Changes for the Better



Connecting a QJ71MT91 Modbus/TCP Module to a Mitsubishi VFD



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FURTHER READING REFERENCE LIST

QJ71MT91, GX Configurator-MB MODBUS(R)_TCP Interface Module User's Manual SH_NA_080446ENG-G FR-A700 Instruction Manual (Applied), NA Version IB_NA_0600255ENG-E FR-A7N-ETH User's Manual V2.320 (<u>www.iccdesigns.com</u> or <u>http://www.iccdesigns.com/fr-a7n-eth.html</u>)

ATTACHMENTS

QJ71MT91 Demo.gwx - GX Works2 File (Using the Module as a Master to a Slave Device(s)) QJ71MT91 Modbus Slave.gwx - GX Works2 File (Using the Module as a Slave from a Master Device) QJ71MT91 as a Slave Addendum Manual.pdf – Addendum Manual for SLAVE Setup Only

Chapter 1 Introduction

This Quick Start Guide (QSG) provides instructions on how to set a QJ71MT91 (MT91) Modbus/TCP Communications Module to communicate to a Mitsubishi A700, F700 or E700 Series Variable Frequency Drive (VFD) using the Automatic Communication Parameters in the Intelligent Function Module Utility in GX Works2 Programmable Logic Controller (PLC) Software. Installed in the VFD is a FR-A7N-ETH Option Module.

The MT91 Master module supports up to 64 Remote Connections. A Slave Device can use One (1) or multiple Connections depending upon the setup.

The objective of this QSG is to assist the users to quickly setup the iQ or Q PLC CPU program to have the MT91 Module to send commands to the VFD and receive status information and data from the VFD. This QSG contains the necessary configuration information for the iQ or Q PLC and the 700 Series VFD.

If the MT91 Module is to be used as a SLAVE (Server) from a Modbus/TCP MASTER (Client) please reference the QJ71MT91 as a Slave Addendum Manual and GXW2 Modbus Slave program.



Figure 1 QJ71MT91 Module Ethernet Connection to a A700, F700 or E700 VFDs

Chapter 2 System Overview

This QSG was setup using the following test system. The PLC Programming software is GX Works2 V1.73B or Greater. Melsoft Navigator was NOT used or required.

The FR-A7N-ETH module is the Server and the PLC CPU is the Client.



Modbus/TCP Ethernet Connection to Mitsubishi Inverter

Figure 2.1 Architecture of Test System

Chapter 3 VFD Parameter Setup and Wiring

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3.1 E700 Connecting the FR-A7N-ETH to the Standard RJ45 Parameter Unit (PU) Port

Parameter	Description	<u>Setting</u>
117	PU Station #	1
118	PU Comms Speed	384
120	PU Parity	2 (Default)
122	PU Comms Timeout	9999
340	Network Mode	10
549	Protocol Selection	1 (Modbus Protocol)
77	Parameter Write Mode	2

Use the OPTIONAL cable with the FR-A7N-ETH module to connect to the RJ45 Port built into the VFD as shown below and in the FR-A7N-ETH manual. Remember to cycle power to the VFD after setting any communication related parameter.



Figure 3.1 E700-NET-CBL Option Cable

3.2 A700/F700 Connecting the FR-A7N-ETH to the RS-485 Terminal Blocks

<u>Parameter</u>	Description	<u>Setting</u>
331	RS-485 Station #	1
332	RS-485 Speed	384 (38.4K)
334	RS-485 Parity	2 (Default)
340	Network Mode	10
549	Protocol Selection	1 (Modbus Protocol)
77	Parameter Write Mode	2

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Use the supplied cable that comes with the FR-A7N-ETH module to connect to the RS-485 Terminals built into the VFD as shown below and in the FR-A7N-ETH manual. Remember to cycle power to the VFD after setting any communication related parameter.



