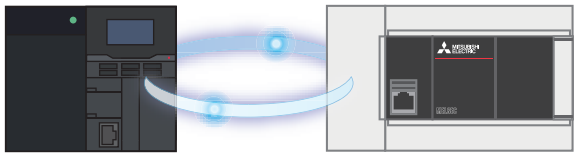
MITSUBISHI ELECTRIC

Programmable Controller

MELSEC iQ-F series

Quick Connection Guide
Simple CPU Communication Function
KEYENCE CORPORATION KV Series



INTRODUCTION

This manual describes the setting procedure for connecting the FX5 CPU module and the KV series module manufactured by KEYENCE CORPORATION using the simple CPU communication function and the operation check method.
This manual describes the connection procedure until the connection is established. This manual does not describe the operation other than the connection procedure, installation, and device functions and specifications. Please read this manual and the relevant manuals or consult the product manufacturer and fully understand the specifications before attempting to use the product.

Safety guidelines

- Before using this product described in this manual, read this manual.
- This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine, or passenger movement vehicles, consult Mitsubishi Electric.
- This product has been manufactured under strict quality control. However when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions in the system.
- For design precautions and wiring precautions, read safety precautions described in the relevant manuals.

Note

- If in doubt at any stage during the installation of the product, always consult a professional electrical engineer who is qualified and trained in the local and national standards. If in doubt about the operation or use, please consult the nearest Mitsubishi Electric representative.
- Since the examples indicated by this manual, technical bulletin, catalog, etc. are used as a reference and do not guarantee operation, please use the product after confirming for yourself the function and safety of the device and machine.
- The content, including specifications, in this manual may be changed for improvement without notice.
- For devices other than those manufactured by Mitsubishi Electric described in this manual, please acquire manuals and check the safety precautions and descriptions.
- The information in this manual has been carefully checked and is believed to be accurate; however, if you have noticed a doubtful point or a doubtful error, please contact your local Mitsubishi Electric representative. When doing so, please provide the manual number given at the end of this manual.

CONTENTS

RELEVANT MANUALS

The following lists the relevant manuals. Please download those manuals from the website of each manufacturer.

■ Mitsubishi Electric

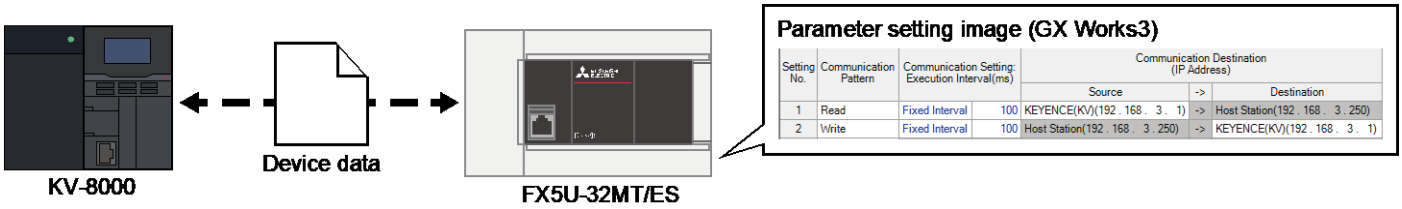
Manual name	Manual number
MELSEC iQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware)	SH-082452ENG
MELSEC iQ-F FX5 User's Manual (Application)	JY997D55401
MELSEC iQ-F FX5 User's Manual (Ethernet Communication)	JY997D56201
GX Works3 Operating Manual	SH-081215ENG

■ KEYENCE CORPORATION

Manual name	Manual number
KV-8000 Series User's Manual	-
KV STUDIO Ver.11 User's Manual	-
KV-EP21V/8000 (A)/7500/5500/NC1EP User's Manual	-

1. OVERVIEW

An FX5 CPU module is connected with a KV series module manufactured by KEYENCE CORPORATION using the simple CPU communication function.
The simple CPU communication function communicates the specified device data at a specified timing just by setting simple parameters from GX Works3. Assign an IP address to the FX5 CPU module and KV series module and set the communication destination and device in the simple CPU communication setting of GX Works3.



