return Time		0.0 ~ 25.5 Sec	0.1 Sec	0.0 Sec		A	A	A	A	
L2-08	048Ch	KEB Frequency		0 ~ 300 %		100 %		A	A	A	A	
L3-01	048Fh	StallP Accel Sel	0	Disabled	1	1		A	A	A	NA	
			1	General Purpose								
			2	Intelligent								
L3-02	0490h	StallP Accel Lvl		0 ~ 200 %	1 %	150 %		A	A	A	NA	
L3-03	0491h	StallP CHP Lvl		0 ~ 100 %	1 %	50 %		A	A	A	NA	
L3-04	0492h	StallP Decel Sel	0	Disabled	1	1		Q	Q	Q	Q	
			1	General Purpose								
			2	Intelligent								
			3	Stall prev w/R								
L3-05	0493h	StallP Run Sel	0	Disabled	1	1		A	A	NA	NA	
			1	Decel Time 1								
			2	Decel Time 2								
L3-06	0494h	StallP Run Level		30 ~ 200 %	1 %	160 %		A	A	NA	NA	
L3-11	04C7h	OV Inhibit Sel	0	Disabled	1	0		NA	NA	A	A	
			1	Enabled								
L3-12	04C8h	OV Inhbt VoltLvl		350 ~ 390 V	1 V	380 V		NA	NA	A	A	A1-02
L4-01	0499h	Spd Agree Level		0.0 ~ 400.0 Hz	0.1 Hz	0.0 Hz		A	A	A	A	C6-01
L4-02	049Ah	Spd Agree Width		0.0 ~ 20.0 Hz	0.1 Hz	2.0 Hz		A	A	A	A	
L4-03	049Bh	Spd Agree Lvl+-		-400.0 ~ 400.0 Hz	0.1 Hz	0.0 Hz		A	A	A	A	C6-01
L4-04	049Ch	Spd Agree Wdth+-		0.0 ~ 20.0 Hz	0.1 Hz	2.0 Hz		A	A	A	A	
L4-05	049Dh	Ref Loss Sel	0	Stop	1	0		A	A	A	A	
			1	Run@ 80 % PrevRef								
L4-06	04C2h	Fref at Floss		0.0 ~ 100.0 %	0.1 %	80.00 %		A	A	A	A	

Table 4.12 – L Parameters

Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
L5-01	049Eh	Num of Restarts		0 ~ 10	1	0		A	A	A	A	
L5-02	049Fh	Restart Sel	0	No Flt Relay	1	0		A	A	A	A	
			1	Flt Relay Active								
L6-01	04A1h	Torq Det 1 Sel	0	Disabled	1	0		A	A	A	A	
			1	OL@SpdAgree-Alm								
			2	OL At RUN - Alm								
			3	OL@SpdAgree-Flt								
			4	OL At RUN - Flt								
			5	UL@SpdAgree-Alm								
			6	UL At RUN - Alm								
			7	UL@SpdAgree-Flt								
			8	UL At RUN - Flt								
L6-02	04A2h	Torq Det 1 Lvl		0 ~ 300 %	1 %	150 %		A	A	A	A	
L6-03	04A3h	Torq Det 1 Time		0.0 ~ 10.0 Sec	0.1 Sec	0.1 Sec		A	A	A	A	
L6-04	04A4h	Torq Det 2 Sel	0	Disabled	1	0		A	A	A	A	
			1	OL@SpdAgree-Alm								
			2	OL At RUN - Alm								
			3	OL@SpdAgree-Flt								
			4	OL At RUN - Flt								
			5	UL@SpdAgree-Alm								
			6	UL At RUN - Alm								
			7	UL@SpdAgree-Flt								
			8	UL At RUN - Flt								
L6-05	04A5h	Torq Det 2 Lvl		0 ~ 300 %	1 %	150 %		A	A	A	A	
L6-06	04A6h	Torq Det 2 Time		0.0 ~ 10.0 Sec	0.1 Sec	0.1 Sec		A	A	A	A	
L7-01	04A7h	Torq Limit Fwd		0 ~ 300 %	1 %	200 %		NA	NA	A	A	
L7-02	04A8h	Torq Limit Rev		0 ~ 300 %	1 %	200 %		NA	NA	A	A	
L7-03	04A9h	Torq Lmt Fwd Rgn		0 ~ 300 %	1 %	200 %		NA	NA	A	A	
L7-04	04AAh	Torq Lmt Rev Rgn		0 ~ 300 %	1 %	200 %		NA	NA	A	A	
L7-06	04ACh	Torq Limit Time		5 ~ 10000 ms	1 ms	200 ms		NA	NA	A	NA	
L7-07	04C9h	Torque Limit Sel	0	60 Hz VT2	1	0		NA	NA	A	NA	
			1	50 Hz HST1								
L8-01	04ADh	DB Resistor Prot	0	Not Provided	1	0		A	A	A	A	
			1	Provided								
L8-02	04AEh	OH Pre-Alarm Lvl		50 ~ 130 Deg	1 ºC	95 ºC		A	A	A	A	
L8-03	04AFh	OH Pre-Alarm Sel	0	Ramp to Stop	1	3		A	A	A	A	
			1	Coast to Stop								
			2	Fast-Stop								
			3	Alarm Only								
L8-05	04B1h	Ph Loss In Sel	0	Disabled	1	0		A	A	A	A	
			1	Enabled								
L8-07	04B3h	Ph Loss Out Sel	0	Memobus(Modbus)	1	0		A	A	A	A	
			1	N2 (Metasys)								
			2	FLN (APOGEE)								
L8-09	04B5h	Ground Fault Sel	0	Disabled	1	1		A	A	A	A	
			1	Enabled								
L8-10	04B6h	Fan On/Off Sel	0	Fan On-Run Mode	1	0		A	A	A	A	
			1	Fan Always On								
L8-11	04B7h	Fan Delay Time	0	Disabled	1 Sec	60 Sec		A	A	A	A	
			1	Enabled								
L8-12	04B8h	Ambient Temp		45 ~ 60 Deg	1 ºC	45 ºC		A	A	A	A	
L8-15	04BBh	OL2 Sel @ L-Spd	0	Disabled	1	1		A	A	A	A	
			1	Enabled								
			1	Enabled								
L8-18	04BEh	Soft CLA Sel	0	Disabled	1	1		A	A	A	A	
			1	Enabled								

► N Parameters -

Table 4.13 – n Parameters –

Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
n1-01	0580h	Hunt Prev Select	0	Disabled	1	1		A	A	NA	NA	
			1	Enabled								
n1-02	0581h	Hunt Prev Gain		0.0 ~ 2.5	0.01	1		A	A	NA	NA	
n2-01	0584h	AFR Gain		0.0 ~ 10.0	0.01	1		NA	NA	A	NA	
n2-02	0585h	AFR Time		0 ~ 2000 ms	1 ms	50 ms		NA	NA	A	NA	
n2-03	586h	AFR Time 2		0 ~ 2000 ms	1 ms	750 ms		NA	NA	A	NA	
n3-01	0588h	HSB Decel Width		1 ~ 20 %	1 %	5 %		A	A	NA	NA	
n3-02	0589h	HSB Current Ref		100 ~ 200 %	1 %	150 %		A	A	NA	NA	
n3-03	058Ah	HSB DwelTim@Stp		0.0 ~ 10.0 Sec	0.1 Sec	1.0 Sec		A	A	NA	NA	
n3-04	058Bh	HSB OL Time		30 ~ 1200 Sec	1 Sec	40 Sec		A	A	NA	NA	