Figure 3.2.1 Terminal Block Layout

3.3 FR-A7N-ETH Module Setup

3.3.1. IP Address Settings

Use the ICC Finder software that came with the product or that can be downloaded at http://www.iccdesigns.com/downloads/software/icc-finder.html. It will automatically find the Module if connected to the network. If the IP address needs to be changed, select "Configure IP Settings". Once the IP Address has been changed make sure your computer is on the same subnet as the module and select: "Open Web Interface". Username is "root" and password is "icc".

K ICC Finder V1.0.2					
Tasks	Devices				
Open Web Interface	IP Address	MAC Address	Application Firmw	Product	
	192.168.0.110	00:40:9d:3f:85:0a	V2.300	FR-A7N-ETH	
Open FTP Interface					
Configure IP Settings					
Device Infe					
Reboot Device					
Refresh List					
Close					
	1				

Figure 3.3.1.1 ICC Finder Software

Once the Web Interface is open, select the Config Tab and enter IP Address information if needed.

FR-A7N-ETH - Windows Internet Explorer				
G - E http://192.168.0.110/		- 8	👌 🛟 🗶 💽 Bing	<i>p</i> •
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6 FR-A7N-ETH			🔄 * 🖾 * 🗔 🖷 * Bage	▼ Safety ▼ Tools ▼ 🔞 ▼ 🥍
PR-A7N-ETH Profiles Profiles	hbedded Server	n Yeabus PRESEC Dashboard Configuration Activity Beccessfully leaded configuration. Click have to eave changes made to the configuration. Click have to eave the configura		× Safety × Tgols × ⊕ + ^{**}
Done			nt. m.	

Figure 3.3.1.2 Web Interface Config Tab

Select **SUBMIT** to make changes in the module.

3.3.2. Modbus to Modbus/TCP Address Mapping

Select the Modbus Tab.

 \mathcal{L}

-A7N-ETH	- Windows Ir	nternet Expl	orer									1.150000000			
9 - 6	http://192	.168.0.110/										🕶 🗟 😽 🗙 🖸 Bing			Q
🛄 Snagit	2)	K 🍖 Conve	ert 🔻 🔂 Sele
avorites	🚖 🔁 Sug	gested Sites	s 🔻 🥫 Web S	lice Gallery	👻 🚺 Sugge	sted Sites 🔻									
FR-A7N-ET	н											🏠 🕶 🗟 👻 🖃 🖷 🔹	Page •	<u>S</u> afety ▼	T <u>o</u> ols 🕶 🔞 🕶
											_				
上 Мі.	TSUBIS	ΗI	FR-A7N-E	TH Embe	dded Serve	er									
CL	EUIRIO														
Monito	r \/ P	rofinet	BACne	:t \/	Config	Ether	let/IP	Alarm		Modbu	s V	MELSEC Dashboard	-		
Ifashi	- C									ſ	Modbi	uc Activity			
Enable	e Superviso	ory Imer									Succes	ssfully loaded Modbus configuration.			
Modbur	Pogistor P	omap Cor	nfiguration												
Register	Remaps To	Register	Remaps To	Register	Remaps To	Register	Remaps To	Register	Remaps	То					
2001	9	2011	0	2021	0	2031	0	2041	0		_				
2002	201	2012	0	2022	0	2032	0	2042	0		SUBMIT	Click here to save changes made			
2004	202	2014	0	2024	0	2034	0	2044	0			Warning: This will cause the			
2005	203	2015	0	2025	0	2035	0	2045	0			communication interface card to			
2006	261	2016	0	2026	0	2036	0	2046	0			in a safe state such that loss of			
2007	208	2017	0	2027	0	2037	0	2047	0			communications will not pose a dancer to equipment or			
2008	225	2018	0	2028	0	2038	0	2048	0			personnel before using this			
2009	0	2019	0	2029	0	2039	0	2049	0			feature.			
2010	0	2020	0	2030	0	2040	0	2050	0						
												122 BOUSTRIAL	_		
												COMMUNICATIONS, IN	ð.		
												Internet Protected Mode: Off			100%

Figure 3.3.2 Modbus Address Remapping Tab

The Register Column is the Modbus/TCP register starting at 40xxxx.

