



FC6A Plus EtherNet/IP™



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Example 1: FC6A and Oriental Motor motor driver

- Oriental Motor AZD-KEP motor driver is an Adapter
- FC6A Plus will be configured as a Scanner with Originator function





Adapter parameters (required for communication)

- In order to configure the FC6A Plus to communicate with the Adapter, we need to find out some Adapter's parameters
- There are two methods of finding this information
 - 1. Adapter's device user manual

communications	Communications standards EtherNet/IP (conforms to CT16)									
/endor ID	D 187: Oriental Motor Company									
Device type		43: Generic D	43: Generic Device							
Fransmission rate	1	10/100 Mb	Input data form	nat						
Communication r	node	Full duplex	Contents of the Input	data is as follow	s. The order of	data is in little-e	endian format.			
Cable specificatio	ins	Shielded tv straight-th	Assembly Instance	Attribute	Byte	Size (byte)		Description		
Number of	Output (scanner \rightarrow driver)	40 bytes			0.1	2	Remote I/O (R	-OUT)		
occupied bytes	Input (driver → scanner)	56 bytes			–∎ Outp	ut data for	mat			
	Number of connections	2			Descrip	tions of the Ou	itput data are a	s follows. The	e order of data	is in little-endian format.
	Connection type	Exclusive C			Asser	nbly Instance	Attribute	Byte	Size (byte)	Description
nplicit	Communication cycle (RPI)	1 to 3,200 r				,		0,1	2	Remote I/Q (R-IN)
								2,3	2	Operation data number selection
								4,5	2	Fixed I/O (IN)
								6,7	2	Direct data operation operation type
								8 to 11	4	Direct data operation position
			100	3				12 to 15	4	Direct data operation operating speed
					-			16 to 19	4	Direct data operation starting/changing r
						101	3	20 to 23	4	Direct data operation stopping deceleration
						101	3	20 to 23 24, 25	2	Direct data operation stopping decelerati



Adapter parameters (required for communication)

- There are two methods of finding this information
 - 2. Electronic Data Sheet (EDS) File
 - Most EtherNet/IP Adapters provide an EDS file, so users don't have to manually look up and enter this information in the Scanner settings
 - However, WindLDR currently does not support EDS file import
 - EDS file import will be supported in later WindLDR version
 - For now, users can use the free EDS extractor tool to extract
 - EDS extractor tool
 - https://www.odva.org/subscriptions-services/software/ez-edsdownload/



EDS extractor tool





Example 1: FC6A and Oriental Motor motor driver

- Step 1: Click Ethernet Port 2
- Step 2: Check EtherNet/IP Settings and click Configure

Ether	Ne	t/IP	Settings	
				ſ

Enable EtherNet/IP Configure

Check the Turn ON EtherNet/IP...box if you want the FC6A to automatically enable EtherNet/IP communication

EtherNet/IP setting

FC6A-D16X1CEE CID Connection Point list: Number of CID connection	EtherNet/IP Setting
Scan list: Number of CIP connections 0	Image: Turn ON EtherNet/IP Communication bit automatically Reflesh upper limit: 252 • Total size of allocated device address: 0 [word] Total size of allocable device address: 2888 [word]

M8460: EtherNet/IP Communication Bit

This special internal relay permits or prohibits EtherNet/IP communication.

OFF: Prohibit EtherNet/IP communication

ON: Permit EtherNet/IP communication



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Scan list: Number of CIP connections 0	Turn ON EtherNet/IP Communication bit automatically Reflesh upper limit: 252 [word/scan] Total size of allocated device address: 0 [word] Total size of allocable device address: 2888 [word]

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Step 3: Right mouse click Scan list.. \rightarrow Add Target



Step 4: Under Target Setting tab, enter the Node name, IP Address and Electronic Key of the motor