► O Parameters

Table 4.2 – o Parameters

Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
o1-01	0500h	User Monitor Sel		4 ~ 99	1	6	R	A	A	A	A	
o1-02	0501h	Power-On Monitor		1 ~ 4	1	1	R	A	A	A	A	
o1-03	0502h	Display Scaling		0 ~ 39999	1	0		A	A	A	A	
o1-04	0503h	Display Units		0 ~ 1	1	0		NA	NA	NA	A	
o1-05	0504h	LCD Contrast		0 ~ 5	1	3	R	A	A	A	A	
o2-01	0505h	Local/Remote Key		0 ~ 1	1	1		A	A	A	A	
o2-02	0506h	Oper STOP Key		0 ~ 1	1	1		A	A	A	A	
o2-03	0507h	User Defaults		0 ~ 2	1	0		A	A	A	A	
o2-04	0508h	Inverter Model #		0h ~ FFh	1	0h		A	A	A	A	A1-03 o2-04
o2-05	0509h	Operator M.O.P.		0 ~ 1	1	0		A	A	A	A	
o2-06	050Ah	Oper Detection		0 ~ 1	1	0		A	A	A	A	
o2-07	050Bh	Elapsed Time Set		0 ~ 65535	1	0		A	A	A	A	
o2-08	050Ch	Elapsed Time Run		0 ~ 1	1	0		A	A	A	A	
o2-09	050Dh	Init Mode Sel		1 ~ 2	1	1		A	A	A	A	A1-03
o2-10	050Eh	Fan ON Time Set		0 ~ 65535	1	0		A	A	A	A	
o2-12	0510h	FLT Trace Init		0 ~ 1	1	0		A	A	A	A	
o2-14	0512h	kWh Monitor Init		0 ~ 1	1	0		A	A	A	A	
o3-01	0515h	Copy Funtion Sel		0 ~ 3	1	0		A	A	A	A	
o3-02	0516h	Read Allowable		0 ~ 1	1	0		A	A	A	A	

► P Parameters

Table 4.15 – P Parameters

Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
P1-01	0600h	CASE Param 1		0.0 ~ 100.0	0.01	0		A	A	A	A	
P1-02	0601h	CASE Param 2		0.0 ~ 100.0	0.01	0		A	A	A	A	
P1-03	0602h	CASE Param 3		0.0 ~ 100.0	0.01	0		A	A	A	A	
P1-04	0603h	CASE Param 4		0.0 ~ 100.0	0.01	0		A	A	A	A	
P1-05	0604h	CASE Param 5		0.0 ~ 100.0	0.01	0		A	A	A	A	
P1-06	0605h	CASE Param 6		0.0 ~ 100.0	0.01	0		A	A	A	A	
P1-07	0606h	CASE Param 7		0.0 ~ 100.0	0.01	0		A	A	A	A	
P1-08	0607h	CASE Param 8		0.0 ~ 100.0	0.01	0		A	A	A	A	
P1-09	0608h	CASE Param 9		0.0 ~ 100.0	0.01	0		A	A	A	A	
P1-10	0609h	CASE Param 10		0.0 ~ 100.0	0.01	0		A	A	A	A	
P2-01	060Ah	CASE Param 11		0.0 ~ 100.0	0.01	0		A	A	A	A	
P2-02	060Bh	CASE Param 12		0.0 ~ 100.0	0.01	0		A	A	A	A	
P2-03	060Ch	CASE Param 13		0.0 ~ 100.0	0.01	0		A	A	A	A	
P2-04	060Dh	CASE Param 14		0.0 ~ 100.0	0.01	0		A	A	A	A	
P2-05	060Eh	CASE Param 15		0.0 ~ 100.0	0.01	0		A	A	A	A	
P2-06	060Fh	CASE Param 16		0.0 ~ 100.0	0.01	0		A	A	A	A	
P2-07	0610h	CASE Param 17		0.0 ~ 100.0	0.01	0		A	A	A	A	
P2-08	0611h	CASE Param 18		0.0 ~ 100.0	0.01	0		A	A	A	A	
P2-09	0612h	CASE Param 19		0.0 ~ 100.0	0.01	0		A	A	A	A	
P2-10	0613h	CASE Param 20		0.0 ~ 100.0	0.01	0		A	A	A	A	
P3-01	0614h	CASE Param 21		0.0 ~ 100.0	0.01	0		A	A	A	A	
P3-02	0615h	CASE Param 22		0.0 ~ 100.0	0.01	0		A	A	A	A	

Table 4.15 – P Parameters												
Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
P3-03	0616h	CASE Param 23		0.0 ~ 100.0	0.01	0		A	A	A	A	
P3-04	0617h	CASE Param 24		0.0 ~ 100.0	0.01	0		A	A	A	A	
P3-05	0618h	CASE Param 25		0.0 ~ 100.0	0.01	0		A	A	A	A	
P3-06	0619h	CASE Param 26		0.0 ~ 100.0	0.01	0		A	A	A	A	
P3-07	061Ah	CASE Param 27		0.0 ~ 100.0	0.01	0		A	A	A	A	
P3-08	061Bh	CASE Param 28		0.0 ~ 100.0	0.01	0		A	A	A	A	
P3-09	061Ch	CASE Param 29		0.0 ~ 100.0	0.01	0		A	A	A	A	
P3-10	061Dh	CASE Param 30		0.0 ~ 100.0	0.01	0		A	A	A	A	

► T Parameters

Table 4.16 – T Parameters												
Name	Addr	Digital Operator Text	Data	Parameter Range or Data Description	Inc	Default	Run	Mode				Dep
								V/f	V/f wPG	OLV	FV	
T1-00	0700h	Select Motor	0	Dummy	1	0		A	A	A	A	
			1	1st Motor								
			2	2nd Motor								
T1-01	0701h	Tuning Mode Sel	0	Fixed Fc	1	0		A	A	A	A	
			1	Lower Fc								
			2	Short term OL2								
			3	I-Limit=150 %								
T1-02	0702h	Mtr Rated Power		0.0 ~ 650.0	0.01 kW	0.0		A	A	A	A	
T1-03	0703h	Rated Voltage		0.0 ~ 255.0	0.1 VAC	0.0		A	A	A	A	o2-04
T1-04	0704h	Rated Current		0.0 ~ 1500.0	0.1 A	0.0		A	A	A	A	o2-04
T1-05	0705h	Rated Frequency		0.0 ~ 400.0	0.1 Hz	60.0		A	A	A	A	
T1-06	0706h	Number of Poles		2 ~ 48	1	2		A	A	A	A	
T1-07	0707h	Rated Speed		0 ~ 24000	1 RPM	1750		A	A	A	A	
T1-08	0708h	PG Pulses/Rev		0 ~ 60000	1 PPR	1024		NA	A	NA	A	

ENTER/ACCEPT Command (Write Only)

Caution

Data sent to the F7 drive serially, is sent to the F7 drive's RAM and may be lost when the F7 drive looses power. In order for this data to be retained upon power loss, it must be first transferred to non-volatile memory. The ENTER command transfers the current RAM parameter data to non-volatile memory. Caution should be exercised when using the ENTER command as the maximum number of non-volatile memory writes cannot exceed 100,000. Excessive use of the ENTER command will cause the F7 drive to fail. Entering data through the digital operator transfers the data to non-volatile memory without the use of the ENTER command. Data that cannot be changed while the F7 drive is in RUN mode, is stored in a temporary location. The ACCEPT command is used to move that data from temporary storage to active RAM. There is not restriction on the use of the ACCEPT command.