The Remaps to Column is the Modbus register this is being used by the VFD.

Choose the following for the Remapping

Modbus/TCP Modbus

- 1. 2001 = 9 = 40009 = VFD Command Bits Write Word
- 2. 2002 = 14 = 40014 = VFD Frequency Write Word
- 3. 2003= 201 = 40201 = VFD Current Frequency
- 4. 2004 = 202 = 40202 = VFD Current Current
- 5. 2005 = 203 = 40203 = VFD Current Voltage
- 6. 2006 = 261 = 40261 = VFD Current Status Bits Word
- 7. 2007 = 208 = 40208 = VFD Current DC Bus Voltage
- 8. 2008 = 225 = 40225 = VFD Cumulative Power (1kWh)

Select **SUBMIT** to make changes in the module.

3.3.3. Monitoring

Z

Select the Monitor Tab.

A7N-ETH - Win	idows Internet	Explorer	- X. S. W. (1)	
🅑 🔻 🙋 htt	tp:// 192.168.0 .	10/	🔻 🗟 😽 🗙 🔁 Bing	and the second
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				_
MITSU	IBISHI	FR-A7N-ETH Embedded Server		
ELEC.	TRIC			
Monitor	Profin	BACnet Config EtherNet/IP Alarm Modbus MELSEC	Dashboard	
	U			1
Parameter G	iroup	CPU firmware version: V2.300		
All		YMI assist connection surrounded		
Command re	gisters	AML Socket connection succeeded.		
Monitor regis	ters		ACTIVITY O	
Alarm history	registers		Metterri ()	
Universal acc	cess registers	V FILTER	REFRESH DEO HEX	
Parameter	Register	Description	Value (Decimal)	
	2	Inverter reset	0	
	3	Parameter clear	0	
	4	All parameter clear	0	
	6	Parameter clear (communication parameter values not cleared)	0	
	7	All parameter clear (communication parameter values not cleared)	0	
	9	Command register	2	
	10	Operation mode setting	0	
	14	Frequency command (RAM value)	1000	
	15	Frequency command (EEPROM value)	0	
	100	Universal access register address	0	
	101	Universal access register value	0	
	102	Universal access register status	255	
	201	Output frequency	1000	
	202	Output current	127	
	203	Output voltage	425	
	205	Frequency setting	1000	
	206	Running speed (A700 & F700 only)	300	
	207	Motor torque (A700 & E700 only)	0	
			HOUSTAIAL	
			COMMUNICATIONS, INC	a.
				A 100 Y
			Internet Protected Mode: Off	୍ <u>କ</u> ▼ ଏ(100%

Figure 3.3.3 Monitor Tab

From the Monitor Tab you can see the values being written to or read from the Modbus addresses for the VFD. If the Modbus address is not mapped to a Modbus/TCP address it can be forced from this tab if needed. This is an excellent way to test communication from your MT91 Master and the Module/VFD.

Chapter 4 Modbus/TCP Protocol

4.1 Automatic Communication Function

This QSG uses the Automatic Communication Function of Modbus/TCP Communication

(1) Supporting master function of MODBUS[®] /TCP communication The QJ71MT91 supports the master function of MODBUS[®] /TCP communication, which is an open network system for factory automation, and it is compatible with various MODBUS[®] /TCP slave devices (hereafter abbreviated to the slaves) of other manufactures.

The master function supports the following two functions.

(a) Automatic communication function

By setting the automatic communication parameters, MODBUS[®] device data can be automatically read from or written to the slaves at the specified intervals using the QJ71MT91 buffer memory. (*1) Data can be transferred between the QJ71MT91 buffer memory and programmable controller CPU device memory by making the auto refresh setting with the utility package (GX Configurator-MB) or accessing a intelligent function module device with a sequence program.



