

General Specifications

Model NT351AJ
MELSEC Driver



GS 34P02G01-01E

■ GENERAL

This MELSEC driver is an optional software package used to connect Mitsubishi Electric's MELSEC series of PLCs to the Versatile Data Server Software (VDS) system. It offers the following two connection methods.

● EZSocket type

Connects to MELSEC by way of Mitsubishi's middleware EZSocket.

● Asynchronous type

Connects to the MELSEC sequencer CPU directly.

■ SYSTEM REQUIREMENTS

The system requirements follow those required for VDS specified in VDS Versatile Database Server Software, GS 34P02A02-01E.

Note that the runtime version of MELSEC Driver does not allow the user to make or modify settings and only allows the monitoring.

■ EZSocket TYPE

The MELSEC driver incorporates EZSocket, Mitsubishi's communication middleware, for communication with Mitsubishi's MELSEC series.

● Interface Specifications

Applicable models: MELSEC A/QnA/Q/FX series
Connection interface: Serial, Ethernet, MELSEC NET II, MELSEC NET/10, MELSEC NET/H, CC-Link IE (formerly MELSECNET/G), CC-Link through EZSocket

Number of units connected: 32 max.

Function: Reading/writing of sequence devices

● Applicable Mitsubishi Models

CPU Units

A series: A0J2H, A1S, A1SH, A1SJ, A1SJH, A1N, A2C, A2CJ, A2N(S1), A2S, A2SH, A3N, A2A(S1), A3A, A1FX, A2U(S1), A3U, A4U, A2US(S1), A2USH-S1

QnA series: Q2A, Q2A-S1, Q3A, Q4A, Q4AR, Q2AS(H), Q2AS(H)S1

Q series: Q00J, Q00, Q01, Q02(H), Q02PH, Q03UDV, Q04UDV, Q04UDPV, Q06H, Q06PH, Q06UDV, Q06UDPV, Q12H, Q12PH, Q12PRH, Q13UDV, Q13UDPV, Q25H, Q25PH, Q25PRH, Q02(H)-A, Q06H-A, Q00UJ, Q00U, Q01U, Q02U, Q03UD, Q03UDE, Q04UDH, Q04UDEH, Q06UDH, Q06UDEH, Q10UDH, Q10UDEH, Q13UDH, Q13UDEH, Q20UDH, Q20UDEH, Q26UDH, Q26UDEH, Q26UDV, Q26UDPV, Q50UDEH, Q100UDEH

FX series: FX0(S), FX0N, FX1, FX2(C), FX2N(C), FX1S, FX1N(C), FX3U(C)

L series: L02, L02S, L02S-P, L02-P, L06, L06-P, L26, L26-BT, L26-P, L26-PBT

Communication Units

CPU direct connection (RS-422): All CPU units which support RS-422.

CPU direct connection (USB): QnH CPU units (Q mode) which support USB

CPU direct connection (Ethernet): QnU CPU units which support Ethernet

Remote I/O: AJ72P25/LP25/QLP25, AJ72R25/BR15/QBR15, AJ72T25B, A1SJ72T25B, A1SJ72QBR15/QLP25/QLR25, QJ72LP25G/LP25-25/BR15

Computer link: AJ71C24/UC24, A1SJ71UC24, FX2N-485-BD, FX1N-485-BD, FX2N-232-BD, FX1N-232-BD, FX0N-485ADP, FX2NC-485ADP, FX0N-232ADP, FX2NC-232ADP

Serial communication: AJ71QC24(N), A1SJ71QC24(N), QJ71C24

CC-Link: AJ65BT-G4, AJ65BT-G4-S3
 Ethernet: AJ71E71N, A1SJ71E71N, AJ71E71,
 A1SJ71E71, AJ71QE71, AJ71QE71N,
 A1SJ71QE71N, A1SJ71QE71, QJ71E71,
 QJ71E71-100, QJ71E71-B2, QJ71E71-B5
 MELSECNET II: AJ71AP21, A1SJ71AP21
 MELSECNET/10: AJ71LP21, AJ71BR11,
 A1SJ71LP21, A1SJ71BR11
 MELSECNET/H: QJ71BR11, QJ71LP21-25,
 QJ71LP21G, QJ72LP25G, QJ72LP25-25,
 QJ72BR15
 CC-Link IE (formerly MELSECNET/G):
 QJ71GP21(S)-SX

