

## **SEW Eurodrive MOVIDRIVE**

This manual presents installation and handling of the driver SEW Eurodrive MOVIDRIVE to the terminals in the Cimrex series.

The functionality in the Cimrex terminals and in CIMREX PROG are described in the Cimrex manual.

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# Content

<b>1 Introduction</b> .....	3
<b>2 Install and update driver</b> .....	4
2.1 Installation of driver using Internet.....	4
2.2 Installation of driver from disk.....	4
<b>3 Connecting the terminal to the drive inverter</b> .....	5
3.1 Settings in the CIMREX PROG .....	5
3.2 Settings in the drive inverter .....	8
3.3 Connecting the terminal to the drive inverter .....	9
<b>4 Addressing</b> .....	11
4.1 Station handling.....	12
<b>5 Efficient communication</b> .....	13
5.1 Signals affecting the communication time.....	13
5.2 How to make the communication more efficient .....	14
5.3 Trouble shooting schedule.....	15
<b>6 Drawings</b> .....	16

# **1 Introduction**

This manual describes how the drive inverter SEW Eurodrive MOVIDRIVE is connected to the operator terminals in the Cimrex series via the protocol MOVILINK and how they communicate. Addressing of an item is done in the normal SEW Eurodrive MOVILINK way. For information about the drive inverter we refer to the manual for current inverter.

The driver can be used with the SEW Eurodrive MOVIDRIVE series drive inverters.

## 2 Install and update driver

When installing CIMREX PROG the drivers available at the time of release are installed too. A new driver can be added into CIMREX PROG either with CIMREX PROG 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 CIMREX PROG. 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 CIMREX PROG. The function Mark Newer will mark all drivers that are available in a newer version than the one installed and the drivers not installed. Then you select Download. Each driver 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 CIMREX PROG. 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 CIMREX PROG. The function Mark Newer will mark all drivers that are available in a newer version than the one installed and the drivers not installed. Then you select Install.

How to select the SEW Eurodrive MOVIDRIVE driver in the project and how to transfer it to the terminal are described in *chapter 3*.

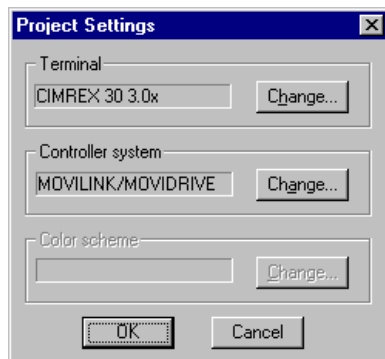
## 3 Connecting the terminal to the drive inverter

### 3.1 Settings in the CIMREX PROG

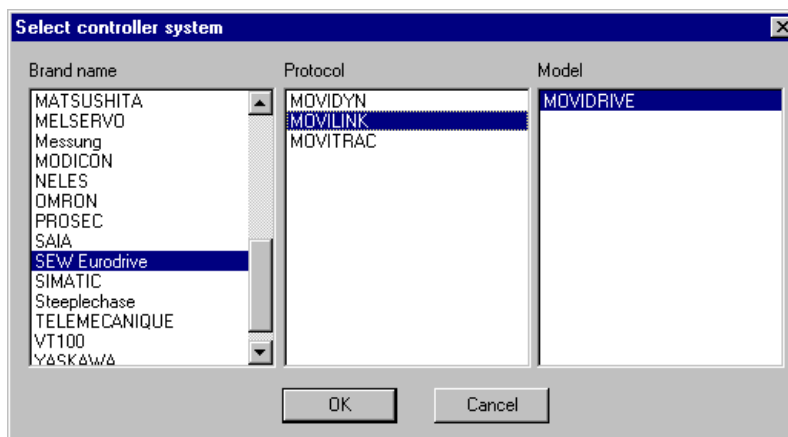
For communication with the drive inverter via the protocol MOVILINK the following settings must be made in the programming tool CIMREX PROG.