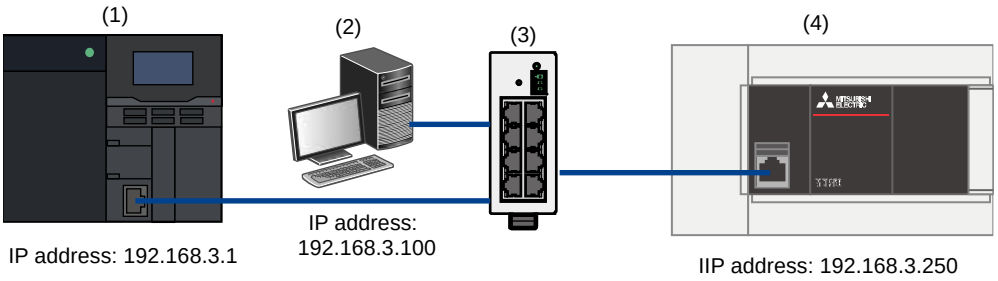
1.1 Applicable Devices

The following table lists the devices that support the simple CPU communication function described in this manual.

Manufacturer	Applicable device
Mitsubishi Electric	FX5U CPU module FX5UC CPU module FX5UJ CPU module FX5S CPU module
KEYENCE CORPORATION	KV series

1.2 System Configuration

In this manual, the following system configuration is used as an example.



Manufacturer		Device/Software	Model
(1)	KEYENCE CORPORATION	KV series	KV-8000
(2)	-	Configuration personal computer (OS: Windows 10)	-
(3)	-	Switching hub	-
(4)	Mitsubishi Electric	FX5 CPU module	FX5U-32MT/ES Serial number: 17X**** or later Firmware version: 1.210 or later
-	Mitsubishi Electric	Engineering software	GX Works3 Version: 1.065T or later (In this manual, Ver.1.085P is used as an example.)
-	KEYENCE CORPORATION	Programming support software	KV STUDIO

❖ **Point**

- Set the IP addresses of devices so that they are all on the same network.
- Available functions and settings differ depending on the device used or software version, thus the product with the version described in this chapter must be used. The setting procedure or setting windows may differ from those in this manual depending on the product version used. In such a case, refer to the relevant manuals of each manufacturer and software help.

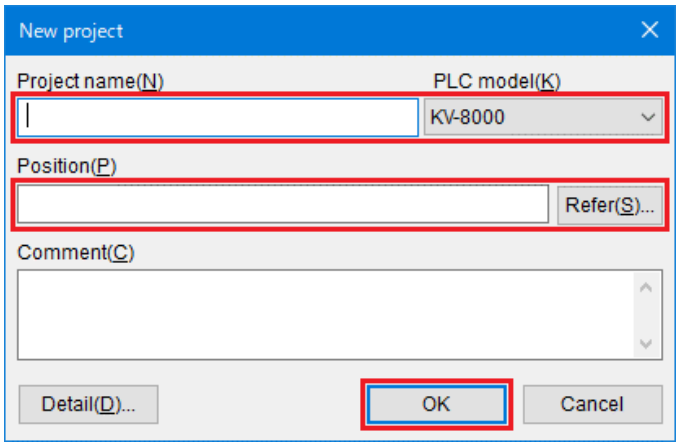
2. SETTINGS FOR THE KV-8000

Set the parameters of the KV-8000 using KV STUDIO (programming support software) manufactured by KEYENCE CORPORATION.