Table 4.17 - ENTER Command

Addr	Function	Data	Description
910	ACCEPT	0	Transfer data to active RAM
900	ENTER	0	Transfers the current parameter data to non-volatile storage

Parameter Dependencies

Certain F7 drive parameters, Master parameters, can affect the default values, range of values and accessibility of other, dependent, parameters. When a Master parameter's value is changed via serial communications (RS232, RS485, DeviceNet, Ethernet, etc.,), the associated dependent parameters are not automatically updated and must be updated serially. For example, parameter d2-02 (frequency lower limit) affects the range of values for all frequency reference parameters (d1-01 through d1-17). If d2-02 is changed to 5.0 Hz serially, all frequency reference parameters with values below 5.0 Hz must be updated serially to have current values of 5.0 Hz or greater. An F7 drive fault may occur if a dependent parameter's value is not updated.

The standard sequence for changing F7 drive parameters is

- Set A1-01 to 2 - Set the access value to Advanced
- Set Master parameter to desired value
- Send ENTER command
- Set any dependent parameter values
- Send ENTER command.

► Master Parameter Sequence Numbers

Some F7 drive parameters may be dependent on more than one Master parameter. For example o2-04 (kVA) and o2-09 (specification) affect a number of parameters together. In these cases it is necessary that the parameter with the lowest sequence number be changed first. The sequence table is shown below. Sequence numbers range From 1 through 9 with lower sequence parameters being changed before parameters with higher sequence numbers. In all cases the parameter access level (o2-09) should be changed first.

Table 4.18 – Master Parameter Sequence Numbers

Prm	Seq	Name	Action after parameter change Send ENTER command, power cycle F7 drive, change dependent parameters, send ENTER
o2-09	2	Initialization Mode	**WARNING** Possible personal injury and/or damage to equipment may occur if o2-09 setting is change from 1 (American Spec). o2-09 is a macro parameter that can change the default values of terminal I/O and many other parameters. Consult with Yaskawa factory for details. If o2-09 is also to be changed, set o2-09 before setting dependent or slave parameter values.
o2-04	1	kVA or F7 drive Model	Send master parameter Send ACCEPT Change dependent parameters Send ACCEPT
A1-02	3	Control Method	
C1-10	5	Acc/Dec Time Units	
C6-01	4	Heavy/Normal Duty	
C6-02	5	Carrier Frequency	
d2-01	5	Freq Upper Limit	
d2-02	5	Freq Lower Limit	
E1-01	5	Input Voltage	
L3-04	5	Stall Prevention @ DEC	
L4-01	5	Speed Agree Detection Level	
L4-02	5	Speed Agree Detection Width	
L4-03	5	Speed Agree Detection Level ±	
L4-04	5	Speed Agree Detection Width ±	
L4-05	5	Operation @ Frequency Loss Detection	
L8-02	5	Overheat Pre-Alarm Level	
L8-15	5	OL2 @ Low Speed	
All Others	9		

► A1-02 Control Mode Parameter Dependencies

Table 4.19 Control Mode Parameter Dependencies

Prm	Addr	Name	Parameter Range or Data Description		A1-02				Notes
					V/f	V/f w PG	OLV	FV	
b3-01	0191h	SpdSrch at Start	0	SpdsrchF Disable	2	3	2	1	
			1	SpdsrchF Enable					
			2	SpdsrchI Disable					
			3	SpdsrchI Enable					
b3-02	0192h	SpdSrch Current	0 ~ 200 %		120 %	120 %	100 %	150 %	
B8-02	01CDh	Energy Save Gain	0.0 ~ 10.0		0	0	7	10	
B8-03	01CEh	Energy Save F.T.	0.0 ~ 10.0 Sec		0	0	50 Sec	1 Sec	
C3-01	020Fh	Slip Comp Gain	0.0 ~ 10.0		0	0	10	10	
C3-02	0210H	Slip Comp Time	0 ~ 10000 ms		2000 ms	2000 ms	200 ms	200 ms	
C4-02	0216h	Torq Comp time	0 ~ 10000 ms		200 ms	200 ms	20 ms	20 ms	
C5-01	021Bh	ASR P Gain 1	1.00 ~ 300.00		0	0.20 Sec	2.000 Sec	2.000 Sec	
C5-02	021Ch	ASR I Time 1	0.0 ~ 10.000 Sec		1.000 Sec	0.200 Sec	0.500 Sec	0.500 Sec	
C5-03	021Dh	ASR P Gain 2	1.00 ~ 300.00		0.020 Sec	0.002 Sec	2.000 Sec	2.000 Sec	
C5-04	021Eh	ASR I Time 2	0.0 ~ 10.000 Sec		1.000 Sec	0.050 Sec	0.500 Sec	0.500 Sec	
C5-06	0220h	ASR Delay Time	0.000~ 0.500 Sec		0.050 Sec	0.050 Sec	0	0	
C5-07	0221h	ASR Gain SW Freq	0.0 ~ 400.0 Hz		0	0	0.4 Hz	0.4 Hz	
d5-02	029Bh	Torq Ref Filter	0 ~ 1000 ms		0 ms	0 ms	0 ms	0 ms	
E1-03			0h	50 Hz	0	0	0	0	
			1h	60 Hz Saturation					
			2h	50 Hz Saturation					
			3h	72 Hz					
			4h	50 Hz VT1					
			5h	50 Hz VT2					
			6h	60 Hz VT1					
			7h	60 Hz VT2					
			8h	50 Hz HST1					
			9h	50 Hz HST2					
			Ah	60 Hz HST1					
			Bh	60 Hz HST2					
			Ch	90 Hz					
			Dh	120 Hz					
			Eh	180 Hz					
			Fh	Custom V/F					
			FFh	Custom w/o limit					
E1-04	0303h	Max Frequency	40.0 ~ 400.0 Hz		0	0	60.0	60.0	
E1-05	0304h	Max Voltage	0.0 ~ 255.0 VAC		0	0	230.0	230.0	
E1-06	0305h	Base Frequency	0.0 ~ 400.0 Hz		0	0	30	0	
E1-07	0306h	Mid Frequency A	0.0 ~ 400.0 Hz		0	0	110	0	
E1-08	0307h	Mid Voltage A	0.0 ~ 255.0 VAC		0	0	5	0	
E1-09	0308h	Min Frequency	0.0 ~ 400.0 Hz		0	0	20	0	
E1-10	0309h	Min Voltage	0.0 ~ 255.0 VAC		0	0	0	0	
E1-11	030Ah	Mid Frequency B	0.0 ~ 400.0 Hz		0	0	0	0	
E1-12	030Bh	Mid Voltage B	0.0 ~ 255.0 VAC		0	0	0	0	
F1-09	0388h	PG Overspeed Time	0.0 ~ 2.0 Sec		1.0 Sec	1.0 Sec	0	0	
L2-05	0489h	PUV Det Level	150 ~ 210 VDC		190 VDC				
L3-12	04C8h	OV Inhibit Volt Level	350 ~ 390 V		380 V				

