

IMPULSE • G+/VG+ SERIES 3
Ethernet Modbus ® TCP/IP
Drive Communication Instruction Manual



MAGNETEK
MATERIAL HANDLING
ELECTROMOTIVE SYSTEMS

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Introduction

This manual explains the specifications and handling of the Electromotive Systems *Modbus® TCP/IP Option* for the Electromotive Systems models Impulse●G+ Series, and Impulse●VG+ Series drives. The *Modbus® TCP/IP Option* connects the drive to a PROFIBUS-DP network and facilitates the exchange of data. In this document, the word “inverter”, “ac drive” and “drive” may be used interchangeably.

To ensure proper operation of this product, read and understand this manual. For details on installation and operation of the drive, refer to the appropriate drive technical manual.

Technical References

Refer to the following publications for information about the IMPULSE SERIES 3:

- IMPULSE G+ SERIES 3® Technical Manual
- IMPULSE VG+ SERIES 3® Technical Manual

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Technical Support

Technical Support Service Center-

Provide telephone assistance to customer related to installation, start-up, programming, and troubleshooting on drives products. For technical phone support call 1-800-288-8178.

Table of Contents

Chapter 1 Installation.....	1-1
Unpack & Inspect	1-2
Installation & Wiring.....	1-2
Option LEDs.....	1-3
Connect to the Ethernet Option.....	1-4
Chapter 2 Network Configuration.....	2-1
Configure the PC Network Connection.....	2-2
Reset the Ethernet Option to the Default Address.....	2-3
Configure the Ethernet Option.....	2-4
Drive Setup.....	2-5
Important Network Information	2-5
Chapter 3 Data Registers	3-1
High Speed Ethernet Registers	3-2
Monitor Registers (Read Only)	3-3
Drive Parameter Registers (U1-xx / Monitor Only).....	3-12
Drive Parameter Registers (U2-xx / Fault Trace and U3-xx / Fault History)....	3-16
Drive Parameter Registers (Read/Write)	3-18
Special Registers (Read / Write)	3-40

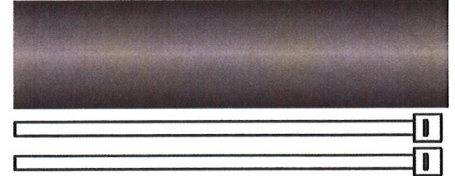
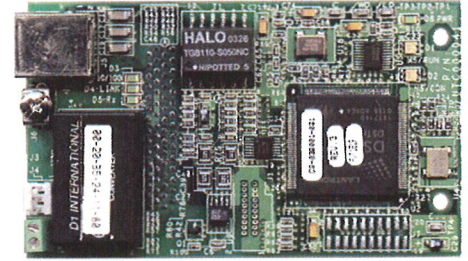
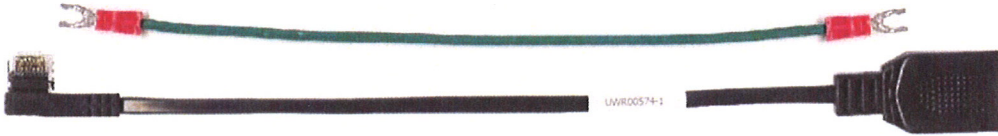
Chapter 1 Installation

- **Unpack & Inspect.....1-2**
- **Installation & Wiring.....1-2**
- **Option LEDs.....1-3**
- **Connecting to Ethernet Option.....1-3**

Unpack & Inspect

- Unpack the Ethernet Modbus TCP/IP Option kit and verify that all components are present and undamaged.

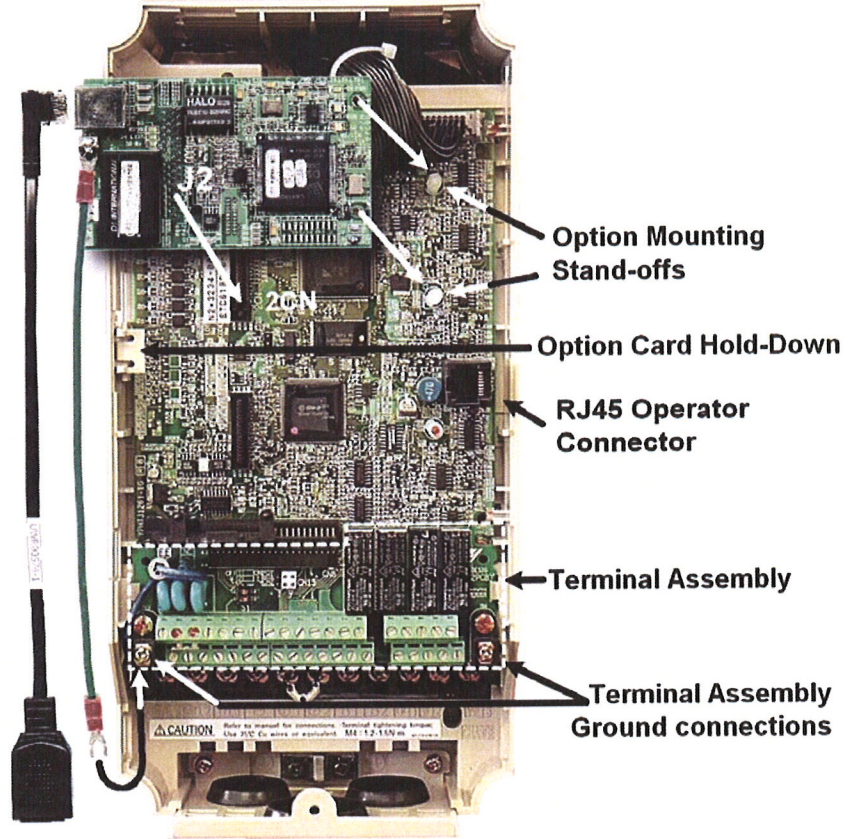
OPTION Kit Parts	Qty.
Ethernet Option Card (UTC000041)	1
Shielded RJ45 M-F Cable (UWR00574-1)	1
Ground Wire (UWR00575-1)	1
4"x1" Insulated Tubing (M45094075004)	1
Cable Ties (UWS-0137)	2
Installation Guide	1



Installation & Wiring

- Connect power to the drive and verify that the drive functions correctly. This includes running the drive from the operator keypad. Refer to the appropriate drive technical manual for information on connecting and operating the drive.
- Remove power from the drive and wait for the charge lamp to be completely extinguished. Wait at least five additional minutes for the drive to be completely discharged. Measure the DC BUS voltage and verify that it is at a safe level.
- Remove the operator keypad and drive cover.
 - Remove the operator keypad.
 - Remove the terminal and control covers.
 - Remove the option card hold-down by carefully compressing the top and bottom until it becomes free of its holder. Lift it out.

- ☐ Mount the *Ethernet Option* on the drive.
 - Connect the ground cable supplied to ground terminal J6 on the *Ethernet Option*.
 - Connect the RJ45 M-F cable supplied in the option kit to the *Ethernet Option*.
 - Align the J2 connector on the back of the *Ethernet Option* with its mating 2CN connector on the drive control card.
 - Align the two standoffs on the front of the drive control board with the two holes on the right side of the *Ethernet Option*.
 - Press the *Ethernet Option* firmly onto the drive 2CN connector and standoffs until the J2 connector is fully seated on 2CN and the drive standoffs have locked into their appropriate holes.
 - Route the RJ45 M-F cable and the ground cable along the left-inside of the drive case.
 - Replace the option card hold down.
 - Connect the ground wire to the ground terminal on the terminal assembly.



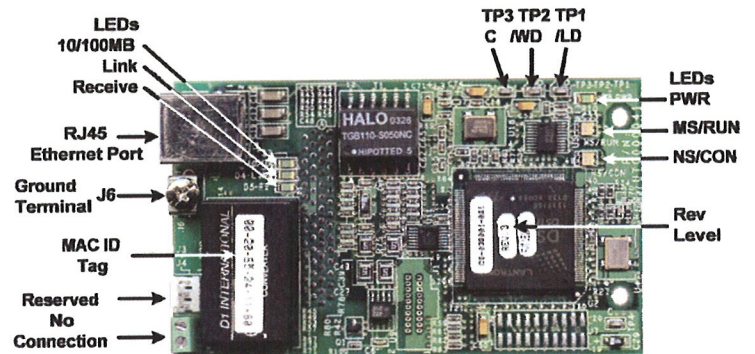
- ☐ Apply power to the drive and verify that the drive functions correctly.
 - Verify that the MS/RUN and PWR LEDs on the Ethernet Option card are both GREEN. (Refer to the section on LEDs below)

Option LEDs

☐ LED Definitions

The states of the *Ethernet Option* card LEDs after the power up sequence has completed are described below. Please wait for at least five seconds for the loading process to complete before verifying the status of the LEDs.

Des	Label	Description
D1	MS/RUN	GREEN – Card Functioning Normally RED – Card Failure
D2	NS/CON	GREEN – Connection Made GREEN BLINK – Control Connection Active (500ms cycle) RED – Connection Fault
D3	10/100	GREEN – 100Mbps Connection Speed
D4	LINK	GREEN – Link Established
D5	Rx	GREEN - Message Received
D8	PWR	GREEN - Appropriate Power Supplied to Card



Connect to the Ethernet Option

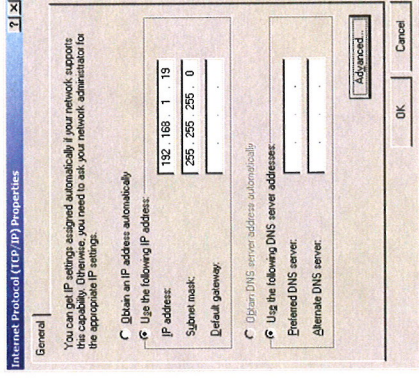
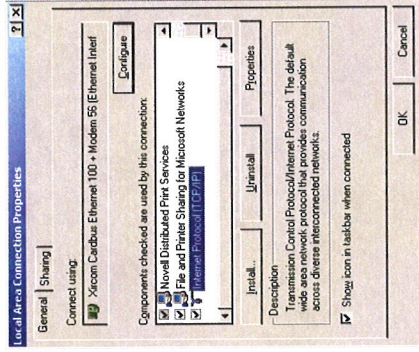
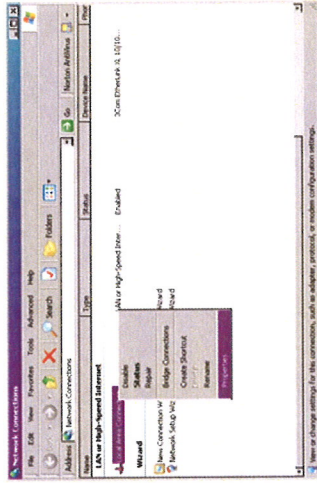
- Due to the presence of high voltage in the area of the network connection, insulating the connection is required.
- Prior to connecting the network cable, slide the supplied insulated tubing over the female end of the supplied RJ45 M-F cable.
 - To connect directly to the *Ethernet Option*, plug one end of a CAT-5 Ethernet **cross-over** cable into the RJ45 socket on the *Ethernet Option* RJ45 M-F cable. Connect the other end to the RJ45 Ethernet socket on the configuration device, typically a controller, laptop or other PC.
 - To connect through a switch, hub or router, connect the RJ45 socket on the *Ethernet Option* RJ45 M-F cable to the switch, hub or router using a standard CAT-5 patch cable.
- After the network connection has been made, slide the insulated tubing over the connection and secure it in place using the supplied cable ties.