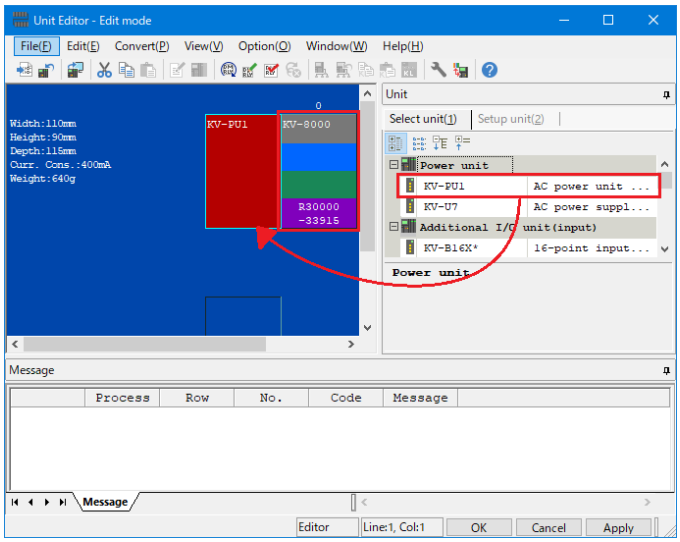
2.1 Parameter Setting

❖ **Point**

- Check that the RUN-PRG Selector Switch of the PLC is in the RUN state.
- No ladder program for communications is required.

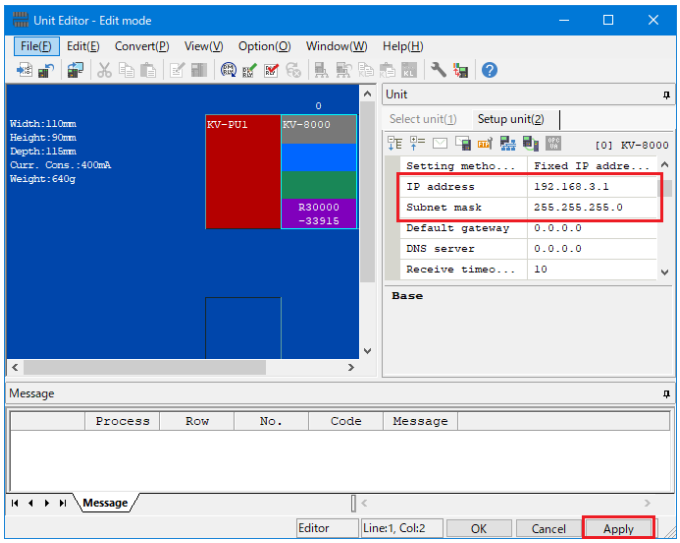


1. From the KV STUDIO menu, select [File] → [New project]. Set the applicable model, any project name, and project save location, and click the [OK] button.



2. From the KV STUDIO menu, select [Tool] → [Unit Editor].

3. Drag and drop the power unit to the unit editor window in accordance with the system configuration, and double-click the KV-8000.



4. In the [Setup unit(2)] tab, set the IP address and subnet mask of the KV-8000.

IP Address: 192.168.3.1
Subnet Mask: 255.255.255.0 (default)

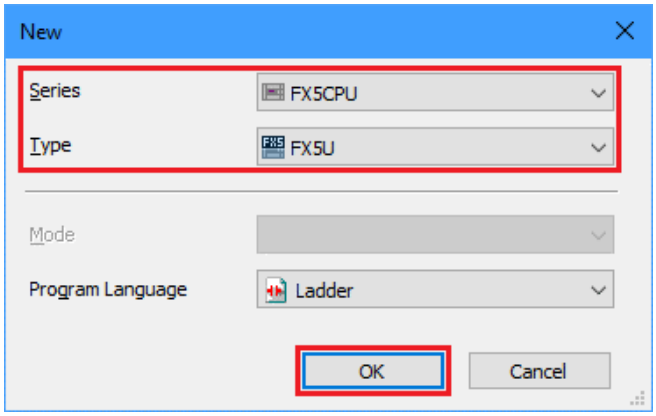
5. Click [Apply] to save the settings.