► o2-04 kVA Parameter Dependencies

Table 4.21– o2-04 Parameter Dependencies (200VAC Class) Default Values

Model		20P4	20P7	21P5	22P2	23P7	25P5	27P5	2011	2015	2018	2022	2030	2037	2045	2055	2075	2090	2110
kW		0.4	0.75	1.5	2.2	3.7	5.5	7.5	11.0	15.0	18.5	22.0	30.0	37.0	45.0	55.0	75.0	90.0	110.0
Min VAC		155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155
Max VAC		255	255	255	255	255	255	255	255	255	255	255	255	255	255	255	255	255	255
Prm	Unit	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	10	11
B3-03	Sec	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
B8-03		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
B8-04		288.20	223.70	169.40	156.80	122.90	94.75	72.69	70.44	63.13	57.87	51.79	46.27	38.16	35.78	31.35	23.10	20.65	18.12
C6-01		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C6-02		6	6	6	6	6	6	6	6	6	6	6	4	3	3	3	2	2	1
C6-03	kHz	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	10.0	10.0	10.0	10.0	10.0	2.5
E2-01	A	1.9	3.3	6.2	8.5	14.0	19.6	26.6	39.7	53.0	65.8	77.2	105.0	131.0	160.0	190.0	260.0	260.0	260.0
E2-02	Hz	2.90	2.50	2.60	2.90	2.73	1.50	1.30	1.70	1.60	1.67	1.70	1.80	1.33	1.60	1.43	1.39	1.39	1.39
E2-03	%	0.12	0.18	0.28	0.30	0.45	0.51	0.80	1.12	1.52	1.57	1.85	2.19	3.82	4.40	4.56	7.20	7.20	7.20
E2-05	Ω	9.842	5.156	1.997	1.601	0.771	0.399	0.288	0.230	0.138	0.101	0.079	0.064	0.039	0.030	0.022	0.023	0.023	0.023
E2-06	%	1.82	1.38	1.85	1.84	1.96	1.82	1.55	1.95	1.72	2.01	1.95	2.08	1.88	2.02	2.05	2.00	2.00	2.00
E2-07		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
E2-08		0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
E2-10	W	14	26	53	77	112	172	262	245	272	505	538	699	823	852	960	1200	1200	1200
E2-11	kW	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11.0	15.0	18.5	22.0	30.0	37.0	45.0	55.0	75.0	90.0	110.0
E4-01	A	1.9	3.3	6.2	8.5	14.0	19.6	26.6	39.7	53.0	65.8	77.2	105.0	131.0	160.0	190.0	260.0	260.0	260.0
E4-02	Hz	2.90	2.50	2.60	2.90	2.73	1.50	1.30	1.70	1.60	1.67	1.70	1.80	1.33	1.60	1.43	1.39	1.39	1.39
E4-03	%	0.12	0.18	0.28	0.30	0.45	0.51	0.80	1.12	1.52	1.57	1.85	2.19	3.82	4.40	4.56	7.20	7.20	7.20
E4-05	Ω	9.842	5.156	1.997	1.601	0.771	0.399	0.288	0.230	0.138	0.101	0.079	0.064	0.039	0.030	0.022	0.023	0.023	0.023
E4-06	%	1.82	1.38	1.85	1.84	1.96	1.82	1.55	1.95	1.72	2.01	1.95	2.08	1.88	2.02	2.05	2.00	2.00	2.00
E4-07	kW	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11.0	15.0	18.5	22.0	30.0	37.0	45.0	55.0	75.0	90.0	110.0
L2-02	Sec	0.1	0.1	0.2	0.3	0.5	1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
L2-03	Sec	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	.10	1.1	1.1	1.2	1.3	1.5	1.5	1.7
L2-04	Sec	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.6	0.6	0.6	0.6	1.0	1.0	1.0	1.0	1.0
L8-02	°C	95	95	95	100	95	95	95	95	90	100	90	90	95	100	105	110	100	110

Table 4.22– o2-04 Parameter Dependencies (400 VAC Class) Default Values

Model		40P4	40P7	41P5	42P2	43P7	44P0	45P5	47P5	4011	4015	4018	4022	4030	4037	4045	4055	4075	4090
kW		0.4	0.75	1.5	2.2	3.7	4.0	5.5	7.5	11.0	15.0	18.5	22.0	30.0	37.0	45.0	55.0	75.0	90.0
Min VAC		310	310	310	310	310	310	310	310	310	310	310	310	310	310	310	310	310	310
Max VAC		510	510	510	510	510	510	510	510	510	510	510	510	510	510	510	510	510	510
Prm	Unit	20	21	22	23	24	25	26	27	28	29	2A	2B	2C	2D	2E	2F	30	31
B3-03	Sec	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
B8-03		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	2.0	2.0	2.0
B8-04		576.40	447.40	338.80	313.60	245.80	236.44	189.50	145.38	140.88	126.26	115.74	103.58	92.54	76.32	71.56	67.20	46.20	38.91
C6-01		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C6-02		6	6	6	6	6	6	6	6	3	4	4	4	3	3	3	2	2	3
C6-03	kHz	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	10.0	10.0
E2-01	A	1.0	1.6	3.1	4.2	7.0	7.0	9.8	13.3	19.9	26.5	32.9	38.6	52.3	65.6	79.7	95.0	130.0	156.0
E2-02	Hz	2.90	2.60	2.50	3.00	2.70	2.70	1.50	1.30	1.70	1.60	1.67	1.70	1.80	1.33	1.60	1.46	1.39	1.40
E2-03	%	0.6	0.8	1.4	1.5	2.3	2.3	2.6	4.0	5.6	7.6	7.8	9.2	10.9	19.1	22.0	24.0	36.0	40.0
E2-05	Ω	38.198	22.459	10.100	6.495	3.333	3.333	1.595	1.152	0.922	0.550	0.403	0.316	0.269	0.155	0.122	0.088	0.092	0.056
E2-06	%	1.82	1.43	1.83	1.87	1.93	1.93	1.82	1.55	1.96	1.72	2.01	2.35	2.07	1.88	1.99	2.00	2.00	2.00
E2-07		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
E2-08		0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
E2-10	W	14	26	53	77	130	130	193	263	385	440	508	586	750	925	1125	1260	1600	1760
E2-11	kW	0.4	0.75	1.5	2.2	3.7	4.0	5.5	7.5	11.0	15.0	18.5	22.0	30.0	37.0	45.0	55.0	75.0	90.0
E4-01	A	1.0	1.6	3.1	4.2	7.0	7.0	9.8	13.3	19.9	26.5	32.9	38.6	52.3	65.6	79.7	95.0	130.0	156.0
E4-02	Hz	2.90	2.60	2.50	3.00	2.70	2.70	1.50	1.30	1.70	1.60	1.67	1.70	1.80	1.33	1.60	1.46	1.39	1.40
E4-03	%	0.6	0.8	1.4	1.5	2.3	2.3	2.6	4.0	5.6	7.6	7.8	9.2	10.9	19.1	22.0	24.0	36.0	40.0
E4-05	Ω	38.198	22.459	10.100	6.495	3.333	3.333	1.595	1.152	0.922	0.550	0.403	0.316	0.269	0.155	0.122	0.088	0.092	0.056
E4-06	%	1.82	1.43	1.83	1.87	1.93	1.93	1.82	1.55	1.96	1.72	2.01	2.35	2.07	1.88	1.99	2.00	2.00	2.00
E4-07	kW	0.4	0.75	1.5	2.2	3.7	4.0	5.5	7.5	11.0	15.0	18.5	22.0	30.0	37.0	45.0	55.0	75.0	90.0
L2-02	Sec	0.1	0.1	0.2	0.3	0.5	0.5	0.8	0.8	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
L2-03	Sec	0.1	0.2	0.3	0.4	0.5	0.6	0.6	0.7	0.8	0.9	1.0	1.0	1.1	1.1	1.2	1.2	1.3	1.5
L2-04	Sec	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.6	0.6	0.6	0.6	0.6	1.0	1.0	1.0
L8-02	°C	95	95	95	90	95	95	95	90	95	95	98	78	85	85	90	90	98	108