*1: The MODBUS[®] device indicates the device area of the slave where data can be read/written in response to a request from the master.

Figure 4.1 Modbus/TCP Protocol – Automatic Communication Function

The Buffer Memory Locations (BFMs) that the Automatic Communication Function uses are shown below. For data Read from the Slave a BFM of 1000h to 1FFFh and data Written to a Salve a BFM of 3000h to 3FFFh have to be defined in the Automatic Communication Parameters for each Read or Write. See Section 5.2 for **Head Buffer Memory Address** Parameter Setup.

(4) Automatic communication function buffer areas

(a) Automatic communication function buffer areas

The automatic communication function uses the following buffer memory areas.

Name	Application	Buffer Memory Address	
Automatic communication function	Stores data read from the	1000 to 1EEE	
buffer input area	slave	1000H to 1111 H	
Automatic communication function	Stores data to be written	3000 to 3EEE	
buffer output area	to the slave	3000H to 3111 H	

Figure 4.1.2 Automatic Communication Function Buffer Memory Locations



Figure 4.1.3 Automatic Communication Function Buffer Memory Transfer Directions

4.2 Modbus Performance Specifications

The following shows the Modbus performance specification.

Item			Specifi	Reference	
	iter	n	10BASE-T	100BASE-TX	Section
	Data transmiss	ion rate	10Mbps	100Mbps	
	Transmission n	nethod	Base	band	1
	Maximum node	e-to-node distance	200m (6	56.16ft.)	1
	Maximum segn	nent length * 1	100m (3	28.08ft.)	1 —
	Number of case	cade connection stages	Max. 4 stages	Max. 2 stages	1
Transmission	Maximum num	ber of connections * 2	64 conr	nections	1
specifications	Number of rout	ters that can be set	1 default router	+ any 8 routers	1
000000000000000000000000000000000000000	Cable		Cable compliant with the IEEE802.3 10BASE-T Standard (unshielded twisted pair cable (UTP cable), Category 3 (4, 5))	Cable compliant with the IEEE802.3 100BASE-TX Standard (shielded twisted pair cable (STP cable), Category 5)	Section 2.2
	Connector app	licable for external wiring	RJ	145	
	Automatia	Number of slaves * 3	64 s	aves	_
	Automatic	Function (for send)	7 fun	ctions	Chapter 4
	tion function	Input area size	4k w	Section	
	uon nuncuon	Output area size	4k w	ords	3.3.1
Master function	Dedicated instruction	Number of instructions that can be executed concurrently *4	Up to 8 instructions		-
		Function (for send)	MBRW instruct MBREQ instruct	ion: 9 functions	Chapter 4
		Input area size	Max. 253 bytes	21.1.1	
		Output area size	Max. 253 bytes	Chapter 4	
	Automatic response function	Function (for receive)	12 fur	ictions	Chapter 4
		Coil	64k r	points	
		Input	64k r	points]
Slave function	MODBUS®	Input register	64k r	points	Section
	device size	Holding register	64k r	points	7.4.1
		Extended file register	Max. 408	6k points	
	No. of simultan messages	eously acceptable request	64		-
GX Developer connection function	Number of sime Developers	ultaneously connectable GX	Max. 8 GX Developers		Section 7.2.3
Number of occu	pied I/O points		32 p	oints	
5VDC internal c	urrent consumpt	ion	0.5	52A	
External dimens	sions		98 (3.86 in.) (H) × 2 90 (3.54 in	27.4 (1.08 in.) (W) ×	Appendix 1
Weight			0.1	1ka	

This section provides the performance specifications of the QJ71MT91.

*1: Length between a hub and a node.
*2: Indicates the number of TCP connections that can be established simultaneously.

*3: Indicates the maximum number of slaves that can be communication targets.

*4: Indicates the maximum number of dedicated instructions that can be started simultaneously from a sequence program.