6. Connect the configuration personal computer with the PLC. From the KV STUDIO menu, select [Monitor/Simulator] → [PLC transfer → monitor mode]. Select the transfer item and click the [Execute] button.

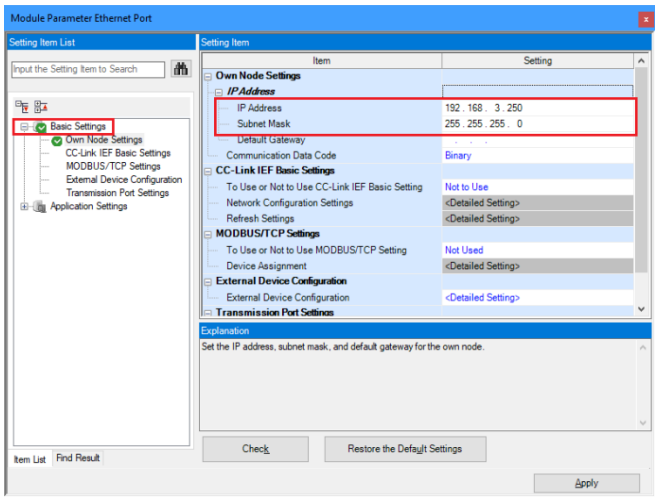
3. SETTINGS FOR THE FX5U

Set the parameters of the MELSEC iQ-F series FX5U CPU module using GX Works3.

3.1 Parameter Setting



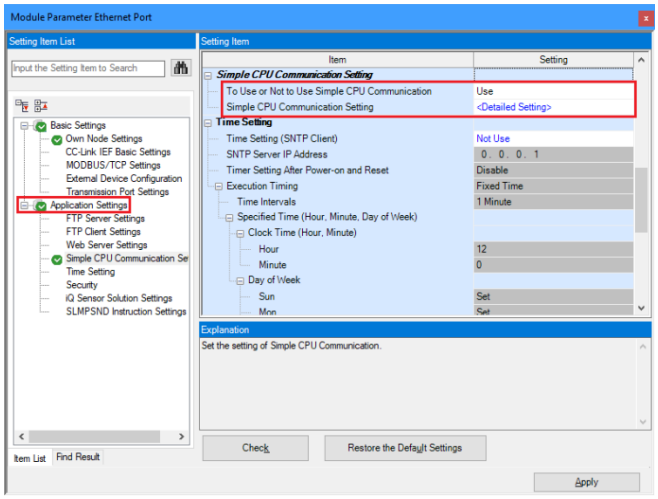
1. From the GX Works3 menu, select [Project] → [New]. Set the series and model, and click the [OK] button.



2. In [Navigation], select [Parameter] → [FX5UCPU] → [Module Parameter] → [Ethernet Port] → [Basic Settings].

3. Set the IP address and subnet mask of the FX5U CPU module.

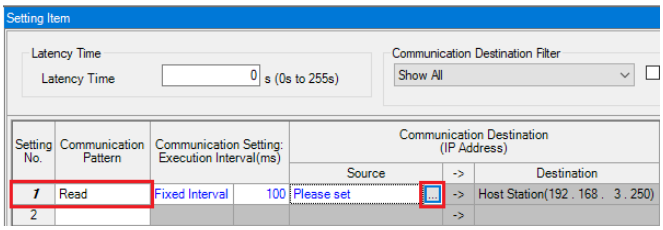
   IP Address: 192.168.3.250
   Subnet Mask: 255.255.255.0