Table 4.22– o2-04 Parameter Dependencies (400 VAC Class) Default Values (Continued)

Model		4110	4132	4160	4185	4220	4300
kW		110	132	160	185	220	300
Min VAC		310	310	310	310	310	310
Max VAC		510	510	510	510	510	510
Prm	Unit	32	33	34	35	36	37
B3-03	Sec	2.0	2.0	2.0	2.0	2.0	2.0
B8-03		2.0	2.0	2.0	2.0	2.0	2.0
B8-04		36.23	32.79	30.13	30.57	27.13	21.76
C6-01		1	1	1	1	1	1
C6-02		3	2	2	2	1	1
C6-03	kHz	10.0	10.0	10.0	5.0	2.5	2.5
E2-01	A	190.0	223.0	270.0	310.0	370.0	500.0
E2-02	Hz	1.40	1.38	1.35	1.30	1.30	1.25
E2-03	%	49.0	58.0	70.0	81.0	96.0	130.0
E2-05	Ω	.046	.035	.029	.025	.020	.014
E2-06	%	20.0	20.0	20.0	20.0	20.0	20.0
E2-07		50	50	50	50	50	50
E2-08		75	75	75	75	75	75
E2-10	W	2150	2350	2850	3200	3700	4700
E4-11	kW	110	132	160	185	220	300
E4-01	A	190.0	223.0	270.0	310.0	370.0	500.0
E4-02	Hz	1.40	1.38	1.35	1.30	1.30	1.25
E4-03	A	49.0	58.0	70.0	81.0	96.0	130.0
E4-05	Ω	.046	.035	.029	.025	.020	.014
E4-06	%	20.0	20.0	20.0	20.0	20.0	20.0
E4-07	kW	110	132	160	185	220	300
L2-02	Sec	2.0	2.0	2.0	2.0	2.0	2.0
L2-03	Sec	1.7	1.7	1.8	1.9	2.0	2.1
L2-04	Sec	1.0	1.0	1.0	1.0	1.0	1.0
L8-02	°C	100	110	108	95	100	108

Notes:

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Chapter 5 User Notes

This chapter allows the user to enter information specific to their application

Notes 5-1
User Parameter Settings 5-2
Hex/Dec Conversion Table 5-13

Notes:

User Parameter Settings

Table 5.1 – User Parameter Settings

Parm	Text	Default	User	Notes
A1-00	Select Language	0		
A1-01	Access Level	2		
A1-02	Control Method	2		
A1-03	Init Parameters	0		
A1-04	Enter Password	0		
A1-05	Select Password	0		
A2-01	User Param 1	0h		
A2-02	User Param 2	0h		
A2-03	User Param 3	0h		
A2-04	User Param 4	0h		
A2-05	User Param 5	0h		
A2-06	User Param 6	0h		
A2-07	User Param 7	0h		
A2-08	User Param 8	0h		
A2-09	User Param 9	0h		
A2-10	User Param 10	0h		
A2-11	User Param 11	0h		
A2-12	User Param 12	0h		
A2-13	User Param 13	0h		
A2-14	User Param 14	0h		
A2-15	User Param 15	0h		
A2-16	User Param 16	0h		
A2-17	User Param 17	0h		
A2-18	User Param 18	0h		
A2-19	User Param 19	0h		
A2-20	User Param 20	0h		
A2-21	User Param 21	0h		
A2-22	User Param 22	0h		
A2-23	User Param 23	0h		
A2-24	User Param 24	0h		
A2-25	User Param 25	0h		
A2-26	User Param 26	0h		
A2-27	User Param 27	0h		
A2-28	User Param 28	0h		
A2-29	User Param 29	0h		
A2-30	User Param 30	0h		
A2-31	User Param 31	0h		

Table 5.1 – User Parameter Settings				
Parm	**Text**	**Default**	**User**	**Notes**
A2-32	User Param 32	0h		
b1-01	Reference Source	1		
b1-02	Run Source	1		
b1-03	Stopping Method	0		
b1-04	Reverse Oper	0		
b1-05	Zero-Speed Oper	0		
b1-06	Cntl Input Scans	1		
b1-07	LOC/REM RUN Sel	0		
b1-08	RUN CMD at PRG	0		
b2-01	DCInj Start Freq	0.5 Hz		
b2-02	DCInj Current	50 %		
b2-03	DCInj Time@Start	0.0 Sec		
b2-04	DCInj Time@Stop	0.5 Sec		
b2-08	Field Comp	0 %		
b3-01	SpdSrch at Start	2		
b3-02	SpdSrch Current	120 %		
b3-03	SpdSrch Dec Time	2.0 Sec		
b3-04	SpdSrch V/F	100 %		
b3-05	Search Delay	0.2 Sec		
b3-10	Srch Detect Comp	1.1		
b3-14	Bidir Search Sel	1		
b4-01	Delay-ON Timer	0.0 Sec		
b4-02	Delay-OFF Timer	0.0 Sec		
b5-01	PID Mode	0		
b5-02	PID Gain	1		
b5-03	PID I Time	1.0 Sec		
b5-04	PID I Limit	100.00 %		
b5-05	PID D Time	0.0 Sec		
b5-06	PID Limit	100.00 %		
b5-07	PID Offset	0.00 %		
b5-08	PID Delay Time	0.0 Sec		
b5-09	Output Level Sel	0		
b5-10	Output Gain	1		
b5-11	Output Rev Sel	0		
b5-12	Fb los Det Sel	0		
b5-13	Fb los Det Lvl	0 %		
b5-14	Fb los Det Time	1.0 Sec		
b5-15	PID Sleep Level	0.0 Hz		
b5-16	PID Sleep Time	0.0 Sec		
b5-17	PID Acc/Dec Time	0.0 Sec		