Figure 4.2.1 Performance Specs

4.3 I/O Signal List

The follow I/O points are used for the MT91 module. These points are for a module in slot 0 of the rack. The module takes up 32 Digital Inputs and 32 Digital Outputs. I/O boxed in RED is used in the Demo Program for enabling Modbus/TCP Communications.

Signa	al Direction QJ71MT91 \rightarrow Programmable contr	oller CPU	Signal Direction Programmable controller CPU → QJ71MT91			
Device No.	Signal name	Reference section	Device No.	Signal name	Reference section	
XO	Module READY * 1 ON : Accessible OFF: Inaccessible	Section 11.1	YO	Use prohibited	_	
X1	Completed ON : Normally completed OFF: —		Y1	Basic parameter setting request ON : Being requested OFF: Not requested	Section 9.1.1	
X2	Basic parameter setting, error completed ON : Error completed	Section 9.1.1	Y2	Lies prohibited	_	
Х3	Basic parameter setting existence ON : Parameters set OFF: No parameters set		Y3	Use pronibiled	_	
X4	Automatic communication parameter setting, normally completed ON : Normally completed OFF: —	Section	Y4	Automatic communication parameter setting request/automatic communication start request ON : Parameter setting being requested/start being requested OFF: No parameter setting requested/no start requested	Section 5.2.1, 9.1.2	
X5	Automatic communication parameter setting, error completed ON : Error completed OEE: —	9.1.2	Y5	Use prohibited	_	
X6	Automatic communication operation status ON : Operating OFF: Stopped		Y6	Automatic communication stop request ON : Being requested OFF: Not requested	Section 5.2.1	
X7	Automatic communication error status ON : Error occurred OFF: No error	Section 5.2.1	Y7	Use prohibited	_	
X8	MODBUS [®] device assignment parameter setting, normally completed ON : Normally completed OFF: —	Section	Y8	MODBUS [®] device assignment parameter setting request ON : Being requested OFF: Not requested	Section 9.1.3	
X9	MODBUS [®] device assignment parameter setting, error completed ON : Error completed OFF: —	9.1.3	Y9	Use prohibited	_	

*1: Turns ON when the QJ71MT91 is ready after the programmable controller is turned ON from OFF or after the programmable controller CPU is reset.

Figure 4.3.1 I/O Signal List 1

Signal	Direction QJ71MT91 \rightarrow Programmable con	troller CPU	Signal	Direction Programmable controller CPU ->	QJ71MT91
Device	Signal name	Reference	Device	Signal name	Reference
No.	oignai name	section	No.	Signar name	section
ХА	MODBUS [®] device assignment parameter setting existence ON : Parameters set OFF: No parameters set	Section 9.1.3	YA		_
XB		_	YB		_
XC		_	YC		_
XD		—	YD		_
XE		—	YE		_
XF			YF		
X10			Y10		
X11		_	Y11	Use prohibited	_
X12	1	—	Y12		—
X13	- Use pronibiled	_	Y13		_
X14		—	Y14		—
X15		—	Y15	*	_
X16		_	Y16		_
X17		_	Y17		_
X18		—	Y18		_
X19		—	Y19		_
X1A		—	Y1A		—
X1B	COM.ERR.LED status ON : Lit OFF: Not lit	Section 11.4.2	Y1B	COM. ERR. LED OFF request ON : Being requested OFF: Not requested	Section 11.4.2
X1C	PING test completed ON : PING test completed OFF: —	Section 11.5.2	Y1C	PING test execution request ON : PING test execution being requested OFF: PING test execution not request	Section 11.5.2
X1D	Lise prohibited	_	Y1D		_
X1E	ose promoteu	_	Y1E	Use prohibited	_
X1F	Watch dog timer error ON : Module error occurred OFF: Module operating normally	Section 11.1	Y1F		_

Figure 4.3.2 I/O Signal List 2

4

Chapter 5 GX Works2 MT91 Parameter Overview

5.1 Intelligent Function Module Software Setup / Switch Settings

In your Project Tree Menu create a new Intelligent Function Module using the QJ71MT91 and assign in to address 0000, which is slot 0.