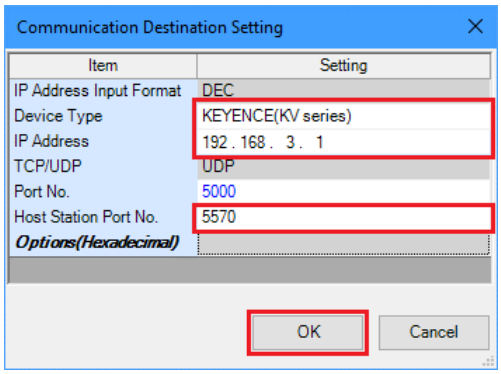


4. Select [Application Settings].

5. Set "Use" for "To Use or Not to Use Simple Communication".

6. Double-click "<Detailed Setting>" of "Simple CPU Communication Setting".





7. Select the communication pattern of Setting No.1.

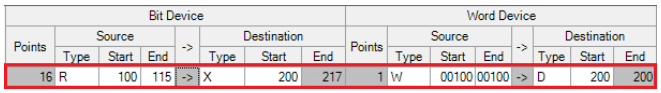
Communication Pattern: Read

8. Click the [...] button of "Source" of "Communication Destination".

9. Set each item on the "Communication Destination Setting" window as follows.

Device Type: KEYENCE(KV series)
IP Address: 192.168.3.1
Host Station Port No.: 5570

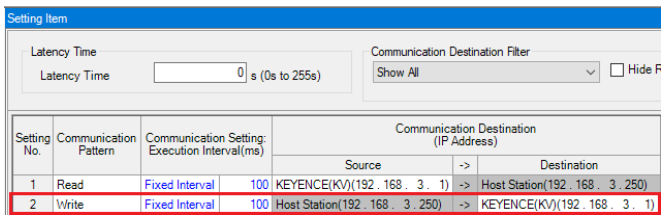
10. Click the [OK] button.



Bit Device							Word Device							
Points	Source			->	Destination			Points	Source			->	Destination		
	Type	Start	End		Type	Start	End		Type	Start	End		Type	Start	End
16	R	100	115	->	X	200	217	1	W	00100	00100	->	D	200	200

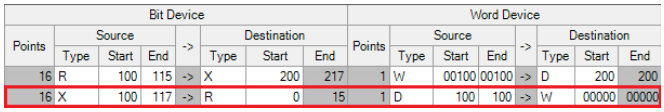
11. Set the devices that are sent/received to/from the communication destination as follows.

Bit Device						Word Device					
Source			Destination			Source			Destination		
Type	Start	End	Type	Start	End	Type	Start	End	Type	Start	End
R	100	115	X	200	217	W	00100	00100	D	200	200



12. Set the communication pattern and communication destination for Setting No.2 as follows in the same way of Setting No.1.

Communication Pattern: Write
Device Type: KEYENCE(KV series)
IP Address: 192.168.3.1
Host Station Port No.: 5571



Bit Device							Word Device							
Points	Source			->	Destination			Points	Source			->	Destination		
	Type	Start	End		Type	Start	End		Type	Start	End		Type	Start	End
16	R	100	115	->	X	200	217	1	W	00100	00100	->	D	200	200
16	X	100	117	->	R	0	15	1	D	100	100	->	W	00000	00000

13. Set the devices for Setting No.2 as follows.

Bit Device						Word Device					
Source			Destination			Source			Destination		
Type	Start	End	Type	Start	End	Type	Start	End	Type	Start	End
X	100	117	R	0	15	D	100	100	W	00000	00000