Interface Boards for Personal Computers

MELSECNET/H: Q80BD-J71LP21-25, Q80BD-
 J71BR11, Q80BD-J71LP21G
 CC-Link IE (formerly MELSECNET/G):
 Q80BD-J71GP21(S)-SX
 CC-Link: A80BD-J61BT13, A80BD(E)-J61BT11,
 Q80BD-J71BR11

● **Restrictions on CPU Units**

- The following CPU Units cannot be used connection test function of EZSocket Builder.
 Unsupported models:
 Q03UDV, Q04UDV, Q04UDPV, Q06UDV,
 Q06UDPV, Q13UDV, Q13UDPV,
 Q26UDV, Q26UDPV, Q50UDEH,
 Q100UDEH
 L02S, L02S-P, L02-P, L06, L06-P, L26,
 L26-P, L26-PBT

● **Restrictions on Communication Units**

Serial Communication Units

- The VDS/ASTMAC system cannot be connected to the RS-422/485 terminals of the computer link or serial communication units since they are controlled by DC voltage.
- For the C24 computer link units, only version S6 or later can be connected.
- With the C24/UC24 computer link units, the VDS/ASTMAC system cannot access devices A/V/Z or extended file register R when the QnA unit is connected. It cannot write to AnSH units (EEPROM operation) when it is running or change the T/C settings.

The C24 units are subject to the following restrictions.

- Even if the AnU unit is installed in the system, only communication equivalent to that of the AnA units is available.
- For units with a model name containing both C24 and UC24, select a communication path according to the software version of a unit connected to them (see user's manuals of respective units for their software versions).
 A1SCPU24-R2: UC24 equivalent
 A1SJ71C24-PRF: UC24 equivalent for software version of "M" or later
 A1SJ71C24-R2: UC24 equivalent for software version of "M" or later
 A2CCPU24: UC24 equivalent for software version of "K" or later
 A2CCPUC34-PRF: UC24 equivalent for software version of "K" or later

The following list indicates the supported and the unsupported models.

- Supported models:
 A1SCPU24-R2, A1SJ71C24-PRF,
 A1SJ71C24-R2
 A1SJ71UC24-PRF, A1SJ71UC24-R2
 A2CCPU24, A2CCPU24-PRF
 AJ71C24-S6, AJ71C24-S8, AJ71UC24
 AJ71UC24-PRF
 Unsupported models:
 A1SJ71C24-R4, A1SJ71UC24-R4
 A2CJ71C24-R4
 A1SJ71UC24-R2, A1SJ71UC24-R4-S2
 AJ71UC24-S2
 AJ71C24, AJ71C24-S3

Use RS-232-C/RS-422 cables recommended by Mitsubishi Electric that are compatible with the serial communication units.

CPU Units

Use the following cables for connection to the QnCPU units.

- QC02R4EX (plus conventional RS-422 cable)
- QC30R2

Ethernet Communication Units

The following versions or later of Ethernet units (AJ71QE71) for QnA units can be connected.

- AJ71QE71, AJ71QE71-B5:
 Software version of "C" or later
 A1SJ71QE71-B2, A1SJ71QE71-B5:
 Software version of "E" or later

The Ethernet units for ACPU (AJ71E71) offer functions equivalent to those of an AnA unit even if they are installed to an AnU unit.

Although a communication error LED is lit for the following versions of Ethernet units for ACPU (AJ71E71) when they are installed to a remote I/O unit, this does not affect their normal operation.