Figure 5.1.1 Project Menu Tree – Intelligent Function Module Creation

Select "Switch Setting" from Intelligent Function Module \rightarrow 0000:QJ71MT91.

In this example the default IP Address of the MT91 Module is used. Change as needed. All other parameters are kept at DEFAULT.

Switch S	Setting 0000:QJ71MT91						
IP Address Setting 192 . 168 . 0 . 254 Operation Mode Setting Online ▼ <u>Communication Condition Setting</u>							
	Item	Setting Value					
	Basic parameter starting method	Default Parameter 🔹					
	MODBUS(R) device assignment parameter starting method	Default Parameter					
	Online change enable/disable setting	Online Change Disabled					
	Send frame specification	Data are sent in the Ethernet(V2.0)-compliant frame					
* Thi: Def if ti	* This dialog setting is linked to the Switch Setting of the PLC parameter. Default value will be shown in the dialog if the Switch Setting of the PLC parameter contains an out-of-range value. OK Cancel						

Figure 5.1.2 Switch Setting Detail

5.2 Intelligent Function Module Software Setup / Automatic Communication Parameter

Select "Automatic Communication Parameter" from Intelligent Function Module → 0000:QJ71MT91.

Automatic Communication Parameter	Set the automatic communication parameters when using the auton
Automatic Communication Parameter 1	The parameter setting concerning the automatic communication.
Target Station IP Address	192.168.0.110
Module ID	255
Repetition Interval Timer Value	0
Response Monitoring Timer Value	0
Type Specification of The Target MODBUS(R) Device	0005h:Write Holding Registers
🖂 Read Setting	The parameter setting concerning reading data from slave.
Head Buffer Memory Address	0000 h
Target MODBUS(R) Device Head Number	0
Access Points	0
Write Setting	The parameter setting concerning writing data to slave.
Head Buffer Memory Address	3000 h
Target MODBUS(R) Device Head Number	2000
Access Points	2

Figure 5.2.1 Automatic Communication Parameter 1 Settings

Choose the following for #1 Settings to Write to Station 192.168.0.110 Modbus Address 402001 and 402002

- 1. Target Station IP Address = 192.168.0.110
- 2. Module ID = 255 (Modbus/TCP) DEFAULT
- 3. Repetition Interval Timer Value = 0 = 0ms (How often the Command is SENT after a RECEIVE)
- 4. Response Monitoring Timer Value = 0 = 30s (How much time a SEND and RECEIVE is expected, when = to 0 a value of 60 is used (60 X 500ms = 30s))
- 5. Type Selection of the Target MODBUS Device = 0005h: Write Holding Register (4x type)
- 6. Head Buffer Memory Address = 3000h This setting must NOT be duplicated in another Parameter.
- 7. Target Modbus Device Head Number = 2000 (Modbus Address -1)
- 8. Access Points = 2 (Consecutive Modbus Addresses)



Figure 5.2.2 Automatic Communication Parameter 2 Settings

Choose the following for #2 Settings to Read from Station 192.168.0.110 Modbus Address 402001 - 402008

- 1. Target Station IP Address = 192.168.0.110
- 2. Module ID = 255 (Modbus/TCP) DEFAULT
- 3. Repetition Interval Timer Value = 0 = 0ms (How often the Command is SENT after a RECEIVE)
- 4. Response Monitoring Timer Value = 0 = 30s (How much time a SEND and RECEIVE is expected, when = to 0 a value of 60 is used (60 X 500ms = 30s))
- 5. Type Selection of the Target MODBUS Device = 0005h: READ Holding Register (4x type)
- 6. Head Buffer Memory Address = 1000h This setting must NOT be duplicated in another Parameter.
- 7. Target Modbus Device Head Number = 2000 (Modbus Address -1)
- 8. Access Points = 8 (Consecutive Modbus Addresses)