Chapter 2 Network Configuration

- **Configuring PC to Network Configuration.....2-2**
- **Resetting Ethernet Option to Default Address.....2-3**
- **Configure the Ethernet Option.....2-4**
- **Drive Setup.....2-4**
- **Important Network Information.....2-5**

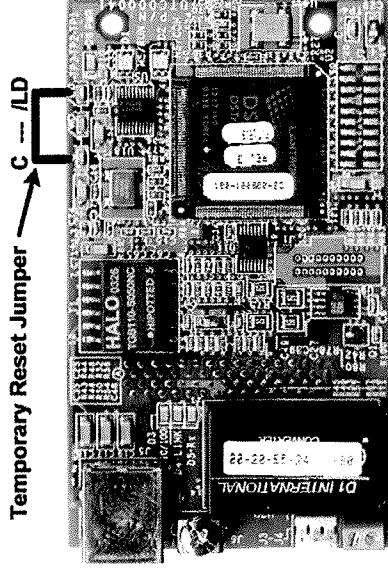
Configure the PC Network Connection

- Select an existing or create a new network connection that will be used to communicate with the *Ethernet Option* card.
 - Select **Start** ⇒ **Settings** ⇒ **Network Connections** from the task bar
 - Select the network connection to be used
- Right click on the network connection and select properties from the menu
- Select **Internet Protocol (TCP/IP)** from the components displayed
 - If a TCP/IP selection is not available, it may be installed by selecting **Install**. Note that Administrator access is required and that the operating system installation CD may also be required. Consult with your IT department as needed.
 - Select **Properties**
 - If the network connection already has an IP address assigned, ignore the following instructions
 - Select the **Use the following IP address** radio button
 - Enter the **IP address** as **192.168.1.19** and the **Subnet mask** as **255.255.255.0**. Check the system network schematic or with the IT department to make sure that the address does not already exist on the network.
 - Once the **IP address** and **Subnet mask** are entered select **OK**
 - It may be necessary to reboot the PC in order for the changes to take affect.



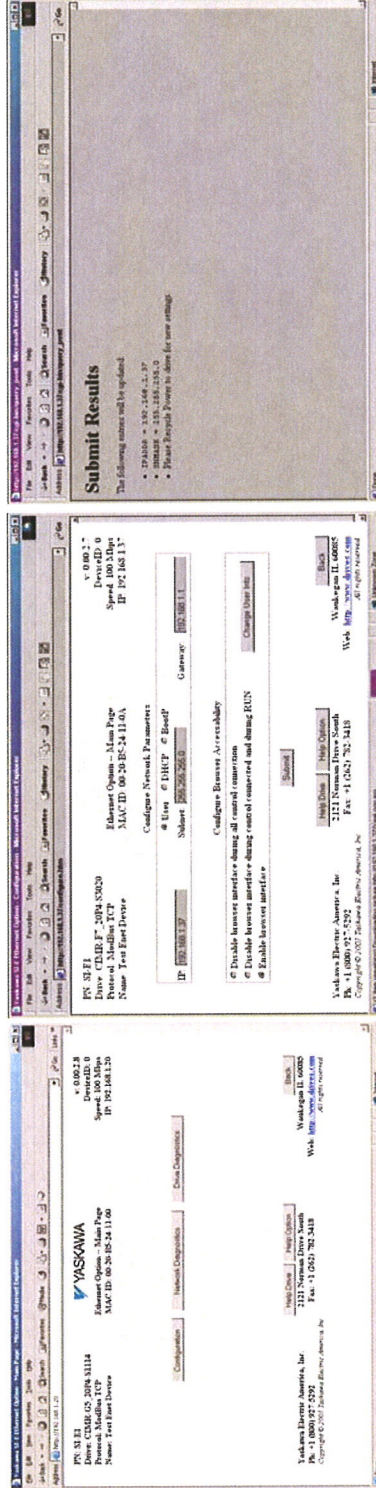
Reset the Ethernet Option to the Default Address

- If the web page is not visible, check that the PC has been setup and connected properly. If the PC has been setup and connected properly and the web page is still not visible, the IP address of the *Ethernet Option* may not be set to its default IP address. To reset it to the default value,
 - Remove power from the drive and wait for the charge lamp to be completely extinguished. Wait at least five additional minutes for the drive to be completely discharged. Measure the DC BUS voltage and verify that it is at a safe level.
 - Place a jumper between test points **C** and **/LD** on the *Ethernet Option* card as shown in the figure to the right.
 - Reapply power to the drive and wait approximately 10 seconds for the power-up cycle to complete. You should now be able to connect to IP address 192.168.1.20 and open the main web page.
 - Remove the jumper between **C** and **/LD** on the *Ethernet Option* once the connection has been made and the web page visible.



Configure the Ethernet Option

- Select the **Configure** button from the main web page.
- Enter the desired IP address in the **IP** field and the desired Subnet Mask in the **Subnet Mask** field. Check with the system schematic or network administrator to verify that the IP address and subnet mask entered are valid.
- Select the **Submit** button.
- A confirmation of the entered IP address and Subnet Mask will be displayed.
- Remove power from the drive and wait for the charge lamp to be completely extinguished. Wait at least five additional minutes for the drive to be completely discharged. Measure the DC BUS voltage and verify that it is at a safe level.
- If necessary, reconfigure the network connection of the configuration device to match the entered *Ethernet Option* configuration.
- Reapply power to the drive and connect to the desired network.



Drive Setup

- Remove power from the drive and wait for the charge lamp to be completely extinguished. Wait at least five additional minutes for the drive to be completely discharged. Measure the DC BUS voltage and verify that it is at a safe level.
- Reinstall all drive covers and the operator keypad. Apply power to the drive.
- Set parameters b1-01 and b1-02 to their appropriate values. Refer to the table to the right for available b1-01 and b1-02 values.

Param	Function	Data	+/- Limits - Description	Default
b1-01	Reference Selection	0	Digital Operator	1
		1	Terminals	
		2	Serial Communication	
		3	Option PCB (Ethernet Modbus TCP/IP Option)	
b1-02	Operation Method Selection	4	Pulse Input (F7 and G7 Only)	1
		0	Digital Operator	
		1	Terminals	
		2	Serial Communication	
		3	Option PCB (Ethernet Modbus TCP/IP Option)	

Important Network Information

- It is strongly recommended that shielded CAT-5 cable be used for all network cables.
- 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 500ms 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).
- Refer to the appropriate programming or parameter access manual for a complete list of drive parameters and registers available. A list of applicable manuals is available at the end of this document.
- 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.
- Addresses 0001h and 0002h may be written while all other registers in the table below are read only. Addresses 0001h and 0002h may only be accessed through Unit ID 1 (see above).

Chapter 3 Data Registers

- High Speed Ethernet Registers.....3-2
- Monitor Registers.....3-3
- Parameter Registers.....3-16
- Special Registers.....3-38

High Speed Ethernet Registers

Addr	Description	Addr	Description	Addr	Description
0001h	0h Forward RUN 1h Reverse RUN 2h Multi-Function Input 3 3h Multi-Function Input 4 4h Multi-Function Input 5 5h Multi-Function Input 6 6h Multi-Function Input 7 7h Multi-Function Input 8 (G5/F7/G7) 8h External Fault (EF0) 9h Fault Reset Ah Multi-Function Input 9 (G7) Bh Multi-Function Input 10 (G7) Ch Multi-Function Input 11 (G7) Dh Multi-Function Input 12 (G7) Eh Fault Log Trace clear Fh External Base Block	2001h Speed (U1-05) 2002h Torque (U1-08) 2003h PG Count Channel 1 2004h Frequency Reference (U1-01) 2005h Output Frequency (U1-02) 2006h Current (U1-03) 2007h Terminal 14 Output 2008h DC BUS Voltage	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 Inverter Heatsink Overheat Ah OL1 Motor Overload Bh OL2 Drive Overload Ch OL3 Overtorque 1 Dh OL4 Overtorque 2 Eh RR Braking Resistor Fault Fh RH Braking Resistor Overheat	0h CE Communications Fault 1h BUS Option Error 2h E-15 SI/F/G Comm Error 3h E-10 SI/F/G CPU Down 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 Braking OL Bh PGO-2-H PG CH2 Open Ch OS-2 CH2 Overspeed Dh DEV-2CH2 Speed Deviation Eh PGO-2-S PG CH2 Open	
0002h	Frequency Reference	2008h	Error Signal 1	200Ch	Analog Input A1 Value
0003h	Torque Limit/torque Reference			200Dh	Digital Input Terminals Value (Bit Field)
0004h	Torque Compensation			200Eh	Analog Input A3 Value
0006h	PID Setpoint			200Fh	PG Count Channel 2
0007h	Analog Output 1 Setting (H4-01 = 31 to Write)			2010h	Inverter Flash ID
0008h	Analog Output 2 (H4-01 = 31 to Write)				
0009h	Relay Output Setting 0 Relay Output (Term M0 -M1) 1 Relay Output (Term M2, M3, M4) 2 Relay Output (Term M5, M6) 6 Fault Relay Enable (MA-MB) 7 Fault Relay Control (MA - MB) 1 Uses the desired PID value from Memobus address 0006h				
000Fh	Command Selection Setting C Batch Data Transfer Term. 5 D Batch Data Transfer Term. 6 E Batch Data Transfer Term. 7 F Batch Data Transfer Term. 8 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 Eh @ Motor 2 Selected Fh @ Zero Servo Complete	200Ah	Error Signal 2 8h DEV-1 CH1 Excessive Speed Deviation 9h PGO-1-S PG CH1 Open (Software) 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		
2000h	Status Word				

Monitor Registers (Read Only)

REGISTER (in hex)	FUNCTION	BIT NO.	DESCRIPTION
0010h	Drive Status	0	Run
		1	Zero-Speed
		2	Reverse Run
		3	Reset Signal Input
		4	Speed Agree
		5	Drive Operation Ready
		6	Minor Fault (Alarm)
		7	Major Fault (Fault)
		8 ~ 10	Not Used
		E	Com Ref Status
F	Com Ctrl Status		
0011h	Operator Status	0	OPE has Occurred
		1	ERR has Occurred
		2	Program Mode
		3	0: Operator 1: PC
		4 ~ F	Not Used
			OPE Description Number
0012h	OPE Number		
0013h	Inverter Code		G5: 0000h V7: 2040h F7: 2040h

Monitor Registers (Read Only) - Continued

REGISTER (in hex)	FUNCTION	BIT NO.	DESCRIPTION
0014h or 0730h	Existing Fault Code 1	0	PUF – Fuse Blown
		1	UV1 - DC Bus Undervoltage
		2	UV2 - CTL PS Undervoltage
		3	UV3 - MC Answerback
		4	Not Used
		5	GF - Ground Fault
		6	OC - Over Current
		7	OV – Overvoltage
		8	OH - Heatsink Overtemperature
		9	OH1 - Drive Overheat
		A	OL1 - Motor Overload
		B	OL2 - Drive Overload
		C	OT1 - Overtorque 1
		D	OT2 - Overtorque 2
		E	RR - Dynamic Braking Transistor
		F	RH - Dynamic Braking Resistor Overheat
0015h or 0731h	Existing Fault Code 2	0	EF3 - External Fault 3
		1	EF4 - External Fault 4
		2	EF5 - External Fault 5
		3	EF6 - External Fault 6
		4	EF7 - External Fault 7
		5	EF8 - External Fault 8
		6	PGO-1-h - PG CH 1 Open (Hardware Detection)
		7	OS-1 – CH 1 Overspeed
		8	DEV-1 - Speed Deviation
		9	PGO-1-S – PG CH 1 Open (Software Detection)
		A	PF - Input Phase Loss
		B	LF - Output Phase Loss
		C	OH3 – Motor Overheat
		D	OPR – Operator Disconnect
		E	ERR - EEPROM R/W Error
		F	OH4 – Motor Overheat 2