AZD-KEP]

t/ID setting

style setting			<u>H</u> elp	
A-D16X1CEE	CIP Connection Setting List Targ	et Setting		₩?
Scan list: Number of CIP connections 1 - 1. Oriental_Motor (192.168.1.6) Exclusive Owner(IDVIN) 100/OUT_1011	Use this target		[Device] Section Comment Vendor Name Driental Motor Company	Comment Comment
	IP Address: 192 . 168 Electronic Key Compatibility Chedk: Vendor ID:	. 1 . 6	Product Name AZD-KEP Application Profile Assembly	Comment Product Code 5094 Comment Device Implemented Attribute 25 Of the Identity OL Comment
	Device Type: Product Code: Revision(Major.Minor):	43 × 5094 × 1 ×	Major Revision Major Revision 1 Comment Product Type 43	Minor Revision 1 Comment Product Type String Generic Device (keyable)(43)

EtherNet/ID cettin



Example 1: FC6A and Oriental Motor motor driver

Step 5: Right mouse click and select Add CIP Connection

Enerveen setting				
FC6A-D16X1CEE	CIP Connection Setting List Target Setting			
- Scan list: Number of CIP connection - Scan list: Number of CIP connection - Oriental Motor (192 168 1 6)	🗷 Use this target			
1. Onental_Motor (192.100.1.0	Add CIP Co	onnection	Orie	ntal_Motor
	Delete Sel	ected Target	192	2.168.1.6

- Step 6: In the CIP Connection Settings, fill in the Adapter parameters
 - IN Instance ID = 100, Size = 28 Words
 - OUT Instance ID = 101, Size = 20 Words

IN (T->0) [Receive data f	rom the 'target'] ———			 		
RPI:	50 🖨 [msec]	No.	Top of device address	Size[word]	Occupied device address	
CIP Connection type:	Point to point 👻	1	D0100	 28	D0100 - D0127	≡
Instance ID:	100 🜩	2				
		-				
OUT (0->T) [Send data to	o the 'target']					
RPI:	50 🖨 [msec]	No.	Top of device address	Size[word]	Occupied device address	
CIP Connection type:	Point to point 👻	1	D0200	 20	D0200 - D0219	=
Instance ID:	101 🖨	2				
		2				





Adapter Settings





Example 1: FC6A and Oriental Motor motor driver

Step 7: Configure the rest of the settings

CIP Connection name See pg 440 Manual for	CIP Connection Setting Node name:	Oriental_Motor		Trigger o	fsend	: Cy	rclic 💌		Trigger of send Cyclic -transmit data at				
more details	CIP Connection name:	Exclusive Owner (ID)		COS Inhi	bittim	e:	0 🚔 [msec]		the set RPI				
	Timeout:	RPI x 16		Control F	legiste	n D0	300 🚽 🛄 D0300 D03	04	COS-transmit data at the				
Timeout Sets the timeout	Configuration Image: Configuration Set Image: Configuration Image: Configuration Image: Configuration Image:								set RPI or when a value changes				
		50 1 [msec]		Top of device					Control Register				
	RF1.		No.	address		Size[word]	Occupied device address		Sets the data registers				
Configuration Instance	CIP Connection type:	Point to point	1	D0100		28	D0100 - D0127	=	- that will be used by the				
ID	Instance ID:	100 🜩	2						CIP connection				
Some vendors use this			3						See pg 441 Manual				
parameter, and some don't			4					_	10				
			Total da	ta size: 28 [word]		Remain	ing data size: 692 [word]						
RPI Requested package interval	OUT (0->T)[Send data to	the 'target']							Top of the device address				
10 to 10,000ms	RPI:	50 ≑ [msec]	50 ≑ [msec]	50 🜩 [msec]	50 ≑ [msec]	50 ≑ [msec] No	No.	Top of device address		Size[word]	Occupied device address	^	Users define data
	CIP Connection type:	Point to point	1	D0200 ┥		20	D0200 - D0219	=	registers in the FC6A				
CIP Connection type	Instance ID:	101 🛓	2										
Point-to-Point-receives			3										
data from target on a one-			4										
to-one basis Multicast-multiple originators receive data from one target			Total da	ata size: 20 [word]		Remain	ing data size: 700 [word]						