#### 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.

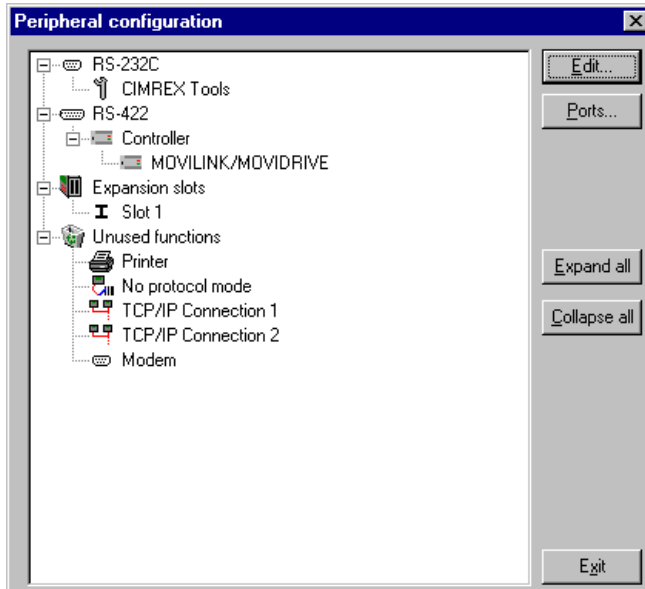


Press **Change...** under **Controller system** to get the choice list of available drivers. Choose **Brand name**, **Protocol** and then press **OK**. Press **OK** again to confirm the project settings.



## Communication setup

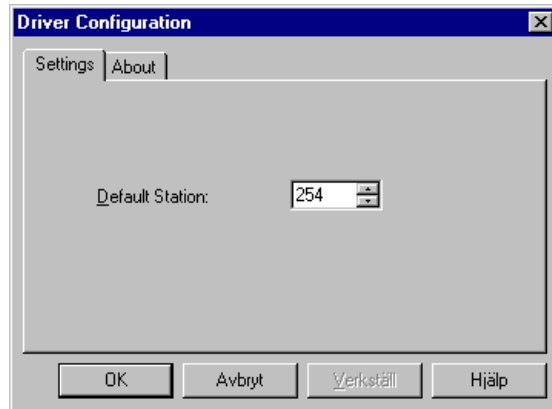
The settings for the communication between the terminal and the drive inverter are done under **Peripherals** in the **Setup** menu. To change which port the drive inverter is connected to, mark Controller and hold left mouse button down and drag to move it to another communication port. Mark the selected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



The settings should be:

Parameter	Description
Port	RS-232 or RS-422
Baudrate	9600
Data bits	8
Stop bits	1
Parity	Even

To make specific settings for the selected driver mark the driver name and press **Edit**.



Under **Settings** you define the default station number. Values 0-99, 254 and 255 can be stated. 0-99 are individual addresses to inverters while 254 is an general address for point-to-point communication. Address 254 can not be used if there are more than one inverter connected to the network because any inverter will reply to this address irrespectively of it's own address. Address 255 is an broadcast address which all inverters are listening to and they will not reply to this message.

### **Error messages**

#### **Wrong parameter**

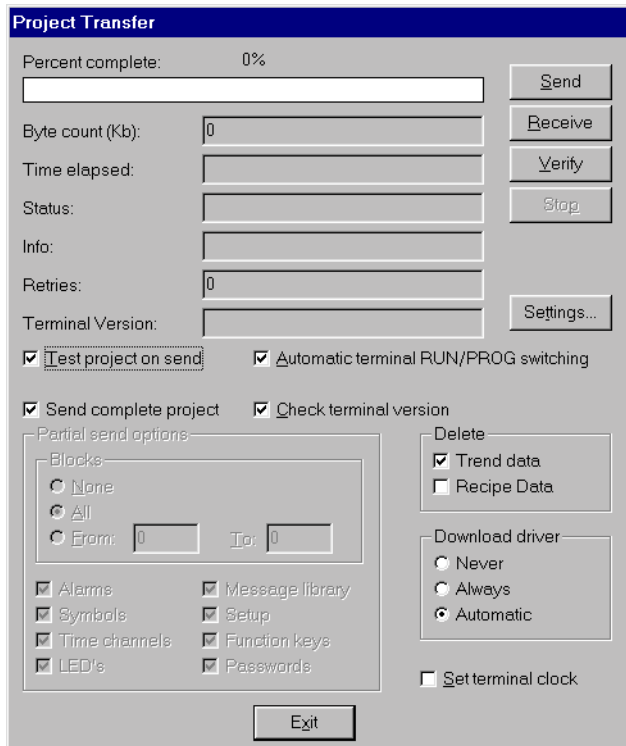
No access to P844      Parameter does not exist.

