Content

Idec FA-series 1:1

Foreword

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

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

1 Introduction

This manual describes how the Idec FA-series 1:1 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 driver in the project and how to transfer it to the terminal are described in *chapter 3*.

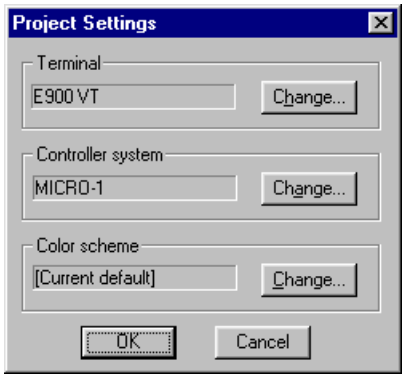
3 Connecting the terminal to the PLC system

3.1 Settings in the MAC Programmer+

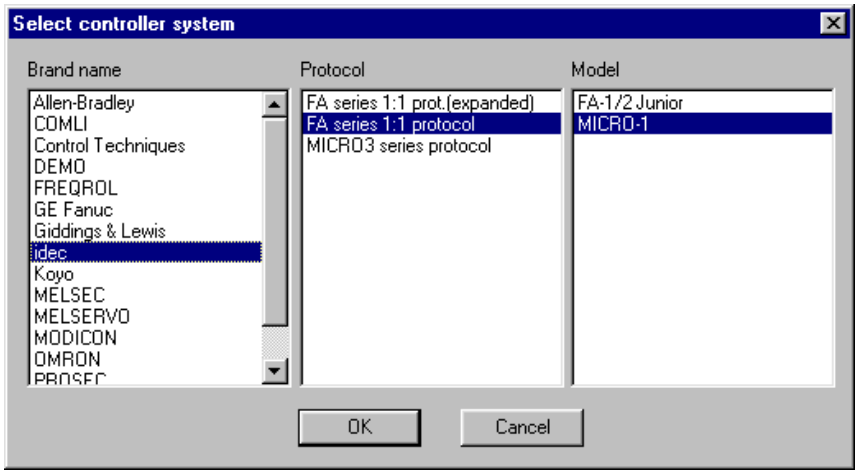
For communication with Idec FA-series 1:1 PLC system the following settings must be made in the programming tool MAC Programmer+.

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.

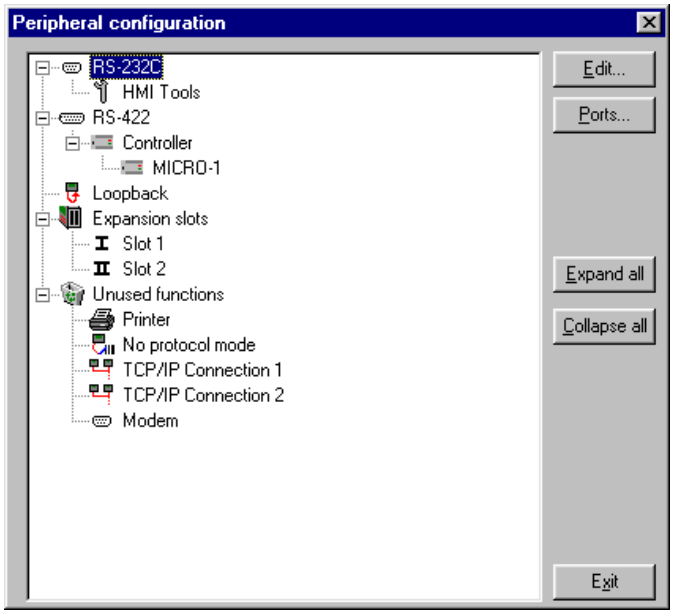


Press **Change…** under Controller system to get the choice list of available drivers. Choose Brand name, Protocol and Model and then press OK. Press OK again to confirm the project settings.



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.