Table 5.1 – User Parameter Settings				
Parm	**Text**	**Default**	**User**	**Notes**
b5-18	PID Setpoint Sel	0		
b5-19	PID Setpoint	0.00 %		
b6-01	Dwell Ref @Start	0.0 Hz		
b6-02	Dwell Time@Start	0.0 Sec		
b6-03	Dwell Ref @Stop	0.0 Hz		
b6-04	Dwell Time @Stop	0.0 Sec		
b7-01	Droop Quantity	0.00 %		
b7-02	Droop Delay Time	0.05 Sec		
b8-01	Energy Save Sel	0		
b8-02	Energy Save Gain	0.7		
b8-03	Energy Save F.T	0.5 Sec		
b8-04	Energy Save COEF	288.2		
b8-05	kW Filter Time	20 ms		
b8-06	Search V Limit	0 %		
b9-01	Zero Servo Gain	5		
b9-02	Zero Servo Count	10		
C1-01	Accel Time 1	10.0 Sec		
C1-02	Decel Time 1	10.0 Sec		
C1-03	Accel Time 2	10.0 Sec		
C1-04	Decel Time 2	10.0 Sec		
C1-05	Accel Time 3	10.0 Sec		
C1-06	Decel Time 3	10.0 Sec		
C1-07	Accel Time 4	10.0 Sec		
C1-08	Decel Time 4	10.0 Sec		
C1-09	Fast Stop Time	10.0 Sec		
Time	Acc/Dec Units	1		
C1-11	Acc/Dec SW Freq	0.0 Hz		
C2-01	SCrv Acc @ Start	0.2 Sec		
C2-02	SCrv Acc @ End	0.2 Sec		
C2-03	SCrv Dec @ Start	0.2 Sec		
C2-04	SCrv Dec @ End	0.0 Sec		
C3-01	Slip Comp Gain	1		
C3-02	Slip Comp Time	200 ms		
C3-03	Slip Comp Limit	200 %		
C3-04	Slip Comp Regen	0		
C3-05	V/F Slip Cmp Sel	0		
C4-01	Torq Comp Gain	1		
C4-02	Torq Comp Time	20 ms		
C4-03	F TorqCmp@start	0.00 %		
C4-04	R TorqCmp@start	0.00 %		

Table 5.1 – User Parameter Settings				
Parm	**Text**	**Default**	**User**	**Notes**
C4-05	TorqCmp Delay T	10 ms		
C5-01	ASR P Gain 1	0		
C5-02	ASR I Time 1	0.0 Sec		
C5-03	ASR P Gain 2	0		
C5-04	ASR I Time 2	0.0 Sec		
C5-06	ASR Delay Time	0.0 Sec		
C5-07	ASR Gain SW Freq	0.0 Hz		
C5-08	ASR I Limit	400 %		
C6-01	Heavy/NormalDuty	1		
C6-02	CarrierFreq Sel	6h		
C6-03	CarrierFreq Max	2.0 kHz		
C6-04	CarrierFreq Min	2.0 kHz		
C6-05	CarrierFreq Gain	0		
d1-01	Reference 1	0.0 Hz		
d1-02	Reference 2	0.0 Hz		
d1-03	Reference 3	0.0 Hz		
d1-04	Reference 4	0.0 Hz		
d1-05	Reference 5	0.0 Hz		
d1-06	Reference 6	0.0 Hz		
d1-07	Reference 7	0.0 Hz		
d1-08	Reference 8	0.0 Hz		
d1-09	Reference 9	0.0 Hz		
d1-10	Reference 10	0.0 Hz		
d1-11	Reference 11	0.0 Hz		
d1-12	Reference 12	0.0 Hz		
d1-13	Reference 13	0.0 Hz		
d1-14	Reference 14	0.0 Hz		
d1-15	Reference 15	0.0 Hz		
d1-16	Reference 16	0.0 Hz		
d1-17	Jog Reference	6.0 Hz		
d2-01	Ref Upper Limit	100.00 %		
d2-02	Ref Lower Limit	0.00 %		
d2-03	Ref1 Lower Limit	0.00 %		
d3-01	Jump Freq 1	0.0 Hz		
d3-02	Jump Freq 2	0.0 Hz		
d3-03	Jump Freq 3	0.0 Hz		
d3-04	Jump Bandwidth	1.0 Hz		
d4-01	MOP Ref Memory	0		
d4-02	Trim Control Lvl	10 %		
d5-01	Torq Control Sel	0 ms		

Table 5.1 – User Parameter Settings				
Parm	**Text**	**Default**	**User**	**Notes**
d5-02	Torq Ref Filter	0 ms		
d5-03	Speed Limit Sel	1		
d5-04	Speed Lmt Value	0 %		
d5-05	Speed Lmt Bias	10 %		
d5-06	Ref Hold Time	0 ms		
d6-01	Field-Weak Lvl	80 %		
d6-02	Field-Weak Freq	0.0 Hz		
d6-03	Field Force Sel	0		
d6-06	FieldForce Limit	400 %		
E1-01	Input Voltage	200 VAC		
E1-03	V/F Selection	0fh		
E1-04	Max Frequency	60.0 Hz		
E1-05	Max Voltage	230.0 VAC		
E1-06	Base Frequency	60.0 Hz		
E1-07	Mid Frequency A	3.0 Hz		
E1-08	Mid Voltage A	13.0 VAC		
E1-09	Min Frequency	1.5 Hz		
E1-10	Min Voltage	9.0 VAC		
E1-11	Mid Frequency B	0.0 Hz		
E1-12	Mid Voltage B	0.0 VAC		
E1-13	Base Voltage	230.0 VAC		
E2-01	Motor Rated FLA	14.0 A		
E2-02	Motor Rated Slip	3.3 Hz		
E2-03	No-Load Current	4.5 A		
E2-04	Number of Poles	4		
E2-05	Term Resistance	0.771 Ohm		
E2-06	Leak Inductance	19.60 %		
E2-07	Saturation Comp1	0		
E2-08	Saturation Comp2	0		
E2-09	Mechanical Loss	0.00 %		
E2-10	Tcomp Iron Loss	0 W		
E2-11	Mtr Rated Power	0.4 kW		
E2-12	Saturation Comp3	1.3		
E3-01	Control Method	2		
E3-02	Max Frequency	60.0 Hz		
E3-03	Max Voltage	230.0 VAC		
E3-04	Base Frequency	60.0 Hz		
E3-05	Mid Frequency	3.0 Hz		
E3-06	Mid Voltage	10.0 VAC		
E3-07	Min Frequency	0.5 Hz		

