Command Registers (Read / Write) for Modbus RTU

Command registers are those used to control the operation of the V7 drive either through a network interface (option card) or via serial communication (defined as Modbus built into the drive's keypad port or terminal strip). These registers are available during an active Run command. It should be noted that multi-function digital inputs that are commanded over a communication network are logically OR'd with their physical digital input terminal counterpart.

The "Address" column contains the register address in hexadecimal format. V7 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 have no meaning.

Please note that these Command Registers are different from those used in the CM091 Modbus TCP/IP Ethernet Option Kit. Refer to the section toward the end of this chapter for more information on Modbus TCP/IP.

Table 4.1 Command Registers (Read / Write)

Address	Function	Bit	Description
0000h	Reserved	-	Reserved
0001h	Digital Input Command	0h	Run Command (0: Stop, 1: Run)
		1h	Forward Reverse (0: Forward, 1: Reverse)
		2h	External Fault
		3h	Fault Reset
		4h	Multi-Function Digital Input Terminal S1 (n050)
		5h	Multi-Function Digital Input Terminal S2 (n051)
		6h	Multi-Function Digital Input Terminal S3 (n052)
		7h	Multi-Function Digital Input Terminal S4 (n053)
		8h	Multi-Function Digital Input Terminal S5 (n054)
		9h	Multi-Function Digital Input Terminal S6 (n055)
		Ah	Multi-Function Digital Input Terminal S7 (n056)
		Bh ~ Fh	Reserved
0002h	Frequency Reference	-	Scaled via parameter n152
0003h ~ 008h	Reserved	-	Reserved
0009h	Digital Output Command	0h	Multi-Function Digital Output Terminal (MA, MB, MC)
		1h	Multi-Function Digital Output Terminal (P1, PC)
		2h	Multi-Function Digital Output Terminal (P2, PC)
		3h ~ Fh	Reserved
000Ah ~ 001Fh	Reserved	-	Reserved

Monitor Registers (Read only)

The following table lists monitor parameters for the V7 drive. These parameters are used to monitor V7 drive information and cannot be written.

- The “Address” column contains the register addresses for that parameter in hexadecimal format. V7 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.
- Reserved registers and data are meaningless and should be ignored

Table 4.3 Monitor Registers

Address	Function	Bit	Description
0020h	Status Signal 1	0h	During Run
		1h	Reverse Direction
		2h	Inverter Ready
		3h	Fault
		4h	Data Set Error
		5h	Multi-function Digital Output Terminal MA~MC (1: Closed)
		6h	Multi-function Digital Output Terminal P1, PC (1: Closed)
		7h	Multi-function Digital Output Terminal P2, PC (1: Closed)
		8h ~ Fh	Reserved
0021h	Fault Content 1	0h	Overcurrent (OC)
		1h	Overvoltage (OV)
		2h	Inverter Overload (OL2)
		3h	Inverter Overheat (OH)
		4h ~ 5h	Reserved
		6h	PID Feedback (FbL)
		7h	External Fault (EF, EF0) or Emergency Stop (STP)
		8h	Hardware Fault (Fxx)
		9h	Motor Overload (OL1)
		Ah	Overtorque Detection (OL2)
		Bh	Undertorque Detection (OL3)
		Ch	Undervoltage (UV1)
		Dh	Control Power Supply Fault (UV2)
		Eh	Modbus Communications Timeout (CE)
		Fh	Operator Connection Fault (oPA)
0022h	Data Link Status	0h	During Data Write
		1h ~ 2h	Reserved
		2h	Reserved
		3h	Limit Fault
		4h	Matching Fault
		5h ~ Fh	Reserved
0023h	Frequency Reference (scaling via n152) (U-01)		
0024h	Output Frequency (scaling via n152) (U-02)		
0025h	Reserved		
0026h	Reserved		
0027h	Output Current (0.1A) (U-03)		
0028h	Output Voltage (1VAC) (U-04)		
0029h ~ 002Ah	Reserved		

Table 4.3 Monitor Registers			
Address	Function	Bit	Description
002Bh	Digital Input Status	0h	Multi-function Digital Input Terminal S1 (1: Closed)
		1h	Multi-function Digital Input Terminal S2 (1: Closed)
		2h	Multi-function Digital Input Terminal S3 (1: Closed)
		3h	Multi-function Digital Input Terminal S4 (1: Closed)
		4h	Multi-function Digital Input Terminal S5 (1: Closed)
		5h	Multi-function Digital Input Terminal S6 (1: Closed)
		6h	Multi-function Digital Input Terminal S7 (1: Closed)
		7h ~ Fh	Reserved
002Ch	Status Signal 2	0h	During Run
		1h	Zero Speed
		2h	Speed Agree
		3h	Alarm
		4h	Frequency Detection 1
		5h	Frequency Detection 2
		6h	Inverter Ready
		7h	Undervoltage Detection
		8h	Baseblock
		9h	Frequency Reference Source (0: Network, 1: n004)
		Ah	Run Command Source (0: Network, 1: n003)
		Bh	Overtorque Detection
		Ch	Undertorque Detection
		Dh	Fault Retry
		Eh	Fault
		Fh	Communication Timeout
002Dh	Digital Output Status	0h	Multi-function Digital Output Terminal MA~MC (1: Closed)
		1h	Multi-function Digital Output Terminal P1, PC (1: Closed)
		2h	Multi-function Digital Output Terminal P2, PC (1: Closed)
		3h ~ Fh	Reserved
002Eh	Reserved		
002Fh	Frequency Reference Bias (0.1%)		
0030h	Reserved		
0031h	DC Bus Voltage (1VDC) (U-05)		
0032h	Torque Monitor (1%) (U-08)		
0033h ~ 0036h	Reserved		
0037h	Output Power (0.1kW) (U-11)		
0038h	PID Feedback (0.1%) (U-16)		
0039h	PID Input (1%) (U-17)		
003Ah	PID Output (0.1%) (U-18)		
003Bh ~ 00Ch	Reserved		
003Dh	Modbus Error	0h	CRC Error
		1h	Data Length Error
		2h	Not Used
		3h	Parity Error
		4h	Overrun Error
		5h	Framing Error
		6h	Timeout
		7h ~ Fh	Not Used
003Eh ~ 00FFh	Reserved		