- AB ControlLogix is a Scanner with Originator function
- FC6A Plus will be configured as a Scanner with Target function





WindLDR Configuration

- Step 1: Click Ethernet Port 2
- Step 2: Check EtherNet/IP Settings and click Configure

EtherNet/IP Settings	
Enable EtherNet/IP	Configure

 Step 3: Right mouse click CIP Connection...→ Add CIP Connection Point Setting

EtherNet/IP setting





Example 2: FC6A and AB ControlLogix5555

WindLDR Configuration

- Step 4: FC6A sends values in D0-D1 to ControLogix
 - Instance ID = 100 (Default. Can be set with other value)
 - CIP Tag: Optional
 - Type: IN $(T \rightarrow O)$
 - Top of device address: D0, Size 2

CIP Connection Point Setting								
Instance ID: 100 Available Instance ID (100 to 197, 240 to 255 and 768 to 1279)								
Туре:	Type: IN (T->O) Send data to the 'Originator'.							
Device Allocation:	No.	Top of device address		Size[word]	Occupied device address			
	1	D0000		2	D0000 - D0001			
	2							

- Step 5: Repeat step 3 to add another connection point



- WindLDR Configuration
 - Step 6: FC6A receives data from ControLogix and stores in D400-D409
 - Instance ID = 101 (Needs to be different from other connection point)
 - CIP Tag: Optional
 - Type: OUT (O \rightarrow T)

CIP Connection Point Setting							
Instance ID: 101 Available Instance ID (100 to 197, 240 to 255 and 768 to 1279)							
CIP Tag:							
Type:	OUT (O	OUT (0->T) Receive data from the 'Originator'.					
Device Allocation:	No.	Top of device address		Size[word]	Occupied device address		
	1	D0400		10	D0400 - D0409		
	2						



- RSLogix5000 Configuration
 - Step 1: Select "1756-ENBT/A eip"
 - Step 2: Select "Add New Module" from context menu





Example 2: FC6A and AB ControlLogix5555

RSLogix5000 Configuration

– Step 3: Select "Generic Ethernet Module" from module list



- Step 4: Configure properties of FC6A Plus

Name	Any name	Module Properties - eip (ETHERNET-MODULE 1.1)					
IP Address	FC6A PLUS IP Address	Type: ETHERNET-MODULE Generic Ethernet Module Vendor: Allen-Bradley Parent: eip Name: [rc6aConnection Parameters					
Input (T \rightarrow O)	Assembly Instance = 100 Size = 2	Description: Assembly Instance: Size: Input: 100 2					
Output $(O \rightarrow T)$	Assembly Instance = 101 Size = 10	Comm Eormat: Data = INT Configuration: II 0 ::: (8-bit) Address / Host Name Gonfiguration: II 0 ::: (8-bit) © IP Address: 192. 168. 1 6 Status Input: Image: Configuration: Image: Configuration:					
Configuration	Assembly Instance = 1 Size = 0	Cancel < Back Next > Finish >> Help	-				



Example 2: FC6A and AB ControlLogix5555

- RSLogix5000 Configuration
 - Step 5: Configure RPI and click "Finish >>"

Module Properties – eip (ETHERNET-MODULE 1.1)				
Requested Packet Interval (RPI): 100 <u>→</u> ms (1.0 - 3200.0 ms) 「Inhibit Module				
Major Fault On Controller If Connection Fails While in Run Mode				
Module Fault				
Cancel < Back Next > Finish >>				

Notes: We didn't configure the Vendor ID, Device Type, and Product Type because some Scanners do not require this information. But other Scanners do require this information.

The FC6A information can be found on page 451 of the manual.

■Instance Attributes (Instance ID: 1)

ID	Access	Name	Data Type	Description	Attribute Value
1	Get	Vendor ID	UINT	Vendor identification number	159
2	Get	Device Type	UINT	General device type	14 (Programmable Logic Controller)
3	Get	Product Code	UINT	Product identification code	2000