Monitor Registers (Read Only) - Continued

REGISTER (in hex)	FUNCTION	BIT NO.	DESCRIPTION
0016h or 0732h	Existing Fault 3	0	CE – Modbus Com Error
		1	BUS – Option Communication Error
		2	E15 – Serial Communication Error
		3	E10 – Option CPU Down
		4	CF – Out of Control
		5	SVE – Zero Servo Fault
		6	EFO – Communication Option External Fault
		7	FBL – PID Feedback Loss
		8	UT1 – Undertorque 1
		9	UT2 – Undertorque 2
0733h	Existing Fault 4	A	OL7 – High Speed Slip Braking Overload
		B	PGO-2-H – PG CH2 Open (Hardware Detection)
		C	OS-2 – CH2 Overspeed
		D	DEV-2 – CH2 Speed Deviation
		E	PG)-S-S – PG CH2 Open (Software Detection)
		F	Not used
		0	Not Used
		1	Not Used
		2	SNAP – Snapped Shaft
		3	LC - Load Check Error
4	BE1 – Rollback Detected		
5	BE2 – No Current		
6	BE3 – Brake Release No Good		
7	BE7 – Brake Welded		
8	UL3 – Upper Limit 3		
9 ~ F	Not Used		

Monitor Registers (Read Only) - Continued

REGISTER (in hex)	FUNCTION	BIT NO.	DESCRIPTION
0017h	CPF Description 1	0 ~ 1	Not Used
		2	CPF02 – Baseblock Circuit
		3	CPF03 – EEPROM Fault
		4	CPF04 – CPU Internal A/D Converter
		5	CPF05 – External A/D Converter
		6	CPF06 – Option Board Connection Error
		7	CPF07 – ASIC Internal RAM Error
		8	CPF08 – Watchdog Timer Fault
		9	CPF09 – CPU-ASIC Mutual Diagnosis Fault
		A	CPF10 – ASIC Version Fault
0018h	CPF Description 2	B ~ F	Not Used
		0	CPF20 – Option A/D Error
		1	CPF21 – Option CPU Down
		2	CPF22 – Option Type Error
		3	CPF23 – Option Board Interconnection Fault
		4 ~ F	Not Used
		0	UV - DC Bus Undervoltage (No run command)
		1	OV - DC Bus Overvoltage (No run command)
		2	OH - Inverter Overheat
		3	OH2 - Inverter Overheat Warning by MFDI '39H'
0019h or 734h	Minor Fault Content 1 (Alarm)	4	OT1 - Overtorque 1
		5	OT2 - Overtorque 2
		6	EF - External Fault (F/R simultaneously)
		7	BB - External Baseblock
		8	EF3 - External Fault Terminal 3
		9	EF4 - External Fault Terminal 4
		A	EF5 - External Fault Terminal 5
		B	EF6 - External Fault Terminal 6
		C	EF7 - External Fault Terminal 7
		D	EF8 - External Fault Terminal 8
E	SNAP - Snapped Shaft		
F	OS-1 - CH1 Overspeed		

Monitor Registers (Read Only) - Continued

REGISTER (in hex)	FUNCTION	BIT NO.	DESCRIPTION
001Ah or 735h	Minor Fault Content 2 (Alarm)	0	DEV-1 - CH1 Speed Deviation
		1	PGO-1-S - PG CH1 Open (Software Detection)
		2	PGO-1-H - PG CH1 Open (Hardware Detection)
		3	CE - Memobus Communication Error
		4	BUS - Communication Option Error
		5	CALL - Serial Comm has not been established (Communication Option)
		6	LC - Load Check Error
		7	BE0 - Brake Answerback Lost during run
		8	DEV-2 - CH2 Speed Bias Exceeded
		9	EF0 - Communication Option External Fault
		A	Can't SW - Motor Switch During Run
		B	FBL - PID Feedback Loss
		C	CALL - Serial Comm has not been established (Memobus)
		D	UT1 - Undertorque 1
		E	UT2 - Undertorque 2
		F	Communication TEST Error
001Bh or 736h	Minor Fault Content 3 (Alarm)	0	OS-2 - CH2 Overspeed
		1	OH3 - Motor Overheat 1
		2	DNE - Drive not Ready
		3	PGO-2-S - PG CH2 Disconnect (Software Detection)
		4	PGO-2-H - PG CH2 Disconnect (Hardware Detection)
		5	BE4 - Brake Answer 1 (Start of Run)
		6	BE5 - Brake Answer 2 (End of Run)
		7	BE6 - Brake Slipping
		8	UL2 - Upper Limit 2
		9	LL2 - Lower Limit 2
		A	UL1 - Upper Limit 1
		B	LL1 - Lower Limit 1
		C	SLC - Slack Cable Detect
		D	MNT - Maintenance Required
		E	KLX - Klixon
		F	UL3 - Upper Limit 3
737h	Minor Fault Content 4 (Alarm)	0	BE8 - Brake Slipping (Load Catch)
		1 ~ F	Not Used (Future Alarms)

Monitor Registers (Read only) - Continued

REGISTER R (in hex)	FUNCTION	BIT NO.	DESCRIPTION
0020h	Drive Status	0	Running
		1	Reverse Run
		2	Drive Operation Ready
		3	Drive Fault
		4	Data Setting Error
		5	Multi-Function Digital Output (Terminal M0 – M1)
		6	Multi-Function Digital Output (Terminal M2 – M4)
		7	Multi-Function Digital Output (Terminal M5 – M6)
		8 ~ F	Not Used
		0021h	Major Fault Content
1	OV - DC Bus Overvoltage		
2	OL2 - Inverter Overload		
3	OH1, OH2 Inverter Overheat		
4	RR - Braking Transistor Fault, RH - Internal Braking Resistor Overheat		
5	PUF - Fuse Blown		
6	FbL - PID Feedback Loss		
7	External Fault (EF, EF0)		
8	CPF Hardware Fault		
9	OL1, OT1, OT2		
0022h	Data Link Status	A	PGO-1-S, OS-1, DEV-1
		B	UV - DC Bus Undervoltage (No run command)
		C	UV1, UV2, UV3 Power Loss while running
		D	SPO - Output Phase, SPI - Input Phase
		E	CE - Memobus Communication Error
		F	OPR - Operator Connection Fault while running from operator
		0	Writing Data
		1 ~ 2	Not Used
		3	Parameter Upper/Lower Limit Fault
		4	Parameter Data Inconsistency Fault
0023h 0024h 0025h	Frequency Reference Output Frequency Output Voltage	5 ~ F	Not Used
			U1-01
			U1-02
			U1-06

Monitor Registers (Read only) - Continued

REGISTER (in hex)	FUNCTION	BIT NO.	DESCRIPTION
0026h	Output Current		U1-03
0027h	Output Power		U1-08
0028h	Torque Reference		U1-09
002Bh	Digital Input Status	0	Terminal 1 (Closed)
		1	Terminal 2 (Closed)
		2	Terminal 3 (Closed)
		3	Terminal 4 (Closed)
		4	Terminal 5 (Closed)
		5	Terminal 6 (Closed)
		6	Terminal 7 (Closed)
		7	Terminal 8 (Closed)
002Ch	Drive Status	0	During Run
		1	During Zero Speed
		2	During Speed Agree (Fixed: (Fref = Fout) or (Fref = Motor Speed)) (Width by L4-02)
		3	During Speed Agree (Programmable by L4-01, L4-02)
		4	Frequency Detection 1
		5	Frequency Detection 2
		6	Inverter Ready
		7	Undervoltage During Detection
		8	During Baseblock
		9	Frequency Reference Mode 1: Not from Comm.
		A	Run Command Mode 1: Not from Comm.
		B	Overtorque During Detection
		C	During Frequency Reference Loss
		D	During Fault Restart (Auto Reset)
		E	During Fault
		F	Memobus Timed Out
002Dh	Multi-Function Output Status	0	Multi-Function Output (Terminal M0, M1)
		1	Multi-Function Output (Terminal M2 ~ M4)
		2	Multi-Function Output (Terminal M5, M6)
0031h 0032h 0033h 0038h	DC Bus Voltage Torque Reference Output Power PID Setpoint	3 ~ F	Not Used
			U1-07
			U1-09
			U1-08
			U1-24

Monitor Registers (Read only) - Continued

REGISTE R (in hex)	FUNCTION	BIT NO.	DESCRIPTION
0039h	PID Input		U1-36
003Ah	PID Output		U1-37
003Bh	CPU Software Number		U1-28
003Ch	Flash Software Number		U1-114
003Dh	Comm. Error Description	0	CRC Error
		1	Data Length Error
		2	Not Used
		3	Parity Error
		4	Overrun Error
		5	Framing Error
		6	Timed Out
7 ~ F	Not Used		
003Eh	KVA Setting		Drive KW Rating
003Fh	Control Mode		Control Method

Drive Parameter Registers (U1-xx / Monitor Only)

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	BIT NO.	LIMITS / DESCRIPTION
040h	U1-01	Frequency Reference			Frequency Reference of drive (0.1 Hz) (1)
041h	U1-02	Output Frequency			Output Frequency of drive (0.1 Hz) (1)
042h	U1-03	Output Current			10V/Drive rated current (2)
043h	U1-04	Control Method	0		V/f Control
			1		V/f with PG Feedback
			2		Open Loop Vector
			3		Flux Vector
044h	U1-05	Motor Speed			Motor Speed (in 0.1 Hz)
045h	U1-06	Output Voltage			Output Voltage (in 0.1 V)
046h	U1-07	DC Bus Voltage			DC Bus Voltage (in 1 V)
047h	U1-08	Output Power			Output Power (in 0.1 kW)
048h	U1-09	Torque Reference			Torque Reference (in 0.1%)
049h	U1-10	Input Terminal Status	0		Input Terminal 1 closed
			1		Input Terminal 2 closed
			2		Input Terminal 3 closed
			3		Input Terminal 4 closed
			4		Input Terminal 5 closed
			5		Input Terminal 6 closed
			6		Input Terminal 7 closed
			7		Input Terminal 8 closed
04Ah	U1-11	Output Terminal Status	0		Control Circuit terminals M0, M1: "Closed"
			1		Control Circuit terminals M2 ~ M4: "Closed"
			2		Control Circuit terminals M5, M6: "Closed"
			3-6		Not Used
			7		Control Circuit terminals MA ~ MC: "Closed"

Notes:

(1) Scaling depends on the setting of $\alpha 1-03$.

(2) Display unit = 0.01A for models IMPULSE Series 3 2003 thru 2025 and 4001 thru 4011; display unit = 0.1A for models 2033 - 2300 and 4014 - 4605.