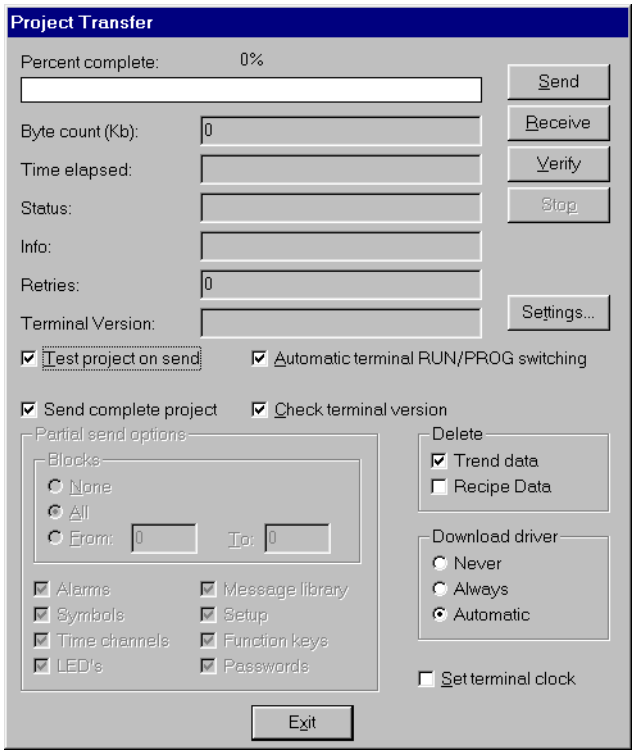


The settings should be:

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.



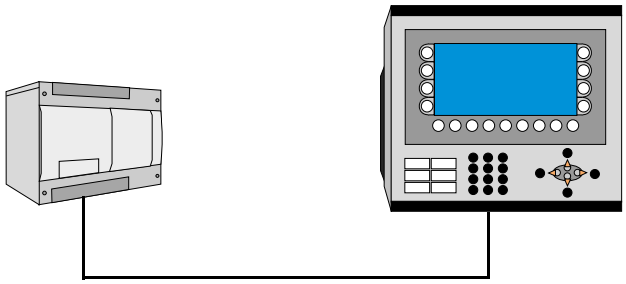
There are three alternatives when the driver is downloaded into the terminal.

Function	Description
Never	The driver is not down-loaded and the existing driver in the terminal 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

FA-series



Cable according to
drawing K-03335 or K-03336

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

Micro 1

The cable according to drawing K-03336 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
I	input (Read-Only)	X	
Q	output (Read-Write)	X	
M	internal relay (Read-Write)	X	
R	shift register (Read-Write)	X	
T	timer (Read-Only)		X
TP	timer preset (Read-Write)		X
C	counter value (Read-Only)		X
CP	counter preset (Read-Write)		X
D	dataregister (Read-Write)		X
H	10 ms timer (Read-Only)		X

All bit-devices are addressed with the last 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

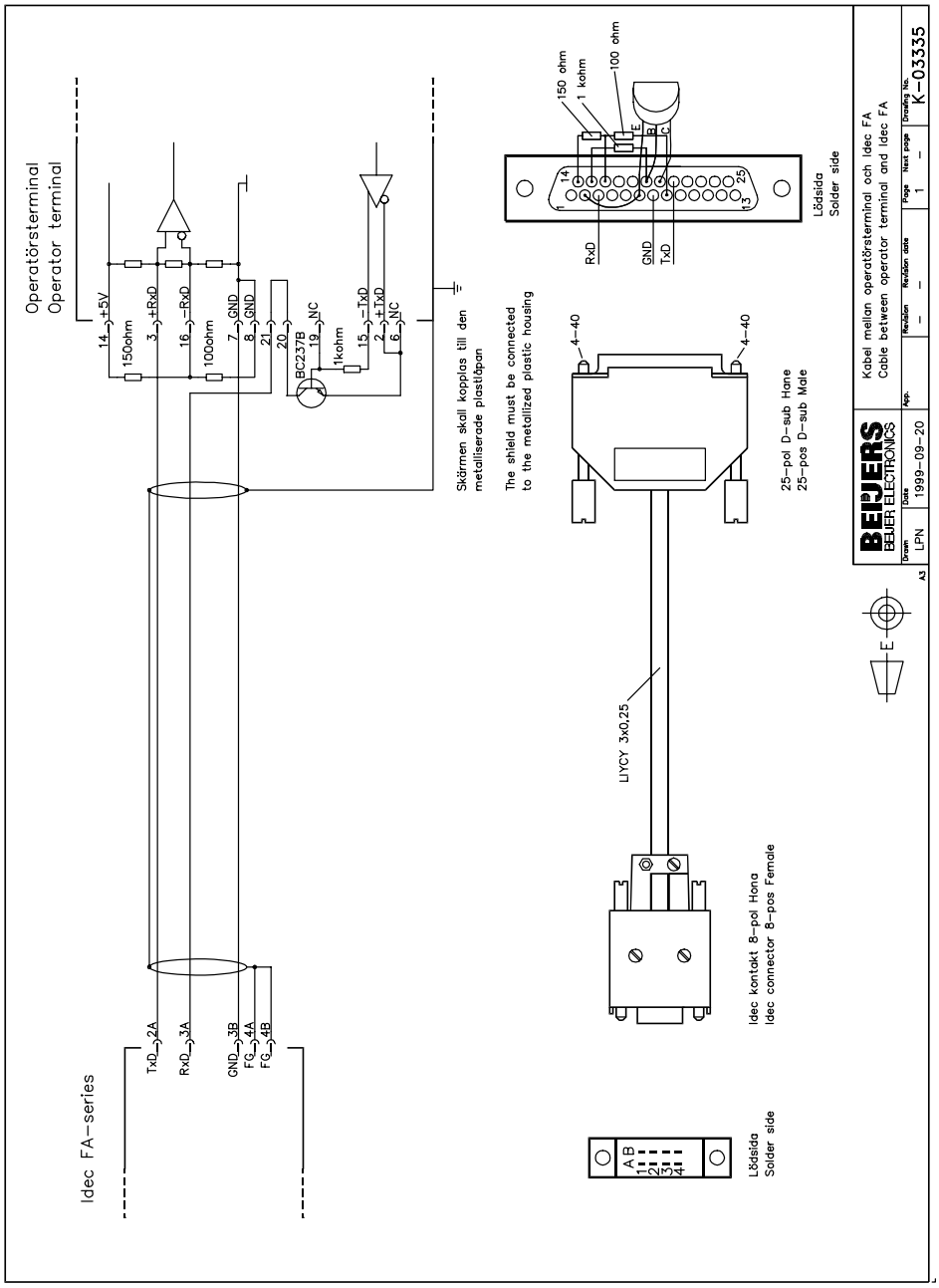
An extra load is put on communication if the clock of the PLC system is used since the clock register must be read up to the terminal. Downloading of the clock to the PLC system also creates an extra load. The interval between downloadings should therefore be as long as possible.