5.3 Intelligent Function Module Software Setup / Auto Refresh Settings

Select "Auto Refresh" from Intelligent Function Module → 0000:QJ71MT91

Item		
Transfer to PLC	The data of the b	iffer memory is transmitted to the specified device.
Auto Communication Function Buffer Input Area	D0 (0,8)	
Auto Communication Function Operation Status Storage Area (Parameter 1 to 64)		
User Setting Area (Input)		
Transfer to Intelligent Function Module	The data of the s	ecified device is transmitted to the buffer memory.
Auto Communication Function Buffer Output Area	D1000 (0,2)	
User Setting Area (Output)		

Figure 5.3.1 Automatic Refresh Detail

5

Define the PLC Data Register starting number (D0), the offset value (keep it at zero) and the number of consecutive Data Registers (8) that will be read from the Slave device(s), Inputs. As the Slave Devices increase the Transfer Word Counts will increase as needed per Slave Device.

Input Device 0000:QJ71MT91	×			
Auto Communication Function Buffer Input Area				
The QJ71MT91 store the data in auto communication buffer input area sequentially from large address in unit of 1 word (16 bit) when receive response from the slave.				
Device Specification	Off <u>s</u> et Value 0 🛨			
	Iransfer Word 8			
	OK Cancel			

Figure 5.3.2 Data Register Input (Read from Slave) Parameters

Define the PLC Data Register starting number (D1000), the offset value (keep it at zero) and the number of consecutive Data Registers (2) that will be written to the Slave device(s), Outputs. As the Slave Devices increase the Transfer Word Counts will increase as needed per Slave Device.

Input Device 0000:QJ71MT91	x			
Auto Communication Function Buffer Output Area				
The QJ71MT91 store the data read from auto communication buffer output area sequentially from large address in unit of 1 word (16 bit)				
Device Specification D1000 Offset Value 0	[
Transfer Word 2				
OK Cance				

Figure 5.3.3 Data Register Output (Written to Slave) Parameters

These Settings in the Intelligent Function Module Setup are all kept at DEFAULT.

- Basic Parameter (Router Information)
- Basic Parameter (Preferred Node Specification)
- Modbus Device Assignment Parameter

5.4 MT91 Master Slave Register Setup

The following table shows the relationship between the Modbus Address (ETH Module), the MT91 BFM location, the PLC Data Register and the Modbus Address in the VFD. All these items, except Modbus Address (VFD), must be properly aligned in the Intelligent Function Module settings to work properly.

QJ71MT91 Quick Start Guide Master Slave Register Setup

Send to Slave (Write)						
Modbus Address(ETH)	<u>BFM</u>	PLC Data Register		VFD	Modbus Address(VFD)	
402001	3000h	←	D1000	Command Register	40009	
402002	3001h	←	D1001	Command Frequency	40014	

Receive from Slave (Read)

<u>Modbus Address(ETH)</u>	<u>BFM</u>	PLC Data Register	VFD	Modbus Address(VFD)
402001	1000h	→ D0	Commanded Bits	40009
402002	1001h	→ D1	Commanded Freq	40014
402003	1002h	→ D2	Output Frequency	40201
402004	1003h	→ D3	Output Current	40202
402005	1004h	→ D4	Output Voltage	40203
402006	1005h	→ D5	VFD Status Bits	40261
402007	1006h	→ D6	DC Bus Voltage	40208
402008	1007h	→ D7	Cumulative Power	40225

Chapter 6 GX Works2 PLC Program

If Automatic Communication Parameters are setup properly communication with the Slave device(s) will start when the PLC CPU is put into run. If not, the first two lines of code will be needed to turn on the Modbus/TCP Communication between the Master and the slaves.

This code is used to Start Modbus/TCP Communications.



This code writes 2 Data Words to Start the VFD Forward or Reverse and Write Speed/Frequency.



This code reads all 8 Data Words from the VFD and converts them to real units (Freq, Current, Volts, etc.).

() 0



Revisions

September 2012 – Document Created and Published V1.0