Drive Parameter Registers (U1-xx / Monitor Only) – Continued

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	BIT NO.	LIMITS / DESCRIPTION
04Bh	U1-12	Operation Status		0 1 2 3 4 5 6 7	Run Zero-Speed Reverse Run Reset Signal Input Speed Agree Drive Operation Ready Minor Fault Major Fault
04Ch	U1-13	Elapsed Time			Hours
04Dh	U1-14	Software No. (CPU ID No.)			Software version number
04Eh	U1-15	Control Circuit Term A1 Input Voltage			Input voltage signal at terminal A1 (+10V / +100.0% ~ -10V / -100.0%)
04Fh	U1-16	Control Circuit Term A2 Input Voltage			Input voltage or mAmp signal at terminal A2 (+10V / +100.0% ~ -10V / -100.0%) or (4mA / 0.0% ~ 20mA / 100.0%)
050h	U1-17	Control Circuit Term A3 Input Voltage			Input voltage signal at terminal A3 (+10V / +100.0% ~ -10V / -100.0%)
051h	U1-18	Motor Secondary Current (Iq)			Motor Secondary Current-Iq (0.1%)
052h	U1-19	Motor Exciting Current (Id)			Motor Rated Primary Current-Id (0.1%)
053h	U1-20	Output Frequency after Soft-start			Max. Output Frequency (0.1 Hz)
054h	U1-21	Automatic Speed Regulator (ASR) Input			ASR Input (0.01%)
055h	U1-22	Automatic Speed Regulator (ASR) Output			ASR Output (0.01%)
056h	U1-23	PG-Z2 CH2 Detection Speed			PG-Z2 CH2 Detection Speed (0.01%)
057h	U1-24	PID Feedback Amount			PID Feedback Amount (0.01%)
058h	U1-25	G5 IN4 Reference			Input value according to the setting of F3-01
059h	U1-26	Output Voltage Reference Vq			Output Voltage-Vq (0.1V)
05Ah	U1-27	Output Voltage Reference Vd			Output Voltage-Vd (0.1V)
05Bh	U1-28	Software No. CPU			processor version number
05Ch	U1-29	Load Weight			Weight Measurement
05Dh	U1-30	SS Delta Speed			Snap Shaft Speed Difference
05Fh	U1-32	ACR Output q Axis			ASR Output q Axis (0.1%)
060h	U1-33	ACR Output d Axis			ASR Output d Axis (0.1%)
061h	U1-34	OPE Detection			Parameter setting error
062h	U1-35	Zero Servo Motion Pulse			Pulse Count During Zero Servo
063h	U1-36	PID Input			PID Input (0.00%)
064h	U1-37	PID Output			PID Output (0.00%)
065h	U1-38	PID Setpoint			PID Setpoint (0.00%)

Drive Parameter Registers (U1-xx / Monitor Only) – Continued

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	BIT NO.	LIMITS / DESCRIPTION
066h	U1-39	Memobus Communication Error			
067h	U1-40	FAN Accumulated Operation Time			
068h	U1-41	Cooling Fin Temperature	Not Used		
069h			Not Used		
06Ah					
06Bh	U1-44	ASR Output			ASR Out No Filter
06Ch			Not Used		
06Dh			Not Used		
06Eh			Not Used		
06Fh			Not Used		
070h	U1-49	CPU Occupation Rate			Amount of CPU Resources Being Used
071h	U1-50	Hook Height			Calculated Height of Hook (0.00%) (Height Measurement)
072h	U1-51	Motor Revolution			Number of Motor Revolutions Since Upper Limit (UL2) (Height Measurement)
073h	U1-52	Maintenance Timer			Number of Hours Remaining Before Maintenance is Required
074h	U1-53	Inch 2 Count			Number of Pulses Encoder has Moved Since Inch 2 Command

Drive Parameter Registers (U2-xx / Fault Trace and U3-xx / Fault History)

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	BIT NO.	LIMITS / DESCRIPTION
080h	U2-01	Current Fault			Code of current fault (1)
081h	U2-02	Last Fault			Code of second to current fault (1)
082h	U2-03	Frequency Ref. at Fault	Frequency Reference at the time of the current fault (0.0 to 400.0 Hz)		
083h	U2-04	Output Frequency at Fault	Output Frequency at the time of current fault (0.0 to 400.0 Hz)		
084h	U2-05	Output Current at Fault	Output Current at the time of current fault (drive rating /8192)		
085h	U2-06	Motor Speed at Fault	Motor Speed at the time of current fault (in 0.1 Hz)		
086h	U2-07	Output Voltage at Fault	Output Voltage at the time of current fault (in 0.1 V)		
087h	U2-08	DC Bus Voltage at Fault	Output Voltage at the time of current fault (in 1 V)		
088h	U2-09	Output kWatts at Fault	Output Power at the time of current fault (in 0.1 kW)		
089h	U2-10	Torque Reference at Fault	Torque Reference at the time of current fault (in 0.1%)		
				0	Input Terminal 1 closed at time of fault
				1	Input Terminal 2 closed at time of fault
				2	Input Terminal 3 closed at time of fault
				3	Input Terminal 4 closed at time of fault
				4	Input Terminal 5 closed at time of fault
				5	Input Terminal 6 closed at time of fault
				6	Input Terminal 7 closed at time of fault
				7	Input Terminal 8 closed at time of fault
				0	Control Circuit terminals 9 & 10: "Closed"
				1	Control Circuit terminals 25 & 27: "Closed"
				2	Control Circuit terminals 26 & 27: "Closed"
				3-6	not used
				7	Control Circuit terminals 18 & 20: "Closed"
08Ah	U2-11	Input Terminal Status at Fault			
08Bh	U2-12	Output Terminal Status at Fault			

Notes:
 (1) List of Drive Error Codes can be found in chapter 8, Error Codes and Troubleshooting.

Drive Parameter Registers (U2-xx / Fault Trace and U3-xx / Fault History) – Continued

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	BIT NO.	LIMITS / DESCRIPTION
08Ch	U2-13	Drive Status at Fault		0	Running at the time of fault
				1	Zero-Speed at the time of fault
				2	Reverse Running at the time of fault
				3	Reset Signal Input at the time of fault
				4	Speed Agree at the time of fault
				5	Drive Operation Ready at the time of fault
				6	Minor Fault
7	Major Fault				
08Dh	U2-14	Elapsed Time at Fault			Elapsed Time at the time of fault (in hrs.)
800h	U3-01	Last Fault			Code of the most recent fault (1)
801h	U3-02	Fault Message 2			Code of the second to most recent fault (1)
802h	U3-03	Fault Message 3			Code of the third to most recent fault (1)
803h	U3-04	Fault Message 4			Code of the fourth to most recent fault (1)
804h	U3-05	Elapsed Time 1			Elapsed Time at the most recent fault occurrence
805h	U3-06	Elapsed Time 2			Elapsed Time at the second to most recent fault occurrence
806h	U3-07	Elapsed Time 3			Elapsed Time at the third to most recent fault occurrence
807h	U3-08	Elapsed Time 4			Elapsed Time at the fourth to most recent fault occurrence
808h	U3-09	Fault Message 5			Code of the fifth to most recent fault (1)
809h	U3-10	Fault Message 6			Code of the sixth to most recent fault (1)
80Ah	U3-11	Fault Message 7			Code of the seventh to most recent fault (1)
80Bh	U3-12	Fault Message 8			Code of the eighth to most recent fault (1)
80Ch	U3-13	Fault Message 9			Code of the ninth to most recent fault (1)
80Dh	U3-14	Fault Message 10			Code of the tenth to most recent fault (1)
80Eh	U3-15	Elapsed Time 5			Elapsed Time at the fifth to most recent fault occurrence
80Fh	U3-16	Elapsed Time 6			Elapsed Time at the sixth to most recent fault occurrence
810h	U3-17	Elapsed Time 7			Elapsed Time at the seventh to most recent fault occurrence
811h	U3-18	Elapsed Time 8			Elapsed Time at the eighth to most recent fault occurrence
812h	U3-19	Elapsed Time 9			Elapsed Time at the ninth to most recent fault occurrence
813h	U3-20	Elapsed Time 10			Elapsed Time at the tenth to most recent fault occurrence
814h	U3-21	Accumulated Operations			Accumulated Operations
815h	U3-22	U3-21 Rollover			Increments each time U3-21 reaches 65535. U3-21 is set to 0
816h	U3-23	OL / LC Count			OverLoad / Load Check Count

Notes: (1) List of Drive Error Codes can be found in chapter 8, Error Codes and Troubleshooting.

Drive Parameter Registers (Read/Write)

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	LIMITS / DESCRIPTION	INITIAL VALUE
100h	A1-00	Language Selection	0	English	0
			1	French	
			2	Spanish	
101h	A1-01	Parameter Access Level	0	Operation Only	2
			1	User Program	
			2	Advanced	
			3	Factory	
102h	A1-02	Control Method Selection	0	V/f Control	2
			1	V/f Control w/ PG (Factory Access Only)	
			2	Open Loop Vector	
			3	Flux Vector	
103h	A1-03	Motion Select	0	Traverse	1
			1	Standard Hoist	
			2	No-Load Brake Hoist	
			3	Bucket Hoist	
104h	A1-04	Speed Reference	0	2-Spd Multi-Step	6
			1	3-Spd Multi-Step	
			2	5-Spd Multi-Step	
			3	2-Step Infinitely Variable	
			4	3-Step Infinitely Variable	
			5	Uni-Polar Analog	
			6	Bi-Polar Analog	
			7	G5IN4 Option Card	
8	Serial Opt Card				
105h	A1-05	Initialize Parameters	0000	No Initialize	0
			1110	User Initialize	
			2220	2-wire Initialize	
106h	A1-06	User Password 1	0000 ~ 9999	0	
108h	A1-07	Factory Password 2	0000 ~ 9999	0	
10Ah Through 129h	A2-01	User Selected Parameter 1	Setting B1-01 ~ O4-02		0
	~ A2-32	User Selected Parameter 32			

Drive Parameter Registers (Read/Write) – continued

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	LIMITS / DESCRIPTION	INITIAL VALUE
180h	B1-01	Frequency Reference 1		0.00 to 400.00 Hz (1)	15.00
181h	B1-02	Frequency Reference 2		0.00 to 400.00 Hz (1)	30.00
182h	B1-03	Frequency Reference 3		0.00 to 400.00 Hz (1)	60.00
183h	B1-04	Frequency Reference 4		0.00 to 400.00 Hz (1)	45.00
184h	B1-05	Frequency Reference 5		0.00 to 400.00 Hz (1)	60.00
185h	B1-06	Frequency Reference 6		0.00 to 400.00 Hz (1)	0.00
186h	B1-07	Frequency Reference 7		0.00 to 400.00 Hz (1)	0.00
187h	B1-08	Frequency Reference 8		0.00 to 400.00 Hz (1)	0.00
188h	B1-09	Frequency Reference 9		0.00 to 400.00 Hz (1)	0.00
189h	B1-10	Frequency Reference 10		0.00 to 400.00 Hz (1)	0.00
18Ah	B1-11	Frequency Reference 11		0.00 to 400.00 Hz (1)	0.00
18Bh	B1-12	Frequency Reference 12		0.00 to 400.00 Hz (1)	0.00
18Ch	B1-13	Frequency Reference 13		0.00 to 400.00 Hz (1)	0.00
18Dh	B1-14	Frequency Reference 14		0.00 to 400.00 Hz (1)	0.00
18Eh	B1-15	Frequency Reference 15		0.00 to 400.00 Hz (1)	0.00
18Fh	B1-16	Frequency Reference 16		0.00 to 400.00 Hz (1)	0.00
190h	B1-17	Jog Frequency Reference		0.00 to 400.00 Hz (1)	6.00
191h	B1-18	Reference Priority ¹	0	Digital Reference Only	0
			1	Analog Reference Only	
			2	Higher Reference Select	
192h	B2-01	Frequency Reference Upper Limit		0.0 to 110.0%	100.0
193h	B2-02	Frequency Reference Lower Limit		0.0 to 110.0%	0.0
194h	B2-03	Master Speed Ref Lower Limit		0.0 to 110.0%	2
195h	B2-04	Alternate Upper Limit		0.0 to 110.0%	100
196h	B3-01	Reference Selection	0	Digital Operator	1
			1	Terminal	
			2	Serial Communication	
			3	Option PCB	
197h	B3-02	Operation Method Selection	0	Digital Operator	1
			1	Terminal	
			2	Serial Communication	
			3	Option PCB	