14. Click the [Apply] button after setting.

15. The set parameters are written to the CPU module. Then reset or power off and on the CPU module.

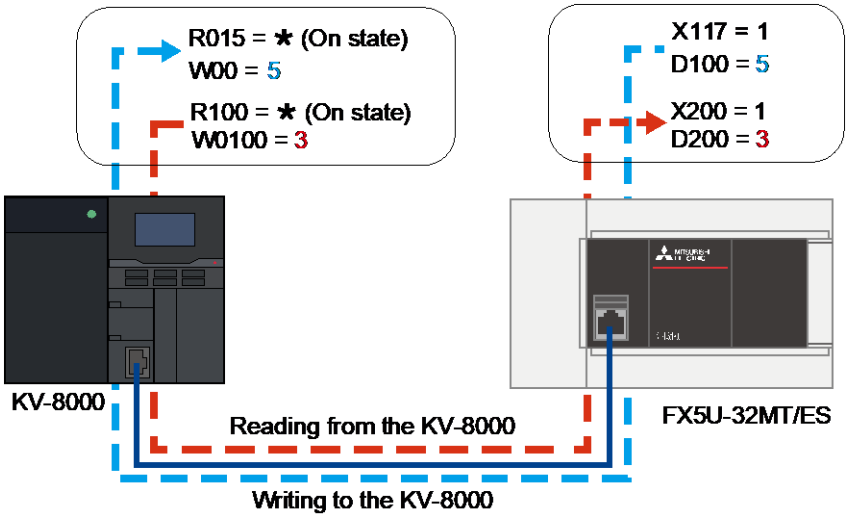
4. OPERATION CHECK

Check whether the FX5U-32MT/ES and KV-8000 communicate successfully in the simple CPU communication. If an error occurs, refer to the following manuals.

- Troubleshooting in the MELSEC iQ-F FX5 User's Manual (Ethernet Communication)
- List of PLC Unit Errors in the KV-8000 Series User's Manual

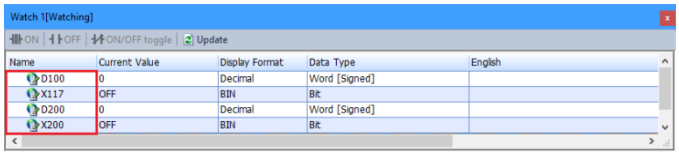
4.1 Operation Example

The specified bit device value or word device value is periodically communicated between the FX5U-32MT/ES and the KV-8000. Check that the data is read/written correctly using the watch window of GX Works3 and the registration monitor window of KV STUDIO.

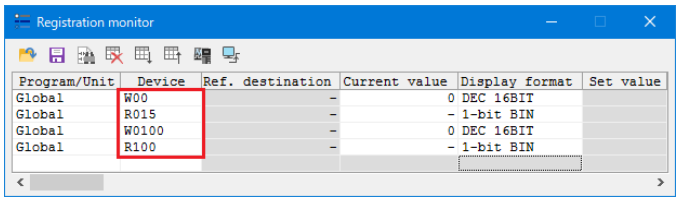


4.2 Check method

Check whether the device data is read/written by using the watch window of GX Works3 and the registration monitor window of the KV STUDIO.



1. Start GX Works3. Select [View] → [Docking Window] → [Watch 1] to display the "Watch" widow.
2. Register D100, X117, D200, and X200 on the "Watch" window.
3. Select [Online] → [Watch] → [Start Watching].

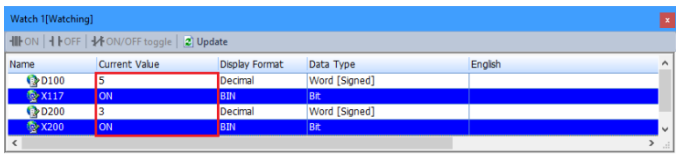


4. Start KV STUDIO. Select [Monitor/Simulator] → [Monitor mode] to set the monitor mode.
5. Select [Monitor/Simulator] → [Register monitor window] to display the "Registration monitor" window. Set W00, R015, W0100, and R100.

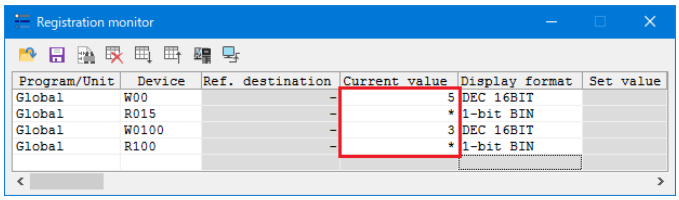
❖ **Point**

Set a device within the range of devices set in the simple CPU communication setting of GX Works3 on the window.