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
30	Abnormal recive command	RECIEV ERROR
31	Recive data over	PLC SIZE ERROR
32	Recive inhibit	PLC RUN ERROR
33	-	-
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


Operatörsterminal
Operator terminal
14 +5V
150ohm
3 +RxD
16 −RxD
100ohm
7 GND
8 GND
21
20
BC237B
19 NC
1kohm
15 −TxD
2 +TxD
6 NC
Skärmen skall kopplas till den metalliserade plastlåpan
The shield must be connected to the metallized plastic housing
150 ohm
1 kohm
100 ohm
14
25
13
E
B
C
RxD
GND
TxD
Lödsida
Solder side
4-40
4-40
25-pol D-sub Hane
25-pos D-sub Male
LIYCY 3x0.25
Idec kontakt 8-pol Hona
Idec connector 8-pos Female
Lödsida
Solder side
A B
1
2
3
4
Idec FA-series
TxD 2A
RxD 3A
GND 3B
FG 4A
FG 4B
BEIJER
BEIJER ELECTRONICS
Drawn LPN
Date 1999-09-20
Appr.
Revision
Revision date
Page 1
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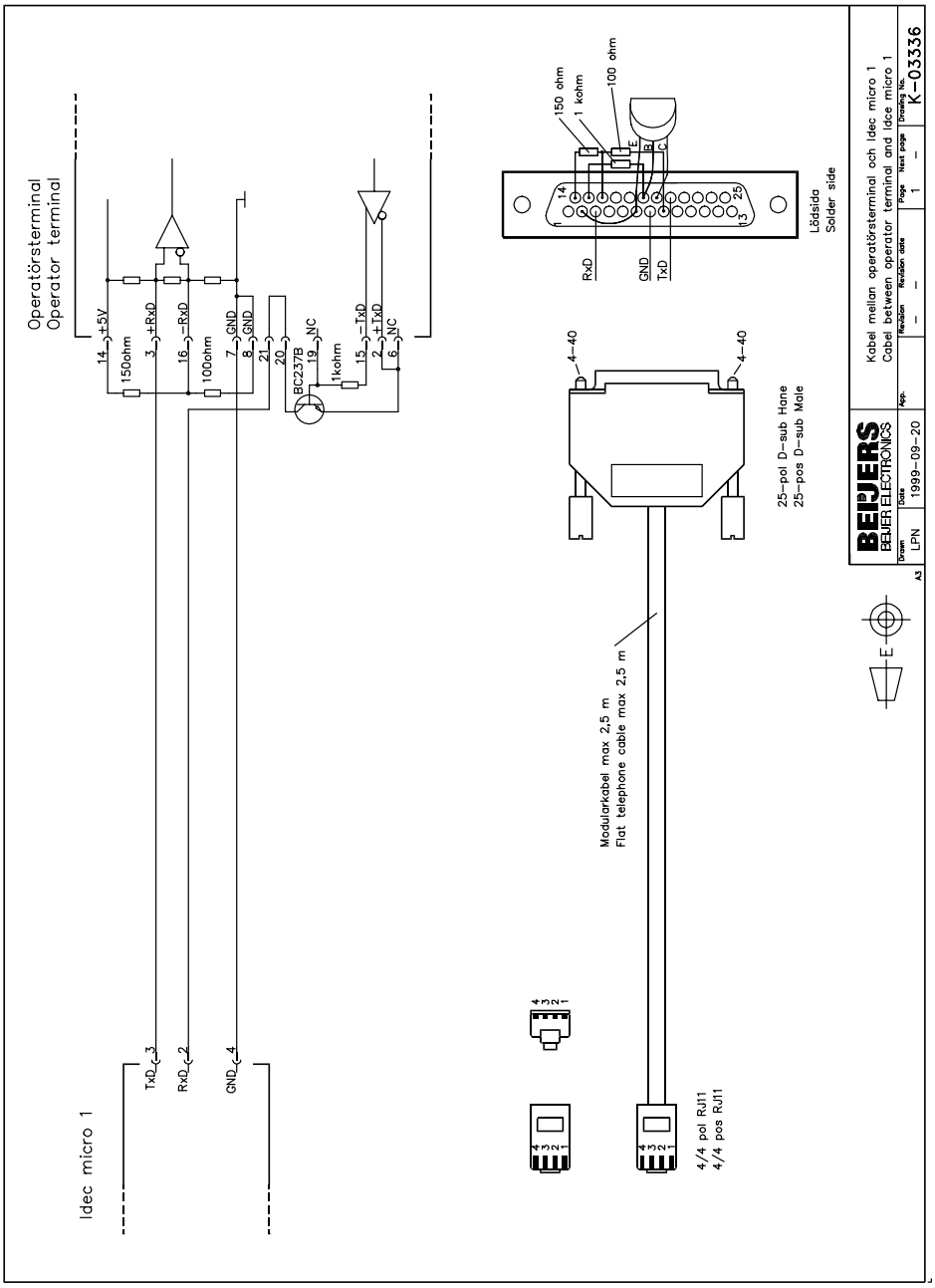
Drawing No. K-03335
A3
Kabel mellan operatörsterminal och Idec FA
Cable between operator terminal and Idec FA