- AJ71E71, A1SJ71E71-B2/B5:
 Software version of "U" or earlier
 AJ71E71-S3, A1SJ71E71-B2-S3/-B5-S3:
 Software version of "H" or earlier

G4 Units (CC-Link)

The AJ65BT-G4 unit can be connected to the products with the software version of "B" or later. The G4 units on the master unit (AJ61BT11 and AJ61QBT11) can be connected to those with the software version of "N" or later.

● Supported MELSEC Devices

When Accessing to Sequence CPU

Device				Applicable CPU					Remarks
Type	Length	Symbol	Address	Q	QnA	A	FX	L	
Special relays	Bit	SM	Decimal	X	X			X	
Special registers	Word	SD	Decimal	X	X			X	
Input relays	Bit	X	Hexadecimal	X	X	X	X	X	For FX, the device addresses are in octal format.
Output relays	Bit	Y	Hexadecimal	X	X	X	X	X	
Internal relays	Bit	M	Decimal	X	X	X	X	X	
Latch relays	Bit	L	Decimal	X	X	X		X	
Annunciators	Bit	F	Decimal	X	X	X		X	
Edge relays	Bit	V	Decimal	X	X			X	
Link relays	Bit	B	Hexadecimal	X	X	X		X	
Data registers	Word	D	Decimal	X	X	X		X	
Link registers	Word	W	Hexadecimal	X	X	X		X	
Timers	Contacts	Bit	TS	Decimal	X	X	X	X	X
	Coils	Bit	TC	Decimal	X	X	X	X	X
	Current readings	Word	TN	Decimal	X	X	X	X	X
Counters	Contacts	Bit	CS	Decimal	X	X	X	X	X
	Coils	Bit	CC	Decimal	X	X	X	X	X
	Current readings	Word	CN	Decimal	X	X	X	X	X
Integrating timers	Contacts	Bit	SS	Decimal		X			X
	Coils	Bit	SC	Decimal		X			X
	Current readings	Word	SN	Decimal		X			X
Special link relays	Bit	SB	Hexadecimal	X	X	X		X	
Special link registers	Word	SW	Hexadecimal	X	X	X		X	
Step relays	Bit	S	Decimal	X	X	X	X	X	
Direct inputs	Bit	DX	Hexadecimal	X	X			X	
Direct outputs	Bit	DY	Hexadecimal	X	X			X	
File registers	Word	R	Decimal	X	X	X		X	
Serial file registers	Word	ZR	Hexadecimal	X	X			X	
Extended file registers	Word	ER	Decimal			X			
Buffer memory	Word	G	Decimal	X	X			X	

● Relationship with Device Tag Objects

Device Tag Object		Device Type		Remarks
		Bit	Word	
DI		X		
DO		X		
DR	Input	X		Bit-device output is valid only if device addresses start with a multiple of 16 and the number of access points is a multiple of 16. (*1)
	Output	X		
AI	AI input		X	Access to bit-devices is valid only if device addresses start with a multiple of 16.
	BCD input	X		
AO	AO output		X	
	BCD output	X		
AR			X	
TXT			X	Only the data type of "UI2" and the character code of "ShiftJIS" can be used.
XAI			X	
XAO			X	
XAR			X	
XTX				
BD	I/O address		X	
	I/O address for start-reading check (read)		X	Specify data in ASCII.
	I/O address for end-reading notification (read)		X	
	Write-permission register (write)		X	
	I/O address for end-writing notification (write)		X	

*1: Using Cv to batch-write array elements of DR, these restrictions are valid (the addresses must start with a multiple of 16 and the number of access points must be a multiple of 16). However, using Cvi(n) to write each array element of DR, neither of them are valid (the addresses can start with a non-multiple of 16 and the number of access points can be a non-multiple of 16).

■ ASYNCHRONOUS TYPE

● Interface Specifications

Communication Interface

Ethernet:

Method of access to device data:

- Continuous bit access
- Continuous word access

Asynchronous event reception (on-demand processing):

Received text: 128 bytes max.

RS-232-C:

Method of access to device data:

- Continuous bit access
- Continuous word access

● Applicable Models

- A series
- QnA series
- Q series (*1) (*2)

*1: Only the devices covered by the A series can be accessed. Devices Ms and Ds between 9000 to 9999 cannot be accessed.