<GX Works3>



<KV STUDIO>



6. Check that the device data is written from the FX5U-32MT/ES to the KV-8000.
In this manual, enter 5 to the current value of D100 and 1 to the current value of X117 in GX Works3.

7. When W00 is 5 and R015 is ✱ in KV STUDIO, the device data is written successfully.

8. Check that the device data is read from the KV-8000 to the FX5U-32MT/ES.
In this manual, enter 3 to the current value of W0100 and double-click the current value of R100 and change it to ✱ in KV STUDIO.

9. When D200 is 3 and X200 is 1 in GX Works3, the device data is read successfully.

REVISIONS

Revision date	Revision	Description
January 2023	A	First edition

WARRANTY

Please confirm the following product warranty details before using this product.
- MELSEC iQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware) [WARRANTY]
- Manual for KV series manufactured by KEYENCE CORPORATION used [WARRANTIES AND DISCLAIMERS]

TRADEMARKS

The company names, system names and product names mentioned in this manual are either registered trademarks or trademarks of their respective companies.
In some cases, trademark symbols are not specified in this manual.

Country/Region	Sales office	Tel/Fax
USA	MITSUBISHI ELECTRIC AUTOMATION, INC. 500 Corporate Woods Parkway, Vernon Hills, IL 60061, U.S.A.	Tel : +1-847-478-2100 Fax : +1-847-478-2253
Mexico	MITSUBISHI ELECTRIC AUTOMATION, INC. Mexico Branch Boulevard Miguel de Cervantes Saavedra 301, Torre Norte Piso 5, Ampliacion Granada, Miguel Hidalgo, Ciudad de Mexico, Mexico, C.P.115200	Tel : +52-55-3067-7512
Brazil	MITSUBISHI ELECTRIC DO BRASIL COMERCIO E SERVICOS LTDA. Avenida Adelino Cardana, 293, 21 andar, Bethaville, Barueri SP, Brasil	Tel : +55-11-4689-3000 Fax : +55-11-4689-3016
Germany	MITSUBISHI ELECTRIC EUROPE B.V. German Branch Mitsubishi-Electric-Platz 1, 40882 Ratingen, Germany	Tel : +49-2102-486-0 Fax : +49-2102-486-7780
UK	MITSUBISHI ELECTRIC EUROPE B.V. UK Branch Travellers Lane, UK-Hatfield, Hertfordshire, AL10 8XB, U.K.	Tel : +44-1707-28-8780 Fax : +44-1707-27-8695
Ireland	MITSUBISHI ELECTRIC EUROPE B.V. Irish Branch Westgate Business Park, Ballymount, Dublin 24, Ireland	Tel : +353-1-4198800 Fax : +353-1-4198890
Italy	MITSUBISHI ELECTRIC EUROPE B.V. Italian Branch Centro Direzionale Colleoni - Palazzo Sirio, Viale Colleoni 7, 20864 Agrate Brianza (MB), Italy	Tel : +39-039-60531 Fax : +39-039-6053-312
Spain	MITSUBISHI ELECTRIC EUROPE, B.V. Spanish Branch Carretera de Rubi, 76-80-Apdo. 420, E-08190 Sant Cugat del Valles (Barcelona), Spain	Tel : +34-935-65-3131 Fax : +34-935-89-1579
France	MITSUBISHI ELECTRIC EUROPE B.V. French Branch 25, Boulevard des Bouvets, 92741 Nanterre Cedex, France	Tel : +33-1-55-68-55-68 Fax : +33-1-55-68-57-57