Operatörsterminal
Operator terminal
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100ohm
7 GND
8 GND
21
20
BC237B
19 NC
1kohm
15 −TxD
2 +TxD
6 NC
150 ohm
1 kohm
100 ohm
E
B
C
14
1
25
13
RxD
GND
TxD
Lödsida
Solder side
4−40
4−40
25−pol D−sub Hane
25−pos D−sub Male
Modularkabel max 2,5 m
Flat telephone cable max 2,5 m
4 3 2 1
4 3 2 1
4 3 2 1
4/4 pol RJ11
4/4 pos RJ11
Idec micro 1
TxD 3
RxD 2
GND 4
BEIJERS
BEIJER ELECTRONICS
Kabel mellan operatörsterminal och Idec micro 1
Cabel between operator terminal and Idec micro 1
Drawn LPN
Date 1999−09−20
Appr.
Revision −
Revision date −
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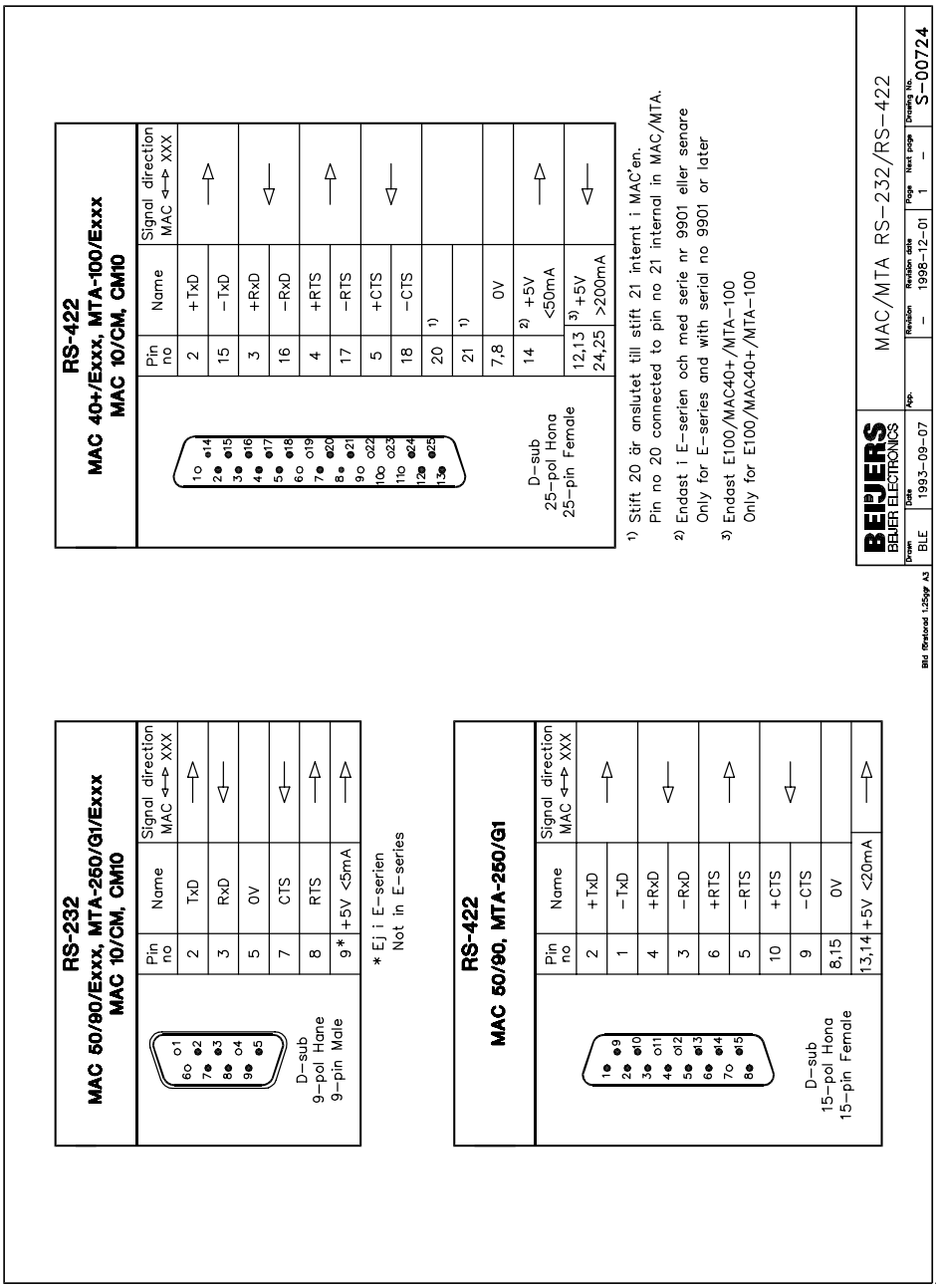
Drawing No. K−03336
A3