Drive Parameter Registers (Read/Write) – continued

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	LIMITS / DESCRIPTION	INITIAL VALUE
198h	B3-03	Stopping Method Selection	0	Ramp to Stop	Determined by A1-03 (Motion)
			1	Coast to Stop	
			2	DC Injection to Stop	
			3	Coast with Timer	
			4	Ramp with Timer	
			5	Hoist 2 Stop	
29Ah	B3-04	Motor Rotation	6	No Load Brake	0
			0	Normal Rotation	
199h	B3-05	Zero Speed Operation (level determined by E1-09)	1	Exchange Phases	0
			0	Run at Frequency Reference	
			1	Stop	
19Ah	B3-06	Logic Input Scan Rate	2	Run at Min. Frequency (E1-09)	0
			3	Run at Zero Speed	
19Bh	B3-07	Local / Remote RUN Selection	0	2ms - 2 scans	1
			1	5ms - 2 scans	
19Ch	B3-08	Run Command Selection @ Program Mode	0	Cycle External Run	0
			1	Accept External Run	
19Eh	B3-10	Allow Run @ Power Up	0	Disabled	0
			1	Enabled	
19Fh	B4-01	Frequency reference Hold Function	0	Disabled	0
			1	Enabled	
1A0h	B4-02	Trim Control Level	0	Disabled: Operates at Zero when restarting Enabled: Operates at previously hel frequency 0 to 100%	10
1A1h	B5-01	Acceleration Time 1	1	0.0 to 25.5 seconds	5.0
1A2h	B5-02	Deceleration Time 1	0	0.0 to 25.5 seconds	3.0
1A3h	B5-03	Acceleration Time 2	0	0.0 to 6000.0 seconds	2.0
1A4h	B5-04	Deceleration Time 2	0	0.0 to 6000.0 seconds	2.0
1A5h	B5-05	Acceleration Time N Chg	0	0.0 to 25.5 seconds	2.0
1A6h	B5-06	Deceleration Time N Chg	0	0.0 to 25.5 seconds	2.0
1A8h	B5-08	Fast Stop Time	0	0.0 to 25.5 seconds	0.5
1A9h	B5-09	Accel / Decel Time Setting Unit	0	0.01 seconds	1
			1	0.1 seconds	

Drive Parameter Registers (Read/Write) – continued

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	LIMITS / DESCRIPTION	INITIAL VALUE
1AAh	B5-10	Accel / Decel Time Switching Freq.		0.0 to 400.0 Hz	60.00
1ACh	B5-12	Acceleration Time 3		0.0 to 6000.0 seconds	3.0
1ADh	B5-13	Deceleration Time 3		0.0 to 6000.0 seconds	3.0
1AEh	B5-14	Acceleration Time 4		0.0 to 6000.0 seconds	3.0
1AFh	B5-15	Deceleration Time 4		0.0 to 6000.0 seconds	3.0
1B0h	B6-01	Speed Search @ Start	0	Disabled	2
			1	Enabled: Speed Estimation Type	
			2	Disabled	
			3	Enabled: Current Detection Type	
1B1h	B6-02	Speed Search Operation Current		0.0 to 200.0%	120
1B2h	B6-03	Speed Search Deceleration Time		0.1 to 10.0 seconds	2.0
1B4h	B6-05	Search Delay Time		0.0 to 20.0 seconds	0.2
1B9h	B6-10	Speed Detect Comp Gain		1.00 to 1.50	1.10
29Dh	B6-14	Bidirectional Search	0	Disabled: Drive uses frequency reference det	1
			1	Enabled: Drive uses detected direction	
1BCh	B8-01	Jump Frequency 1		0.0 to 400.0 Hz	0.0
1BDh	B8-02	Jump Frequency 2		0.0 to 400.0 Hz	0.0
1BEh	B8-03	Jump Frequency 3		0.0 to 400.0 Hz	0.0
1BFh	B8-04	Jump Bandwidth		0.0 to 20.0 Hz	1.0
1C4h	C1-01	Quick Stop 0/1	0	Disabled	0
			1	Enabled	
1C5h	C1-02	Quick Stop Time		0.0 to 25.5 seconds	1.0
1C6h	C1-03	Plug Reverse 0/1	0	Disabled	0
			1	Enabled	
1C7h	C1-04	Plug Reverse Decel Time		0.0 to 25.5 seconds	2.0
1C8h	C1-05	Plug Reverse Accel Time		0.0 to 25.5 seconds	2.0
1C9h	C2-01	Micro Speed Gain 1		0.00 to 2.55	1.0
1CAh	C2-02	Micro Speed Gain 2		0.00 to 2.55	1.0
1CBh	C3-01	Upper Limit 1 Speed		0.00 to 400.00 Hz	6.00
1CCh	C3-02	Upper Limit 1 Decel Time		0.0 to 25.5 sec	1.0
1CDh	C3-03	Upper Limit 2 Stop Time		0.0 to 25.5 sec	0.5
1CEh	C3-04	Lower Limit 1 Speed		0.00 to 400.00 Hz	6.00
				0.0 to 25.5 sec	
1CFh	C3-05	Lower Limit 1 Decel Time		0.0 to 25.5 sec	1.0

Drive Parameter Registers (Read/Write) – continued

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	LIMITS / DESCRIPTION	INITIAL VALUE
1D0h	C3-06	Lower Limit 2 Stop Time	0	0.0 to 25.5 sec	1.0
1D1h	C3-07	Limit Stop Method	1	Decel to Stop	2
			2	BB to Stop	
			Use B3-03 Method		
1D2h	C3-08	UL3 Stop Method	0	Decel/Alarm (No further raise allowed)	4
			1	Coast/Alarm (No further raise allowed)	
			2	Use B3-03/Alarm (No further raise allowed)	
			3	Decel/Fault	
			4	Coast/Fault	
5	Use B3-03/Fault				
1D3h	C3-09	Phantom Stop Met	0	Decel To stop	1
			1	Coast to Stop	
			2	Use B3-03 Method	
600h	C3-10	Load Share Limit	0	Disabled	0
			1	Enabled	
1D4h	C4-01	Load Float Time 2		0 to 255 Sec	10
1D5h	C4-02	Load Float Gain		0 to 100	10/20
1D6h	C4-03	Load Float Count		0 to 16383	10
			0	Disabled	0
1D7h	C5-01	Load Check 0 / 1	1	Enabled	0
			0	Alarm Only	
1D8h	C5-02	Load Check Alarm Action	1	Decel to Stop	1
			2	Coast to Stop	
			3	Fault Stop	
			4	Use B3-03 Method – Can lower only (Alarm)	
1D9h	C5-03	Minimum Torque Reference		0 to 100%	60
1DAh	C5-04	Look Speed 1		0 to 400 Hz	6
1DBh	C5-05	I Ref for LS 1 (V/F or OLV)		1 to 300 % IRC	160
1DDh	C5-07	Look Speed 2		0 to 400 Hz	20
1DEh	C5-08	I Ref for LS 2 (V/F or OLV)		1 to 300 % IRC	160
1DFh	C5-09	Look Speed 3		0 to 400 Hz	40
1E0h	C5-10	I Ref for LS 3 (V/F or OLV)		1 to 300 % IRC	160
1E1h	C5-11	I Ref for > LS 3		1 to 300 %	160

Drive Parameter Registers (Read/Write) – continued

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	LIMITS / DESCRIPTION	INITIAL VALUE
1E2h	C5-12	Load Check Setting Time	0.00 to 2.55 sec	1.00	
1E3h	C5-13	Load Check Test Time	0.00 to 2.55 sec	0.25	
1E4h	C5-14	Load Check Alarm Speed	0.0 to 30.0 Hz	6.0	
1E5h	C6-01	Ultra / Swift Lift 0 / 1	0	Disabled	0
			1	Enabled Automatic	
			2	Enabled by MFI	
1E6h	C6-02	Ultra / Swift Lift Forward Speed		0 to 400 Hz	60
1E7h	C6-03	Ultra / Swift Lift Reverse Speed		0 to 400 Hz	60
1E8h	C6-04	Ultra / Swift Lift Forward Torque		0 to 100 %	50
1E9h	C6-05	Ultra / Swift Lift Reverse Torque		0 to 100 %	30
1EAh	C6-06	Ultra / Swift Lift Enabling Speed		0.0 to 400.0 Hz	59.0
1EBh	C6-07	Ultra / Swift Lift Delay Time		0.0 to 25.5 sec	2.0
1ECh	C6-08	SFS Acc Gain		0.1 to 9.9	1.0
286h	C6-09	Normal OS Level		40.0 to 400.0 Hz	60.0
1EDh	C7-01	Forward Torque Limit		0 to 300%	150
1EEh	C7-02	Reverse Torque Limit		0 to 300%	150
1EFh	C7-03	Forward Regenerative Torque Limit		0 to 300%	180
1F0h	C7-04	Reverse Regenerative Torque Limit		0 to 300%	180
1F1h	C7-05	Torque Limit Gain MFI		0 to 2.55	1.25
1F3h	C8-01	Torque Compensation Time		0.00 to 2.55 Sec	1.00 / 2.00
1F4h	C8-02	IFB OK Time		0.00 to 2.55 Sec	1.00 / 2.00
1F5h	C8-03	Minimum Brake Release Torque		0 to 300 %	10/100
1F6h	C8-04	Roll Back Timer / BE4 Timer		0.00 to 2.55 Sec	0.30
1F7h	C8-05	Roll Back Count		0 to 16536 Pulses	800
1F8h	C8-06	BE3 / Alternate Torque Timer		0.00 to 2.55 Sec	0.30
1F9h	C8-07	BE3 Detection Count		0 to 16536 Pulses	25
1FAh	C8-08	Alternate Reverse Torque Limit		0 to 300 %	25
1FBh	C8-09	Zero Speed Level		0.0 to 10.0 Hz	1
1FCh	C8-10	Load Float Time		0 to 255 Sec	10
1FDh	C8-11	Brake Set Delay Time		0.00 to 25.5 Sec	0.7
1FEh	C8-12	BE6 Detect Timer		0.00 to 25.5 Sec	5.0
1FFh	C8-13	BE6 Max Count		0 to 16536 Pulses	250
200h	C8-14	Brake Hold Speed		B2-02 + 0.1 to 25.5 %	5.0
201h	C8-15	Load Float Extension timer		0 to 255 Sec	10

