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Foreword

This manual presents installation and handling of the driver Idec FA-series 1:1 expanded to the terminals in the E-series.

The functionality in the E-terminals and in MAC Programmer+ are described in the E-manual.

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1 Introduction

This manual describes how the Idec FA-series 1:1 expanded PLC system is connected to the terminals in the E-series. For information about the PLC system we refer to the manual for the current system.

2 Install and update driver

When installing MAC Programmer+ the drivers available at the time of release are installed too. A new driver can be added into MAC Programmer+ either with MAC Programmer+ using an Internet connection or from diskette. A driver can be updated to a newer version in the same ways.

2.1 Installation of driver using Internet

To update available drivers to the latest version or to install new drivers you can use the function Update terminal drivers, from Internet in the File menu in MAC Programmer+. All projects must be closed before this function is used and the computer must be able to make an Internet connection. You don't need a browser. When the connection is established a list is shown with all drivers that can be downloaded from Internet to the computer. The list shows the version number of available drivers and the version number of installed drivers. Mark the driver/drivers you want to install in the MAC Programmer+. The function Mark Newer will mark all drivers that are available in a newer version then the one installed and the drivers not installed. Then you select Download. Each drivers is approximately 500 kb and it is ready to use when the download is ready.

2.2 Installation of driver from disk

To update available drivers to the latest version or to install new drivers you can use the function Update terminal drivers, from Disk in the File menu in MAC Programmer+. All projects must be closed before this function is used. Select the folder with the new driver and choose to open the mpd-file. A list is shown with all drivers that can be installed showing the version number of available drivers and the version number of installed drivers. Mark the driver/drivers you want to install in the MAC Programmer+. The function Mark Newer will mark all drivers that are available in a newer version then the one installed and the drivers not installed. Then you select Install.

How to select the Idec FA-series 1:1 expanded driver in the project and how to transfer it to the terminal are described in *chapter 3*.

3 Connecting the terminal to the PLC system

3.1 Settings in the MAC Programmer+

For communication with Idec FA-series 1:1 expanded PLC system the following settings must be made in the programming tool MAC Programmer+.

Driver selection

Choosing **New** in the **File** menu creates a new project and the dialog **Project Settings** is shown. In an existing project, the dialog is shown by selecting **Project Settings** in the **File** menu.

Project Settings	×
Terminal E900 VT	C <u>h</u> ange
FA-3 CP12/13	Change
Color scheme [Current default]	<u>C</u> hange
(OK	Cancel

Press **Change...** under Controller system to get the choice list of available drivers. Choose Brand name, Protocol and Model and then press OK. Press OK again to confirm the project settings.

Select controller system		×
Brand name Allen-Bradley COMLI Control Techniques DEMO FREQROL GE Fanuc Giddings & Lewis idec Koyo MELSEC MELSERVO MODICON OMRON PBOSEC	Protocol FA series 1:1 prot.(expanded) FA series 1:1 protocol MICRO3 series protocol	Model FA-3 CP12/13
	OK Cancel	

Communication setup

The settings for the communication between the terminal and the PLC system are done under **Peripherals** in the **Setup** menu. To change which port the PLC system is connected to, mark and hold left mouse button down and drag to move it to another communication port. Mark the selected communication port and press **Edit** to change the other communication settings.



The settings should be:

Parameter	Description
Port	RS-422
Baudrate	9600
Data bits	8
Stop bits	1
Parity	even

Transfer the driver to the terminal

The selected driver is down-loaded into the terminal when the project is transferred to the terminal. Choose Project in the Transfer menu.

Project Transfer			
Percent complete:	0%		
			<u>S</u> end
Byte count (Kb):	0		<u>R</u> eceive
Time elapsed:			⊻erify
Status:			Stop
Info:			
Retries:	0		
Terminal Version:			Se <u>t</u> tings
☑ Test project on send			
Send complete project Check terminal version Partial send options Partial se			

There are three alternatives when the driver is downloaded into the terminal.

Function	Description
Never	The driver is not down-loaded and the existing driver in the ter- minal is used.
Always	The driver is down-loaded every time the project is transferred.
Automatic	The driver is down-loaded if the driver in the terminal is not the same as the selected driver in the project. If it is the same the driver is not down-loaded.

3.2 Connecting the terminal to the PLC system

Point-to-point



The cable according to drawing K-03335 in appendix is connected between the PLC system and the RS-422 port on the terminal.

4 Addressing

The terminal can handle the following data types in the PLC system.

Name	Address, Comment	Bit-device	Word-device
1	input (Read-Only)	Х	
Q	output (Read-Write)	Х	
М	internal relay (Read-Write)	Х	
R	shift register (Read-Write)	Х	
T	timer (Read-Only)		Х
TP	timer preset (Read-Write)		Х
С	counter value (Read-Only)		Х
СР	counter preset (Read-Write)		Х
D	dataregister (Read-Write)		Х
Н	10 ms timer (Read-Only)		Х

All bit-devices are addressed with the digit octal. Remaining devices are addressed decimal.

5 Efficient communication

To make the communication between the terminal and the PLC system quick and efficient the following should be noted about how the signals are read and what that can be done to optimize the reading.

5.1 Signals affecting the communication time

It is only signals to objects in the current block that are read continuously. Signals to objects in other blocks are not read, that is the number of blocks does not affect the communication time.

Besides the signals to objects in the current block, the terminal is continuously reading the following signals from the PLC:

Display signals Block print-out signals LED registers Alarm signals Remote acknowledge signals on alarms and alarm groups Login signal Logout signal Trend registers at the sample points Bargraph registers if using min/max indicators New display register Buzzer register Backlight signal Cursor control block Recipe control block Library index register Index registers PLC clock register if the PLC clock is used in the terminal List erase signal No protocol control register No protocol on signal

Signals not affecting the communication time

The following signals do not affect the communication time:

- Signals linked to function keys
- Time channels
- Objects in the alarm messages

Efficient block changes

Block changes are carried out most rapidly and efficiently through the block jump function on the function keys or through a jump object. "Display signals" in the block header should only be used when the PLC system is to force the presentation of another block. The "New Display" register can also be used if the PLC system is to change the block. This does not affect communication as much as a larger number of "Display signals".

Use the clock of the terminal

An extra load is put on communication if the clock of the PLC system is used since the clock register must be read up to the terminal. Downloading of the clock to the PLC system also creates an extra load. The interval between downloadings should therefore be as long as possible.

6 Appendix

Error codes from the PLC system. The code is shown on the display of the terminal.

"Comm. Err: XX"

Error code (XX)	Description	Name
1F	Incorrect operand	operand type and number
20	Incorrect address	program step number
21	Protected	program read/write, operand read/ write
25	Force buffer full	
26	Search not found	Search operand not found
30	Abnormal recive command	RECIVE ERROR
31	Recive data over	PLC SIZE ERROR
32	Recive inhabit	PLC RUN ERROR
34	Program transfer/write	ROM pack
35	Program transfer/write	Read/Write error
36	Program transfer/write	TOTAL
37	Program transfer/write	Overtime/frame error

PLC error respons

"EE:XXXX Stn:nn", nn corresponds to the current station number.

See the Computer Link Function operation.