RS-422
MAC 40+/Exxx, MTA-100/Exxx
MAC 10/CM, CM10
Pin no
Name
Signal direction MAC ⟷ XXX
2 +TxD
15 −TxD
3 +RxD
16 −RxD
4 +RTS
17 −RTS
5 +CTS
18 −CTS
20 1)
21 1)
7,8 0V
14 2) +5V <50mA
12,13 3) +5V >200mA
24,25
D-sub 25-pol Hona 25-pin Female
1) Stift 20 är anslutet till stift 21 internt i MAC'en.
Pin no 20 connected to pin no 21 internal in MAC/MTA.
2) Endast i E-serien och med serie nr 9901 eller senare
Only for E-series and with serial no 9901 or later
3) Endast E100/MAC40+/MTA-100
Only for E100/MAC40+/MTA-100
RS-232
MAC 50/90/Exxx, MTA-250/G1/Exxx
MAC 10/CM, CM10
Pin no
Name
Signal direction MAC ⟷ XXX
2 TxD
3 RxD
5 0V
7 CTS
8 RTS
9* +5V <5mA
D-sub 9-pol Hane 9-pin Male
* Ej i E-serien
Not in E-series
RS-422
MAC 50/90, MTA-250/G1
Pin no
Name
Signal direction MAC ⟷ XXX
2 +TxD
1 −TxD
4 +RxD
3 −RxD
6 +RTS
5 −RTS
10 +CTS
9 −CTS
8,15 0V
13,14 +5V <20mA
D-sub 15-pol Hona 15-pin Female
BEIJERS
BEIJER ELECTRONICS
MAC/MTA RS-232/RS-422
Drawn BLE
Date 1993-09-07
Appr.
Revision –
Revision date 1998-12-01
Page 1
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Drawing No. S-00724
Bild återskrivs 1.25ggr A3