Drive Parameter Registers (Read/Write) – continued

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	LIMITS / DESCRIPTION
202h	C8-16	Initial Brake Release Torque	0 to 300 %	100
203h	C8-17	BE6 Up Speed Limit	0.00 to 400.00 Hz	6.00
205h	C8-19	Brake Test Torque	0 to 300%	125
206h	C8-20	Brake Test Speed	0 to 10Hz	6
207h	C8-21	Height Measure	0 to 65535	250
601h	C8-22	Brake Slip Detect	0 Disabled 1 Enabled	0
602h	C8-23	Brake Slip Detect Speed	0.0 to 10.0 Hz	1.0
208h	C9-01	G5IN4 Option Enable	0 Disabled 1 Enabled	0
209h	C9-02	G5IN4 Option Setup	0000 to FFFF	0
20Ah	C10-01	Load Weight 0 / 1	0 Disabled 1 Enabled at C5-04 2 Enabled by MFI 3 Both Auto & MFI 4 Analog Input (Load Cell) Data "16"	0
20Bh	C10-02	Torque Primary Delay	0 to 1000 ms	200
20Ch	C10-03	Load Weight Display	0 Hold Display 1 Hold Display for 3 Seconds	0
20Dh	C10-04	Load Weight Conversion	00000 to 39999	0
20Eh	C10-05	Full Load Torque	0.0 to 200.0 %	100.0
20Fh	C10-06	No Load Torque	0.0 to 200.0 %	20.0
210h	C10-07	Unit Displayed	0 Tons 1 Pounds 2 Kilograms 3 Metric Tons 4 Percent load	0
211h	C10-08	Weight Limit Output	0.0 to 200.0%	125.0%
212h	C11-01	Slack Cable 0 / 1	0 Disabled 1 Enabled	0

Drive Parameter Registers (Read/Write) – continued

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	LIMITS / DESCRIPTION	INITIAL VALUE
213h	C11-02	Action at Slack Cable	0	No Action	2
			1	No Action / C3-04	
			2	Decel / C3-04	
			3	Decel / No Operation	
			4	Decel to Stop / C3-04	
5	Decel to Stop / No Operation				
214h	C11-03	Slack Cable Detect Torque		0 to 100 %	30
215h	C11-04	Slack Cable Detect Speed 1		0 to 150 Hz	2
216h	C11-05	Slack Cable Delay Time 1		0.00 to 2.55 Sec	0.50
217h	C11-06	Slack Cable Detect Speed 2		0 to 150 Hz	60
218h	C11-07	Slack Cable Delay Time 2		0.00 to 2.55 Sec	0.10
219h	C11-08	Snap Shaft Detection	0	Disabled	0
			1	Enabled	
21Ah	C11-09	Drive Train Discontinuity (Action @ Snap Shaft)	0	Brake / Fault Out	0
			1	Alarm Only	
21Bh	C11-10	SS Delta Speed		0.0 to 400.0 Hz	1.0
21Ch	C11-11	SS Delay Time		0 to 2000 mSec	250
21Dh	C11-12	Gear Ratio Numerator		1 to 65535	10000
21Eh	C11-13	Gear Ratio Denominator		1 to 65535	10000
21Fh	C12-01	Brake Jog Delay		0.0 to 100.0 Sec	0.0
220h	C12-02	Brake Run Delay		0.0 to 100.0 Sec	0.0
221h	C12-03	Delay-ON Timer		0.0 to 3000.0 Sec	0.0
222h	C12-04	Delay-OFF Timer		0.0 to 3000 Sec	0.0
223h	C12-05	Maintenance Timer		0 to 32767 Hour	0
224h	C12-06	Maintenance Gain		0.00 to 1.00	0.50
225h	C13-01	Inch Run Time		0.00 to 2.55 Sec	1.00
226h	C13-02	Inch Repeat Delay Time		0.00 to 2.55 Sec	1.00
227h	C13-03	Index Run Reference		0.01 to 60.00 Hz	0.10
228h	C13-04	Index Revolutions		0 to 65535 Revs	0
229h	C13-05	Index Count		0 to 65535 PLS	100
22Ah	C13-06	Index Repeat Delay		0.00 to 60.00 Sec	0.00
22Bh	C13-07	Index Complete		0 to 32767	10
288h	C13-08	Index Zero Servo Gain		0 to 100	10

Drive Parameter Registers (Read/Write) – continued

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	LIMITS / DESCRIPTION	INITIAL VALUE
289h	C13-09	Index ASR P Gain		0.00 to 300.00	30.00
28Ah	C13-10	Index ASR I Time		0.000 to 10.000 Sec	0.20
28Bh	C13-11	Index Gain		0.0 to 20.0	5.0
23Bh	D1-01	DC Injection Start Frequency		0.0 to 10.0 Hz	0.5
23Ch	D1-02	DC Injection Current		0 - 100%	50
23Dh	D1-03	DC Injection Time at Start		0.00 - 10.00 seconds	0.00
23Eh	D1-04	DC Injection Time at Stop		0.00 - 10.00 seconds	0.05
243h	D2-01	Slip Compensation Gain		0.0 to 2.5	0.0 / 1.0
244h	D2-02	Slip Comp Primary Delay Time		0 to 10000 msec.	200 / 2000
245h	D2-03	Slip Compensation Limit		0 to 250%	200
246h	D2-04	Slip Compensation Selection during Regeneration	0	Disabled	0
247h	D2-05	V/f Slip Comp Select	1	Enabled	0
			0	Disabled	
248h	D2-06	Output V Limit Select	0	Magnetek Flux is calculated by output frequency after compensation	0
			1	Magnetek Flux is calculated by output frequency before compensation	
249h	D3-01	Torque Compensation Gain		0.00 to 2.50	1.00
24Ah	D3-02	Torque Compensation Time		0.00 to 10000 ms	20 / 200
24Bh	D3-03	Torque Compensation for Forward		0.0 to 200.0%	0.0
24Ch	D3-04	Torque Compensation for Reverse		-200.0 to 0.0%	0.0
24Dh	D3-05	Torque Compensation Time Const @ Start		0 to 200 ms	10
24Fh	D4-01	ASR Proportional Gain 1		0.00 to 300.00	30.00 / 0.30
250h	D4-02	ASR Integral Time 1		0.000 to 10.000 seconds	0.500 / 0.20
251h	D4-03	ASR Proportional Gain 2		0.00 to 300.00	30.00
252h	D4-04	ASR Integral Time 2		0.000 to 10.000 seconds	0.100 / 0.050
253h	D4-05	ASR Limit		0.0 to 20.0%	5.0
254h	D4-06	ASR Primary Delay Time		0.000 TO 0.500 seconds	0.004
255h	D4-07	ASR Gain Switching Frequency		0.0 to 400.0 Hz	0.0
256h	D4-08	ASR Integral Limit		0 to 400 %	400
257h	D5-01	Torque Control	0	Speed Control (Controlled by D4-01 ~ 07)	0
			1	Torque Control	

Drive Parameter Registers (Read/Write) – continued

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	LIMITS / DESCRIPTION	INITIAL VALUE
258h	D5-02	Torque Ref Filter		0 to 1000 ms	0
259h	D5-03	Speed Limit Select	1	Limited by Frequency Reference (B3-01)	2
			2	Programming Setting (D5-04)	
25Ah	D5-04	Speed Limit Value		-120 to +120%	100
25Bh	D5-05	Speed Limit Bias		0 to 120%	0
25Ch	D5-06	Ref Hold Time		0 to 1000 ms	0
25Dh	D6-01	Droop Control Gain		0.0 to 100.0 ms	0.0
25Eh	D6-02	Droop Control Delay Time		0.03 to 2.00 seconds	0.05
270h	D8-01	Dwell Frequency at Start		0.0 to 400.0 Hz	0.0
271h	D8-02	Dwell Time at Start		0.0 to 10.0 seconds	0.0
272h	D8-03	Dwell Frequency at Stop		0.0 to 400.0 Hz	0.0
273h	D8-04	Dwell Time at Stop		0.0 to 10.0 seconds	0.0
274h	D9-01	S-curve Characteristic at Accel Start		0.0 to 2.50 seconds	0.20
275h	D9-02	S-curve Characteristic at Accel End		0.0 to 2.50 seconds	0.20
276h	D9-03	S-curve Characteristic at Decel Start		0.0 to 2.50 seconds	0.20
277h	D9-04	S-curve Characteristic at Decel End		0.0 to 2.50 seconds	0.20
282h	D11-01	Hunting Prevention Select	0	Disabled	1
			1	Enabled	
283h	D11-02	Hunting Prevention Gain		0.00 to 2.50	1.00

Drive Parameter Registers (Read/Write) – continued

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	LIMITS / DESCRIPTION	INITIAL VALUE
300h	E1-01	Input Voltage Setting	0 to E	155 to 255V (230V unit) 310 to 510V (460V unit)	230 460
302h	E1-03	V/f Pattern Selection	F	15 preset V/f patterns Custom Pattern (using E1-04 to E1-10)	(1)
303h	E1-04	Maximum Output Frequency		40.0 to 300.0 Hz CT 40.0 to 400.0 Hz VT	60.0
304h	E1-05	Maximum Voltage		0.0 to 255.0V (230V unit) 0.0 to 510.0V (460V unit)	230.0 460.0
305h	E1-06	Base Frequency		0.0 to 400.0 Hz	60.0
306h	E1-07	Mid. Output Frequency A		0.0 to 400.0 Hz	(1)
307h	E1-08	Mid Output Voltage A		0.0 to 255.0V (230V unit) 0.0 to 510.0V (460V unit)	(1)
308h	E1-09	Min. Output Frequency		0.0 to 400.0 Hz	(1)
309h	E1-10	Min. Output Voltage		0.0 to 255.0V (230V unit) 0.0 to 510.0V (460V unit)	(1)
30Ah	E1-11	Mid Frequency B		0.0 to 400.0 Hz	0.0
30Bh	E1-12	Mid Voltage B		0.0 to 255.0 VAC	0.0
30Ch	E1-13	Base Voltage		0.0 to 255.0 VAC	0.0
30Dh		Reserved			
30Eh	E2-01	Motor Rated Current		0.32 to 6.40 A	(2)
30Fh	E2-02	Motor Rated Slip		0.00 to 20.00 Hz	(2)
310h	E2-03	Motor No-Load Current		0.00 to 1.89 Amps	(2)
311h	E2-04	Number of Motor Poles		2 to 48 poles	4
312h	E2-05	Motor Terminal Resistance		0.000 to 65.000 Ohms	(2)
313h	E2-06	Motor Leakage Inductance		0.0 to 40.0%	(2)
314h	E2-07	Motor Iron-core Saturation Coefficient 1		0.00 to 0.50	.50
315h	E2-08	Motor Iron-core Saturation Coefficient 2		E2-07 to 0.75	0.75
316h	E2-09	Motor Mechanical Loss		0.0 to 10.0%	0.0

Notes (for this page only):

(1) Initial Value differs depending on the control method (A1-02).

(2) Values differs depending on the drive capacity.