Table 5.1 – User Parameter Settings				
Parm	**Text**	**Default**	**User**	**Notes**
E3-08	Min Voltage	1.7 VAC		
E4-01	Motor Rated FLA	0.0 A		
E4-02	Motor Rated Slip	0.0 Hz		
E4-03	No-Load Current	0.0 A		
E4-04	Number of Poles	4		
E4-05	Term Resistance	0.0 Ohm		
E4-06	Leak Inductance	0.00 %		
E4-07	Mtr Rated Power	0.4 kW		
F1-01	PG Pulses/Rev	600		
F1-02	PG Fdbk Loss Sel	1		
F1-03	PG Overspeed Sel	1		
F1-04	PG Deviation Sel	3		
F1-05	PG Rotation Sel	0		
F1-06	PG Output Ratio	1		
F1-07	PG Ramp PI/I Sel	0		
F1-08	PG Overspd Level	115 %		
F1-09	PG Overspd Time	1.0 Sec		
F1-10	PG Deviate Level	10 %		
F1-11	PG Deviate Time	0.5 Sec		
F1-12	PG # Gear Teeth1	0		
F1-13	PG # Gear Teeth2	0		
F1-14	PGO Detect Time	2.0 Sec		
F2-01	AI-14 Input Sel	0		
F3-01	DI Input	0		
F4-01	AO Ch1 Select	02h		
F4-02	AO Ch1 Gain	100.00 %		
F4-03	AO Ch2 Select	03h		
F4-04	AO Ch2 Gain	50.00 %		
F4-05	AO Ch1 Bias	0.00 %		
F4-06	AO Ch2 Bias	0.00 %		
F4-07	AO Opt Level Ch1	0		
F4-08	AO Opt Level Ch2	0		
F5-01	DO Ch1 Select	00h		
F5-02	DO Ch2 Select	01h		
F5-03	DO Ch3 Select	02h		
F5-04	DO Ch4 Select	04h		
F5-05	DO Ch5 Select	06h		
F5-06	DO Ch6 Select	37h		
F5-07	DO Ch7 Select	0fh		
F5-08	DO Ch8 Select	0fh		

Table 5.1 – User Parameter Settings				
Parm	**Text**	**Default**	**User**	**Notes**
F5-09	DO-08 Selection	0		
F6-01	Comm Bus Flt Sel	1		
F6-02	EF0 Detection	0		
F6-03	EF0 Fault Action	1		
F6-04	Trace Sample Tim	0		
F6-05	Current Unit Sel	0		
F6-06	Torq Ref/Lmt Sel	0		
H1-01	Terminal S3 Sel	24h		
H1-01	Terminal S3 Sel	24h		
H1-02	Terminal S4 Sel	14h		
H1-03	Terminal S5 Sel	03h		
H1-04	Terminal S6 Sel	04h		
H1-05	Terminal S7 Sel	06h		
H1-06	Terminal S8 Sel	08h		
H2-01	Term M1-M2 Sel	0h		
H2-02	Term M3-M4 Sel	1h		
H2-03	Term M5-M6 Sel	2h		
H2-04	Term P3 Sel	06h		
H2-05	Term P4 Sel	10h		
H3-01	Term A1 Lvl Sel	0		
H3-02	Terminal A1 Gain	100.00 %		
H3-03	Terminal A1 Bias	0.00 %		
H3-04	Term A3 Signal	0		
H3-05	Terminal A3 Sel	02h		
H3-06	Terminal A3 Gain			
H3-07	Terminal A3 Bias	0.00 %		
H3-08	Term A2 Signal	2		
H3-09	Terminal A2 Sel	0h		
H3-10	Terminal A2 Gain	100.00 %		
H3-11	Terminal A2 Bias	0.00 %		
H3-12	Filter Avg Time	0.03 Sec		
H4-01	Terminal FM Sel	02h		
H4-01	Terminal FM Sel	02h		
H4-02	Terminal FM Gain	100.00 %		
H4-03	Terminal FM Bias	0.00 %		
H4-04	Terminal AM Sel	03h		
H4-05	Terminal AM Gain	50.00 %		
H4-06	Terminal AM Bias	0.00 %		
H4-07	AO Level Select1	0		
H4-08	AO Level Select2	0		

Table 5.1 – User Parameter Settings				
Parm	**Text**	**Default**	**User**	**Notes**
H5-01	Serial Comm Adr	1fh		
H5-02	Serial Baud Rate	3		
H5-03	Serial Com Sel	0		
H5-04	Serial Fault Sel	3		
H5-05	Serial Flt Dtct	1		
H5-06	Transmit WaitTIM	5 ms		
H5-07	RTS Control Sel	1		
H6-01	Pulse Input Sel	0		
H6-02	Pulse In Scaling	1440 Hz		
H6-03	Pulse Input Gain	100.00 %		
H6-04	Pulse Input Bias	0.00 %		
H6-05	Pulse In Filter	0.1 Sec		
H6-06	Pulse Moni Sel	02h		
H6-07	Pulse Moni Scale	1440 Hz		
L1-01	MOL Fault Select	1		
L1-02	MOL Time Const	1.0 min		
L1-03	Mtr OH Alarm Sel	3		
L1-04	Mtr OH Fault Sel	1		
L1-05	Mtr Temp Filter	0.2 Sec		
L2-01	PwrL Selection	0		
L2-02	PwrL Ridethru t	0.1 Sec		
L2-03	PwrL Baseblock t	0.5 Sec		
L2-04	PwrL V/F Ramp t	0.3 Sec		
L2-05	PUV Det Level	190 VDC		
L2-06	KEB Decel Time	0.0 Sec		
L2-07	UV Return Time	0.0 Sec		
L2-08	KEB Frequency	100 %		
L3-01	StallP Accel Sel	1		
L3-02	StallP Accel Lvl	150 %		
L3-03	StallP CHP Lvl	50 %		
L3-04	StallP Decel Sel	1		
L3-05	StallP Run Sel	1		
L3-06	StallP Run Level	160 %		
L3-11	OV Inhibit Sel	0		
L3-12	OV Inhbt VoltLvl	380 V		
L4-01	Spd Agree Level	0.0 Hz		
L4-02	Spd Agree Width	2.0 Hz		
L4-03	Spd Agree Lvl+-	0.0 Hz		
L4-04	Spd Agree Wdth+-	2.0 Hz		
L4-05	Ref Loss Sel	0		