*2: The universal model (QnU) CPU unit is required to support A compatible 1E frame or A compatible 1C frame.

● Communication Protocol Specifications

Ethernet Driver

Communication protocol:

Interface: Ethernet

Supported model:

Mitsubishi Electric:

- AJ71E71 Ethernet interface unit (version K or later)
- QE71 Ethernet interface unit (*1)
- QJ71E71 Ethernet interface unit (*1)

Communication function:

- Access to data in sequencer CPU
- Reception of sequencer asynchronous event

Data format: ASCII

Protocol: UDP/IP

Port No.: Specifiable

VDS: Specifiable.

MELSEC: Specifiable by MELSEC.

Update method:

- Reading/writing data from/to sequencer CPU
- Through fixed buffer

Note: Specify the IP address or node name at the other end of the line. ACPU monitoring timers 0 to 9 are available (*1) (250 ms).

*1: Operates within the A compatible 1E frame.

RS-232-C Driver

Communication protocol:

Interface: RS-232-C

Supported model:

Mitsubishi Electric:

- AJ71C24-S8 Computer link unit
- AJ71UC24 Computer link unit (*1)
- A0J2-C214S1 Computer link unit (*1)
- AJ71QC24 Computer link unit (*1)

Protocol: A compatible 1C frame (control procedure 4 only)

Transmission method: Half-duplex

Synchronization method: Start-stop synchronization

Transmission speed: 300, 600, 1200, 2400, 4800, 9600, 19200 bps

Data format:

Start bit: 1

Data bit: 7 or 8

Parity bit: 0: none; 1: odd; 2: even

Sum check: Yes/no

Specification of terminator character:

Available for control procedure 4

Transmission wait: 0 to 15 (x 10) msec

Note: Specify the COM port number used.

*1: Operates the function covered by the AJ71C24-S8 computer link unit.

● Supported Devices

The following table shows the devices that can be handled with the MELSEC I/O driver contained in this driver software package.

Bit device

Input relays: X

Output relays: Y

Internal relays: M

Special relays: M

Latch relays: L

Step relays: S

Link relays: B

Word devices

Data registers: D

Special registers: D

Link registers: W

File registers (*1): R

*1: The extended file registers are not supported. This device can be used only by A series.

● Relationship to Device Tag Objects

The following table shows the relationship between the device types acquired by the MELSEC I/O driver contained in this driver software package and the device tag objects.

Device Tag Object Type		Specifiable Device Types											
		Bit Device						Word Device			Asynchronous Data		
		X	Y	M	L	S	B	D	W	R	ONDEMAND		
DI		X		X	X	X	X						
DO			X	X	X	X	X						
DR	Input	X		X	X	X	X						
	Input/output		X	X	X	X	X						
AI (*1)	AI input	X		X	X	X	X	X	X	X			
	BCD	X		X	X	X	X						
AO (*1)	AO output		X	X	X	X	X	X	X	X			
	BCD		X	X	X	X	X						
AR								X	X	X			
TXT								X	X	X		X	
XAI								X	X	X			
XAO								X	X	X			
XAR								X	X	X			
XTX													
BD (*1)	Input trigger	X		X	X	X	X	X	X	X		X	
	Input data	X		X	X	X	X	X	X	X			
	Output data		X	X	X	X	X	X	X	X			
	Notification of input/output completion		X	X	X	X	X	X	X	X			
	Output permission	X		X	X	X	X	X	X	X			

X: Indicates that the device type can be specified with the corresponding object type.

*1: When a bit device is specified, the data is handled as 16-bit data.

■ MODEL AND SUFFIX CODE

Model	Suffix Code	Description
NT351AJ	-LW11A	MELSEC Driver

■ ORDERING INFORMATION

Specify the model and suffix codes.

■ RELATED DOCUMENT

- VDS, GS 34P02A02-01E

■ TRADEMARKS

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