Drive Parameter Registers (Read/Write) – continued

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	LIMITS / DESCRIPTION	INITIAL VALUE
317h	E2-10	Tcomp Iron Loss		0 ~ 65535 W	(1)
318h	E2-11	Rated Horsepower		0.00 ~ 650.00	(1)
380h	F1-01	Encoder (PG) Constant		0 to 60000 ppr	1024
381h	F1-02	Operation Selection at PG Open Circuit	0 1 2 3	Ramp to stop Coast to stop Fast-stop Alarm only	1
382h	F1-03	Operation Selection at Overspeed	0 1 2 3	Ramp to stop Coast to stop Fast-stop Alarm only	1
383h	F1-04	Operation Selection at Speed Deviation	0 1 2 3 4 5 6 7	@Speed Agree-Ramp to stop(B5-02) @Speed Agree-Coast to stop @Speed Agree Fast-stop(B5-08) @Speed Agree-Alarm only @Run-Decel(B5-02) @Run-Coast to Stop @Run-Fast Stop(B5-08) @Run-Alarm Only	1
384h	F1-05	PG Rotation	0 1	FWD:Counter-clockwise FWD:Clockwise	0
385h	F1-06	PG Division Rate (PG Pulse Monitor)	1 to 132 (effective only with PG-B2 control board)		1
386h	F1-07	Integral Value during Accel/Decel Selection	0 1	Disabled Enabled	0
387h	F1-08	Overspeed Detection Level		0 to 120%	115
388h	F1-09	Overspeed Detection Delay Time		0.0 to 2.0 seconds	0.0
389h	F1-10	Excessive Speed Deviation Detection Level		0 to 50%	10
38Ah	F1-11	Excessive Speed Deviation Detection Delay Time		0.0 to 10.0 seconds	0.3

Notes (for this page only):

(1) Initial Value differs depending on the control method (A1-02).

Drive Parameter Registers (Read/Write) – continued

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	LIMITS / DESCRIPTION	INITIAL VALUE
38Bh	F1-12	Number of PG Gear Teeth 1		0 to 1000	0
38Ch	F1-13	Number of PG Gear Teeth 2		0 to 1000	0
38Dh	F1-14	PG-O Ch1 Software Detection Time		0 ~ 10.0 Sec	0.5
38Fh	F1-16	PG CH2 PPR		1 to 60000 PPR	1024
390h	F1-17	PG CH2 Rotation	0	0: FWD = C.C.W. 1: FWD = C.W.	0
391h	F1-18	PG-O Ch2 Software Detection Time	0	0 ~ 10 Sec	0.5
392h	F1-19	PG-Z2 Output Select	0	Select by MFI 41 (Motor 2 Select)	
			1	Channel 1	
			2	Channel 2	2
			3	Select by MFI 64	
393h	F1-20	PGO-1-H	0	Disabled	1
			1	Enabled	
394h	F1-21	PGO-2-H	0	Disabled	0
			1	Enabled	
395h	F1-22	PG-Z2 Input Sel	0	Motor 1 = CH1 (Motor 2 = CH2)	0
			1	Motor 1 = CH2 (Motor 2 = CH1)	
396h	F2-01	AI-14 Bi-polar or Uni-polar Input Selection	0	3-channel Individual	0
			1	3-channel Addition	
			0	BCD 1%	
			1	BCD 0.1%	
			2	BCD 0.01%	
			3	BCD 1 Hz	0
			4	BCD 0.1 Hz	
			5	BCD 0.01 Hz	
			6	BCD (5DG) 0.01 Hz	
			7	Binary	
397h	F3-01	DI-16 Digital Input Option			
398h	F4-01	AO-08/AO-12 Channel 1 Monitor Select.		1 to 50	2
399h	F4-02	AO-08/AO-12 Channel 1 Gain		0.00 to 1000.0%	100.0
39Ah	F4-03	AO-08/AO-12 Channel 2 Monitor Select.		1 to 50	3
39Bh	F4-04	AO-08/AO-12 Channel 2 Gain		0.00 to 1000.0%	100.0
39Ch	F4-05	CH1 AO Bias		-110.0 ~ 110.0%	0.0

Drive Parameter Registers (Read/Write) – continued

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	LIMITS / DESCRIPTION	INITIAL VALUE
39Dh	F4-06	CH2 AO Bias		-110.0 ~ 110.0%	0.0
39Eh	F4-07	Analog Output Signal Level CH1	0	0 ~ 10VDC	0
			1	-10 ~ +10VDC	
			0	0 ~ 10VDC	0
39Fh	F4-08	Analog Output Signal Level CH2			0
3A0h	F5-01	DO-02 Channel 1 Output Selection		00 to FF	F
3A1h	F5-02	DO-02 Channel 2 Output Selection		00 to FF	F
3A2h	F5-03	DO-02 Channel 3 Output Selection		00 to FF	F
3A3h	F5-04	DO-02 Channel 4 Output Selection		00 to FF	F
3A4h	F5-05	DO-02 Channel 5 Output Selection		00 to FF	F
3A5h	F5-06	DO-02 Channel 6 Output Selection		00 to FF	F
3A6h	F5-07	DO-02 Channel 7 Output Selection		00 to FF	F
3A7h	F5-08	DO-02 Channel 8 Output Selection		00 to FF	F
3A8h	F5-09	DO-08 Output Mode Selection	0	8-channel Individual	0
			1	Binary Output	
			2	8CH Sel-Outputs according to F5-01 ~ 08	
			3	Serial Com Output – Serial Communication	
3A9h	F6-01	Communication Error Detection Operation Selection	0	Deceleration To Stop (B5-02)	1
			1	Coast To Stop	
			2	Fast Stop (B5-08)	
			3	Use B3-03 Method	
			4	Alarm Only (Operation Continues)	
3AAh	F6-02	EFO Detection	0	Always Detected	0
			1	Detected Only During Run	

Drive Parameter Registers (Read/Write) – continued

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	LIMITS / DESCRIPTION	INITIAL VALUE
3ABh	F6-03	EFO Fault Action	0	Deceleration To Stop (B5-02)	
			1	Coast To Stop	
			2	Fast Stop (B5-08)	1
			3	Use B3-03 Method	
			4	Alarm Only (Operation Continues)	
3ADh	F6-05	Current Monitor Display Unit Selection	0	Amp Display	0
			1	100%/8192	
3AEh	F6-06	Torque Reference/Torque Limit	0	Disabled-Torque Ref/Limit From Communication is Disabled	
			1	Enabled – Torque Reference/Limit From Communication is Enabled	0
400h	H1-01	Multi-function Input (terminal 3)	0 to 6Dh		0
401h	H1-02	Multi-function Input (terminal 4)	0 to 6Dh		1
402h	H1-03	Multi-function Input (terminal 5)	0 to 6Dh		F
403h	H1-04	Multi-function Input (terminal 6)	0 to 6Dh		F
404h	H1-05	Multi-function Input (terminal 7)	0 to 6Dh		F
405h	H1-06	Multi-function Input (terminal 8)	0 to 6Dh		F
40Bh	H2-01	Multi-function Output (term. M1 - M2)	0 to FFh		0
40Ch	H2-02	Multi-function Output (term. M3 - M4)	0 to FFh		0
40Dh	H2-03	Multi-function Output (term. M5 - M6)	0 to FFh		7F
410h	H3-01	Terminal A1 Signal Voltage	0	0 to 10 V DC	0
			1	-10 to +10 V DC	
411h	H3-02	Terminal A1 Gain	0.0 to 1000.0%		100.0
40Bh	H3-03	Terminal A1 Signal Bias	-100.0 to +100.0%		0.0
413h	H3-04	Terminal A3 Signal Voltage	0	0 to 10 V DC	0
			1	-10 to +10 V DC	
414h	H3-05	Multi-function Analog Input Term A3 Select	0 to 1F		1F
415h	H3-06	Multi-function Analog Input Term A3 Gain	0.0 to 1000.0%		100.0
416h	H3-07	Multi-function Analog Input Term A3 Bias	-100.0 to +100.0%		0.0
417h	H3-08	Terminal A2 Signal Voltage	0	0 to 10 V DC	
			1	-10 to +10 V DC	2
			2	4 to 20 mA	
418h	H3-09	Multi-function Analog Input Term A2 Select	1 to 1F		0

Drive Parameter Registers (Read/Write) – continued

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	LIMITS / DESCRIPTION	INITIAL VALUE
419h	H3-10	Multi-function Analog Input Term A2 Gain		0.0 to 1000.0%	100.0
41Ah	H3-11	Multi-function Analog Input Term A2 Bias		-100.0 to +100.0%	0.0
41Bh	H3-12	Analog Input Filter Time Constant		0.00 to 2.00 seconds	0.00
41Dh	H4-01	Multi-function Analog Output 1 Selection (Terminal FM)		1 to 67H	2
41Eh	H4-02	Multi-function Analog Output 1 Gain		0.00 to 1000.0%	100.0
41Fh	H4-03	Multi-function Analog Output 1 Bias		-110.0 to +110.0%	0.0
420h	H4-04	Multi-function Analog Output 2 Selection (Terminal AM)		1 to 67H	3
421h	H4-05	Multi-function Analog Output 2 Gain		0.00 to 1000.0%	50.0
422h	H4-06	Multi-function Analog Output 2 Bias		-110.0 to +110.0%	0.0
423h	H4-07	Multi-function Analog Output 1 Signal Level Selection (Terminal FM)	0	0 to 10 V DC	0
			1	-10 to +10 V DC	
			2	4 to 20 mA	
424h	H4-08	Multi-function Analog Output 2 Signal Level Selection (Terminal AM)	0	0 to 10 V DC	0
			1	-10 to +10 V DC	
			2	4 to 20 mA	
425h	H5-01	Serial Communication Address		0 to 20H	1F
426h	H5-02	Serial Communication Baud Rate	0	1200 bps	
			1	2400 bps	
			2	4800 bps	3
			3	9600 bps	
			4	19200 bps	
427h	H5-03	Serial Communication Parity Selection	0	No Parity	0
			1	Even Parity	
			2	Odd Parity	
428h	H5-04	Stopping Method after Serial Communication Error	0	Ramp to Stop	
			1	Coast to Stop	1
			2	Fast-Stop	
			3	Alarm Only	
429h	H5-05	Communication Error (CE) Detection Selection	0	Disabled	1
			1	Enabled	

Drive Parameter Registers (Read/Write) – continued

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	LIMITS / DESCRIPTION	INITIAL VALUE
42Ah	H5-06	Send Waiting Time		5 ~ 65 mSec	5
42Bh	H5-07	RTS Control Select	0	Disabled (RTS is always on)	1
			1	Enabled (RTS is on only when sending)	
42Ch	H6-01	Pulse Input Function Select	0	Frequency Reference (B3-01)	0
			1	PID Feedback	
			2	PID Set Point	
42Dh	H6-02	Pulse Input Scaling		1000 ~ 32000 Hz	1440
42Eh	H6-03	Pulse Input Gain		0.0 ~ 1000.0%	100.0
42Fh	H6-04	Pulse Input Bias		-100.0 ~ 110.0%	0.0
430h	H6-05	Pulse Input Filter Time		0.00 ~ 2.00 Sec	0.10
431h	H6-06	Pulse Output Selection		1,2,5,20,24	2
432h	H6-07	Pulse Output Scaling		0 ~ 32000 Hz	1440
480h	L1-01	Motor Overload Protection Selection	0	Disabled	3
			1	Std Fan Cooled	
			2	Std Blower Cooled	
			3	Vector Motor	
481h	L1-02	Motor Overload Protection Time Constant		0.1 to 20.0 Minutes	8.0
482h	L1-03	Motor Overheat Alarm Operation Selection	0	Alarm: Decel to Stop	3
			1	Alarm: Coast To Stop	
			2	Alarm: Fast-Stop (B5-08)	
			3	Alarm: Alarm Only OH3 Flashes on D.O.	
			4	Alarm: Stop by B3-03 Method	
483h	L1-04	Motor Overheat Operation Selection	0	Decel To Stop	2
		1	Coast To Stop		
		2	Fast Stop by B5-08 Deceleration Time		
484h	L1-05	Motor Temp Input Filter Time Constant		0.00 ~ 10.00 Sec	0.20
485h	L2-01	Momentary Power Loss Detection	0	Disabled	0
			1	Powerloss Ride Thru Time	
			2	While CPU Power Active	
486h	L2-02	Momentary Powerloss Ride Through Time		0.0 ~ 25.5 Sec	(1)