Table 5.1 – User Parameter Settings				
Parm	**Text**	**Default**	**User**	**Notes**
L4-06	Fref at Floss	80.00 %		
L5-01	Num of Restarts	0		
L5-02	Restart Sel	0		
L6-01	Torq Det 1 Sel	0		
L6-02	Torq Det 1 Lvl	150 %		
L6-03	Torq Det 1 Time	0.1 Sec		
L6-04	Torq Det 2 Sel	0		
L6-05	Torq Det 2 Lvl	150 %		
L6-06	Torq Det 2 Time	0.1 Sec		
L7-01	Torq Limit Fwd	200 %		
L7-02	Torq Limit Rev	200 %		
L7-03	Torq Lmt Fwd Rgn	200 %		
L7-04	Torq Lmt Rev Rgn	200 %		
L7-06	Torq Limit Time	200 ms		
L7-07	Torque Limit Sel	0		
L8-01	DB Resistor Prot	0		
L8-02	OH Pre-Alarm Lvl	95 Deg		
L8-03	OH Pre-Alarm Sel	3		
L8-05	Ph Loss In Sel	0		
L8-07	Ph Loss Out Sel	0		
L8-09	Ground Fault Sel	1		
L8-10	Fan On/Off Sel	0		
L8-11	Fan Delay Time	60 Sec		
L8-12	Ambient Temp	45 Deg		
L8-15	OL2 Sel @ L-Spd	1		
L8-18	Soft CLA Sel	1		
n1-01	Hunt Prev Select	1		
n1-02	Hunt Prev Gain	1		
n2-01	AFR Gain	1		
n2-02	AFR Time	50 ms		
n2-03	AFR Time 2	750 ms		
n3-01	HSB Decel Width	5 %		
n3-02	HSB Current Ref	150 %		
n3-03	HSB DwelTim@Stp	1.0 Sec		
n3-04	HSB OL Time	40 Sec		
o1-01	User Monitor Sel	6		
o1-02	Power-On Monitor	1		
o1-03	Display Scaling	0		
o1-04	Display Units	0		
o1-05	LCD Contrast	3		

Table 5.1 – User Parameter Settings				
Parm	**Text**	**Default**	**User**	**Notes**
o2-01	Local/Remote Key	1		
o2-02	Oper STOP Key	1		
o2-03	User Defaults	0		
o2-04	Inverter Model #	0h		
o2-05	Operator M.O.P.	0		
o2-06	Oper Detection	0		
o2-07	Elapsed Time Set	0		
o2-08	Elapsed Time Run	0		
o2-09	Init Mode Sel	1		
o2-10	Fan ON Time Set	0		
o2-12	FLT Trace Init	0		
o2-14	kWh Monitor Init	0		
o3-01	Copy Funtion Sel	0		
o3-02	Read Allowable	0		
P1-01	CASE Param 1	0		
P1-02	CASE Param 2	0		
P1-03	CASE Param 3	0		
P1-04	CASE Param 4	0		
P1-05	CASE Param 5	0		
P1-06	CASE Param 6	0		
P1-07	CASE Param 7	0		
P1-08	CASE Param 8	0		
P1-09	CASE Param 9	0		
P1-10	CASE Param 10	0		
P2-01	CASE Param 11	0		
P2-02	CASE Param 12	0		
P2-03	CASE Param 13	0		
P2-04	CASE Param 14	0		
P2-05	CASE Param 15	0		
P2-06	CASE Param 16	0		
P2-07	CASE Param 17	0		
P2-08	CASE Param 18	0		
P2-09	CASE Param 19	0		
P2-10	CASE Param 20	0		
P3-01	CASE Param 21	0		
P3-02	CASE Param 22	0		
P3-03	CASE Param 23	0		
P3-04	CASE Param 24	0		
P3-05	CASE Param 25	0		
P3-06	CASE Param 26	0		

Table 5.1 – User Parameter Settings				
Parm	**Text**	**Default**	**User**	**Notes**
P3-07	CASE Param 27	0		
P3-08	CASE Param 28	0		
P3-09	CASE Param 29	0		
P3-10	CASE Param 30	0		
T1-00	Select Motor	0		
T1-01	Tuning Mode Sel	0		
T1-02	Mtr Rated Power	0.0		
T1-03	Rated Voltage	0.0		
T1-04	Rated Current	0.0		
T1-05	Rated Frequency	0.0		
T1-06	Number of Poles	0		
T1-07	Rated Speed	0		
T1-08	PG Pulses/Rev	0		

Hex/Dec Conversion Table

Table 5.2 – Hexadecimal-Decimal Conversion

Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec
0	0	34	52	68	104	9C	156	D0	208
1	1	35	53	69	105	9D	157	D1	209
2	2	36	54	6A	106	9E	158	D2	210
3	3	37	55	6B	107	9F	159	D3	211
4	4	38	56	6C	108	A0	160	D4	212
5	5	39	57	6D	109	A1	161	D5	213
6	6	3A	58	6E	110	A2	162	D6	214
7	7	3B	59	6F	111	A3	163	D7	215
8	8	3C	60	70	112	A4	164	D8	216
9	9	3D	61	71	113	A5	165	D9	217
A	10	3E	62	72	114	A6	166	DA	218
B	11	3F	63	73	115	A7	167	DB	219
C	12	40	64	74	116	A8	168	DC	220
D	13	41	65	75	117	A9	169	DD	221
E	14	42	66	76	118	AA	170	DE	222
F	15	43	67	77	119	AB	171	DF	223
10	16	44	68	78	120	AC	172	E0	224
11	17	45	69	79	121	AD	173	E1	225
12	18	46	70	7A	122	AE	174	E2	226
13	19	47	71	7B	123	AF	175	E3	227
14	20	48	72	7C	124	B0	176	E4	228
15	21	49	73	7D	125	B1	177	E5	229
16	22	4A	74	7E	126	B2	178	E6	230
17	23	4B	75	7F	127	B3	179	E7	231
18	24	4C	76	80	128	B4	180	E8	232
19	25	4D	77	81	129	B5	181	E9	233
1A	26	4E	78	82	130	B6	182	EA	234
1B	27	4F	79	83	131	B7	183	EB	235
1C	28	50	80	84	132	B8	184	EC	236
1D	29	51	81	85	133	B9	185	ED	237
1E	30	52	82	86	134	BA	186	EE	238
1F	31	53	83	87	135	BB	187	EF	239
20	32	54	84	88	136	BC	188	F0	240
21	33	55	85	89	137	BD	189	F1	241
22	34	56	86	8A	138	BE	190	F2	242
23	35	57	87	8B	139	BF	191	F3	243
24	36	58	88	8C	140	C0	192	F4	244
25	37	59	89	8D	141	C1	193	F5	245
26	38	5A	90	8E	142	C2	194	F6	246
27	39	5B	91	8F	143	C3	195	F7	247
28	40	5C	92	90	144	C4	196	F8	248
29	41	5D	93	91	145	C5	197	F9	249
2A	42	5E	94	92	146	C6	198	FA	250
2B	43	5F	95	93	147	C7	199	FB	251
2C	44	60	96	94	148	C8	200	FC	252
2D	45	61	97	95	149	C9	201	FD	253
2E	46	62	98	96	150	CA	202	FE	254
2F	47	63	99	97	151	CB	203	FF	255
30	48	64	100	98	152	CC	204	100	256
31	49	65	101	99	153	CD	205		
32	50	66	102	9A	154	CE	206		
33	51	67	103	9B	155	CF	207		

Notes:

F7 Drive Parameter Access

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