Czech Republic	MITSUBISHI ELECTRIC EUROPE B.V. Czech Branch, Prague Office Pekarska 621/7, 155 00 Praha 5, Czech Republic	Tel : +420-255-719-200
Poland	MITSUBISHI ELECTRIC EUROPE B.V. Polish Branch ul. Krakowska 48, 32-083 Balice, Poland	Tel : +48-12-347-65-00
Sweden	MITSUBISHI ELECTRIC EUROPE B.V. (Scandinavia) Hedvig Mollersgata 6, 223 55 Lund, Sweden	Tel : +46-8-625-10-00 Fax : +46-46-39-70-18
Russia	MITSUBISHI ELECTRIC (RUSSIA) LLC St. Petersburg Branch Piskarevsky pr. 2, bld 2, lit “Sch”, BC “Benua”, office 720; 195027 St. Petersburg, Russia	Tel : +7-812-633-3497 Fax : +7-812-633-3499
Turkey	MITSUBISHI ELECTRIC TURKEY A.S. Umraniye Branch Serifali Mah. Kale Sok. No:41 34775 Umraniye - Istanbul, Turkey	Tel : +90-216-969-2500 Fax : +90-216-661-4447
UAE	MITSUBISHI ELECTRIC EUROPE B.V. Dubai Branch Dubai Silicon Oasis, P.O.BOX 341241, Dubai, U.A.E.	Tel : +971-4-3724716 Fax : +971-4-3724721
South Africa	ADROIT TECHNOLOGIES 20 Waterford Office Park, 189 Witkoppen Road, Fourways, South Africa	Tel : +27-11-658-8100 Fax : +27-11-658-8101
China	MITSUBISHI ELECTRIC AUTOMATION (CHINA) LTD. Mitsubishi Electric Automation Center, No.1386 Hongqiao Road, Shanghai, China	Tel : +86-21-2322-3030 Fax : +86-21-2322-3000
Taiwan	SETSUYO ENTERPRISE CO., LTD. 6F, No.105, Wugong 3rd Road, Wugu District, New Taipei City 24889, Taiwan	Tel : +886-2-2299-2499 Fax : +886-2-2299-2509
Korea	MITSUBISHI ELECTRIC AUTOMATION KOREA CO., LTD. 7F to 9F, Gangseo Hangang Xi-tower A, 401, Yangcheon-ro, Gangseo-Gu, Seoul 07528, Korea	Tel : +82-2-3660-9569 Fax : +82-2-3664-8372
Singapore	MITSUBISHI ELECTRIC ASIA PTE. LTD. 307 Alexandra Road, Mitsubishi Electric Building, Singapore 159943	Tel : +65-6473-2308 Fax : +65-6476-7439
Thailand	MITSUBISHI ELECTRIC FACTORY AUTOMATION (THAILAND) CO., LTD. 12th Floor, SV.City Building, Office Tower 1, No. 896/19 and 20 Rama 3 Road, Kwaeng Bangpongpang, Khet Yannawa, Bangkok 10120, Thailand	Tel : +66-2682-6522-31 Fax : +66-2682-6020
Vietnam	MITSUBISHI ELECTRIC VIETNAM COMPANY LIMITED Unit 01-04, 10th Floor, Vincom Center, 72 Le Thanh Ton Street, District 1, Ho Chi Minh City, Vietnam	Tel : +84-28-3910-5945 Fax : +84-28-3910-5947
Indonesia	PT. MITSUBISHI ELECTRIC INDONESIA Gedung Jaya 8th Floor, JL. MH. Thamrin No.12, Jakarta Pusat 10340, Indonesia	Tel : +62-21-31926461 Fax : +62-21-31923942
India	MITSUBISHI ELECTRIC INDIA PVT. LTD. Pune Branch Emerald House, EL-3, J Block, M.I.D.C., Bhosari, Pune-411026, Maharashtra, India	Tel : +91-20-2710-2000 Fax : +91-20-2710-2100
Australia	MITSUBISHI ELECTRIC AUSTRALIA PTY. LTD. 348 Victoria Road, P.O. Box 11, Rydalmere, N.S.W 2116, Australia	Tel : +61-2-9684-7777 Fax : +61-2-9684-7245

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN

www.MitsubishiElectric.com

L(NA)08860ENG-A