Notes (for this page only):

(1) Initial Value differs depending on the drive capacity(O2-04)

Drive Parameter Registers (Read/Write) – continued

487h	L2-03	Minimum Base Block Time	0.1 ~ 5.0 Seconds	(1)
488h	L2-04	Pwrl V/F Ramp Time	0.0 ~ 5.0 Seconds	0.3
489h	L2-05	Undervoltage Detection Level	230VAC: 150 ~ 210 VDC 460VAC: 300 ~ 410 VDC	190 380
48Fh	L3-01	Stall Prevention Selection during Acceleration	0 Disabled 1 General-purpose 2 Intelligent (2)	1
490h	L3-02	Stall Prevention Level during Accel	0 to 200%	150 (1)
491h	L3-03	Stall Prevention Level during Accel (CHP)	0 to 100%	50
492h	L3-04	Stall Prevention Selection during Deceleration	0 Disabled 1 General-purpose 2 Intelligent (2) 3 Stall Prevent with Braking Resistor	0
493h	L3-05	Stall Prevention Selection during Running	0 Disabled 1 Decel time 1 2 Decel time 2	1
494h	L3-06	Stall Prevention Level during Running	30 to 200%	150(1)
499h	L4-01	Speed Agree 1 Level	0.0 ~ 300.0 CT 0.0 ~ 400.0 VT	0.0
49Ah	L4-02	Speed Agree 1 Width	0.0 to 20.0 Hz	2.0
49Bh	L4-03	Speed Agree 2 Level (+/-)	-400.0 to +400.0 Hz	0.0
49Ch	L4-04	Speed Agree 2 Width	0.0 to 20.0 Hz	2.0
48Eh	L4-05	Frequency Reference Loss Detection	0 Stop 1 Run at 80% of Frequency Reference	0

Notes (for this page only):

(1) Initial value differs depending on drive capacity.

(2) When Vector Control (A1-02 = 2 or 3) is selected, set value 2 (intelligent) cannot be used.

Drive Parameter Registers (Read/Write) – continued

REGISTER R (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	LIMITS / DESCRIPTION	INITIAL VALUE
4A1h	L6-01	Torque Detection Selection 1	0	Disabled	0
			1	Alarm: OT @ Spd Agree	
			2	Alarm: OT @ Run	
			3	Fault: OT @ Spd Agree	
			4	Fault: OT @ Run	
			5	Alarm: UT @ Spd Agree	
			6	Alarm: UT @ Run	
			7	Fault: UT @ Spd Agree	
4A2h 4A3h	L6-02	Torque Detection Level 1	8	Fault: UT @ Run	150
	L6-03	Torque Detection Time 1	0.0 to 10.0 seconds	0.0 to 10.0 seconds	0.1
4A4h	L6-04	Torque Detection Selection 2	0	Disabled	0
			1	Alarm: OT @ Spd Agree	
			2	Alarm: OT @ Run	
			3	Fault: OT @ Spd Agree	
			4	Fault: OT @ Run	
			5	Alarm: UT @ Spd Agree	
			6	Alarm: UT @ Run	
			7	Fault: UT @ Spd Agree	
4A5h 4A6h	L6-05	Torque Detection Level 2	8	Fault: UT @ Run	150
	L6-06	Torque Detection Time 2	0.0 to 10.0 seconds	0.0 to 10.0 seconds	0.1
4AEh	L8-02	oH (Overheat) Protection Alarm LVL		50 to 110 °C	95 (1)
4AFh	L8-03	Operation Selection after oH (Overheat) Pre-alarm	0	Ramp to Stop	3
			1	Coast to Stop	
			2	Fast-stop	
			3	Alarm Only	

Notes (for this page only):

(1) Initial value differs depending on drive capacity.

Drive Parameter Registers (Read/Write) – continued

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	LIMITS / DESCRIPTION	INITIAL VALUE
4B1h	L8-05	Input Phase Loss Protection	0	Disabled	1
			1	Enabled	
4B3h	L8-07	Output Phase Loss Protection	0	Disabled	2
			1	Enabled: 1 PH Loss Det	
4B5h	L8-09	Ground Fault Detection	2	Enabled: 2/3 Loss Det	1
			0	Disabled	
4B6h	L8-10	Cooling Fan Operation Select	1	Enabled	0
			0	Fan On-Run Mode	
4B7h	L8-11	Cooling Fan On/Off Delay Time	1	Fan Always On	60
			0	0 ~ 300 Seconds	
4B8h	L8-12	Ambient Temperature		45 ~ 60 Deg C	45
			0	Disabled: OL Disabled @ Low Speed	
4BBh	L8-15	OL2 Select @ Low Speed	1	Enabled	1 (1)
			0	Disabled	
4BEh	L8-18	Soft CLA Selection	1	Enabled	0
			0	Disabled	
4BFh	L9-01	Auto Restart Operation Selection	1	Enabled	1
			0	Disabled	
4C0h	L9-02	Number of Auto Restart Attempts		0 to 10	3
				0.0 to 180.0 Seconds	
4C1h	L9-03	Reset Time		0000 to FFFF	0.5
				0000 to FFFF	
4C2h	L9-04	Reset Fault Select 1		0000 to FFFF	0001
				0000 to FFFF	
4C3h	L9-05	Reset Fault Select 2		0000 to FFFF	E000
				0000 to FFFF	
4C4h	L9-06	Fault Contact Select	0	Disabled: Fault Contact Not Operated	0
			1	Enabled: Fault Contact is Operated	
584h	N2-01	AFR Gain		0.00 ~ 10.00	1.00
585h	N2-02	AFR Time		0 ~ 2000 mSeconds	50
586h	N2-03	AFR Time 2		0 ~ 2000 mSeconds	750
587h	N2-04	AFR Limit		0.0 ~ 60.0 Hz	5.0
500h	O1-01	Monitor Selection		4 to 52	6

Notes (for this page only):

(1) Setting depends on D10-01. When D10-01 = 0, L8-15 will change to 0. When D10-01 = 1 or 2, it will change to 1

Drive Parameter Registers (Read/Write) – continued

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	LIMITS / DESCRIPTION	INITIAL VALUE
501h	O1-02	Monitor Selection after Power-up	1	Frequency Reference	1
			2	Output Frequency	
			3	Output Current	
			4	Monitor item Set by O1-01	
502h	O1-03	Digital Operator Display Scaling		0 ~ 39999	0
503h	O1-04	Digital Operator Display Units	0	Hz	0
			1	RPM	
504h	O1-05	LCD Brightness Adjust		0 ~ 5	3
505h	O2-01	Mode Service Key Select	0	Mode/Service	0
			1	Local/Remote	
			0	Coast To Stop	
506h	O2-02	Stop Key Function Selection	1	Decel To Stop	0
			2	Use B3-03 Method	
507h	O2-03	User Parameter Initialization Selection	0	No Change	0
			1	Set Defaults	
			2	Clear All	
508h	O2-04	KVA Selection		0 ~ FF	0
509h	O2-05	Operator M.O.P.	0	Disabled: Enter Key Required	0
			1	Enabled: Enter Key is not Required	
50Ah	O2-06	Digital Operator Detection	0	Disabled	1
			1	Enabled	
50Bh	O2-07	Elapsed Timer Setting		0 ~ 65535 Hour	0
50Ch	O2-08	Elapsed Timer Selection	0	Power On Time	1
			1	Running Time	
50Eh	O2-10	Fan Operating Time Setting		0 ~ 65535 Hour	0
515h	O3-01	Clear Fault history	0	Not Clear U2/U3	0
			1	Clear U2/U3	
			0	Not Clear	
516h	O3-02	Clear Count History	1	Accumulated Operation Clear (U3-21 ~ 22)	0
			2	Overload Load Check Clear (U3-23)	
			3	Both 1 and 2 Cleared	

Drive Parameter Registers (Read/Write) – continued

REGISTER (in hex)	PARAMETER	PARAMETER FUNCTION	PARAMETER SETTING	LIMITS / DESCRIPTION	INITIAL VALUE
517h	O4-01	Copy Function Select	0	Copy Select	0
			1	Read: Inverter → Operator	
			2	Operator → Inverter	
			3	OP → Inverter Verify	
518h	O4-02	Read Selection	0	Disabled	1
700h	T1-00	Motor Selection 1/2	1	Enabled	0
			0	1 st Motor	
701h	T1-01	Tuning Mode Selection	1	2 nd Motor	0
			0	Rotational Tune	
			1	Stationary Auto Tune	
			2	Terminal Resistance	
			3	On-Dly Comp Tune	
702h	T1-02	Motor Output Power		0.4 ~ 650.0 HP	0.40
703h	T1-03	Motor Rated Voltage		0 ~ 255.5	230.0 (1)
704h	T1-04	Motor Rated Current		(2)	(3)
705h	T1-05	Base frequency		0 ~ 400.00Hz	60.00
706h	T1-06	Number of Motor Poles		2 ~ 48 Pole	4
707h	T1-07	Rated Motor Speed		0 ~ 24000 RPM	1750
708h	T1-08	PG Pulses/Rev		0 ~ 60000 RPM	1024

Notes (for this page only):

- (1) For 400V class, the value is twice that for the 200V class
- (2) Setting Range is 10 ~ 200% of inverter rated output current
- (3) Initial value differs depending upon inverter capacity

Special Registers (Read / Write)

REGISTE (in hex)	FUNCTION	DATA SET	DESCRIPTION
FFDDh	ACCEPT	0	Activates newly written data
FFFDh	ENTER	0	Activates newly written data and saves to Non-Volatile memory

The drive has two types of memory, Volatile and Non-Volatile. Data held in Volatile memory will be lost when power is removed from the drive. Data held in Non-Volatile memory will be retained when power is removed from the drive. The drive also has active and inactive areas of memory. The different registers are saved and activated differently, as described below.

Command Registers:

The command registers are stored in Volatile Memory. When writing to a command register the new data becomes inactive immediately. In the case of power loss, all data stored in these registers will not be retained.

Parameter Registers:

The parameter registers are stored in Non-Volatile memory. When writing new data to parameter registers, the new data is not active.

Sending the ACCEPT command will cause the new data to become active. The ACCEPT command is accomplished by writing a value of 0 to data register FFDDh. The accept command allows the drive to run with these changed parameters. It also allows parameters to again be changed from the drive keypad. The data is not saved to Non-Volatile Memory.

Sending the ENTER command will cause the new data to become active and to be saved in Non-Volatile Memory. The ENTER command is accomplished by writing a value of 0 to data register FFFDh. If power loss occurs after the new data has been saved (by using the ENTER command) into Non-Volatile Memory, the data will be retained.

Monitor Registers:

The monitor registers are stored in Volatile Memory. These registers cannot be written to (read only registers). Any data read from the monitor registers will not be retained during a power loss situation.

Special Registers:

The special registers are in Volatile Memory. These registers will not be retained during a power loss situation. When writing to a special register, the new data becomes active immediately.



CAUTION

USE THE ENTER AND ACCEPT COMMAND ONLY WHEN NECESSARY!

The Life of the Non-Volatile EEPROM on the drive will support a finite number of operations. This means that the ENTER command can only be used a maximum of 100,000 times to store data in the EEPROM. After the specified number of operations, the EEPROM may fault (ERR), requiring the drive control board to be replaced.