#### **Communication faults**

Comm Error 10.11.0.0    Error class.Error code.Address code high.Address code low

## Transfer the driver to the terminal

The selected driver is downloaded 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:

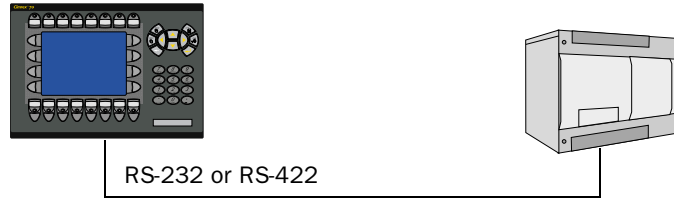
Function	Description
Never	The driver is not downloaded and the existing driver in the terminal is used.
Always	The driver is downloaded every time the project is transferred.
Automatic	The driver is down-loaded if the driver in the terminal is not the same as the selected driver in the project. If it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

## 3.2 Settings in the drive inverter

For information about settings in the drive inverter we refer to the manual for current system.

### 3.3 Connecting the terminal to the drive inverter

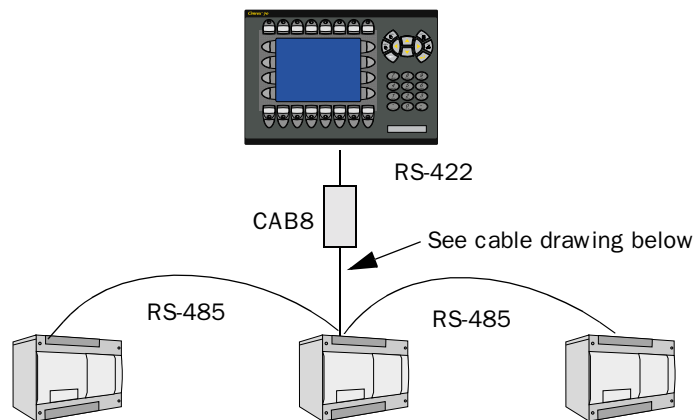
#### Point-to-point connection



The point-to-point connection can be done via the RS-232C port on the terminal to the RS232 interface on the module USS21A on the SEW Eurodrive MOVIDRIVE. For cable configuration see cable drawing below.

CIMREX terminal 9-pin DSUB female	SEW Eurodrive MOVIDRIVE RS-232 interface on module USS21A 9-pin DSUB male
TxD 2	3
RxD 3	2
GND 5	5

#### Multidrop connection

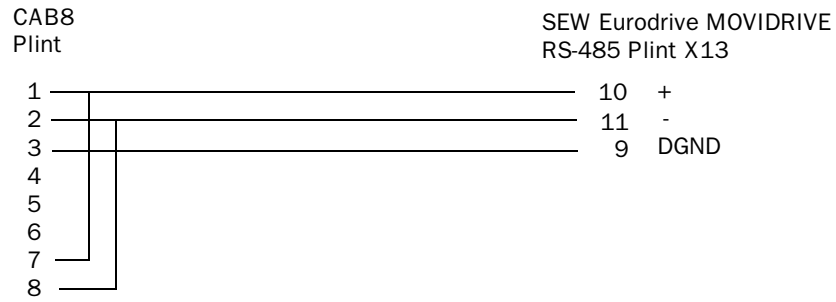


The terminal is connected to an RS-485 network via the adaptor CAB8 which is connected to the RS-422 port on the terminal. CAB8 is a standard adaptor that can be ordered from Cimrex Electronics.

#### Terminal to RS485 interface on the USS21A module on MOVIDRIVE

CAB8 Plint	SEW Eurodrive MOVIDRIVE RS-485 Plint
1	1 +
2	2 -
3	3 OV5
4	
5	
6	
7	
8	

**Terminal to RS485 interface MOVIDRIVE**



For further information about settings in the drive inverter, cable specifications and information about connecting the drive inverter to the terminal we refer to the manual for the current drive inverter.

## 4 Addressing

The terminal can handle the following data types in the drive inverter.

Parameters (P, NVP), Index (X, NVX), and IPOS variables (H).

Parameters and index (P, X), are written into the non-permanent RAM of the inverter and is therefore lost when the inverter is switched off. If it is desired that the setting is kept after power has been switched off NVP or NVX has to be used. Data is then written into the Non Volatile memory (e.g. in an EEPROM). Because the EEPROM only can support a specified number of writes this function should be used with care.

Which parameters, index and IPOS-variables that exist depends on the inverter connected as well as installed options in the inverter and has to be checked out in the manual for the drive.

### Digital objects:

Device	Min Address	Max Address	Comment
<i>Prr.bb</i>	P0.0	P955.31	Bit <i>bb</i> in register <i>rr</i>
<i>NVPrr.bb</i>	NVP0.0	NVP955.31	Bit <i>bb</i> in register <i>rr</i>
<i>Xrr.bb</i>	X8192.0	X24575.31	Bit <i>bb</i> in register <i>rr</i>
<i>NVXrr.bb</i>	NVX8192.0	NVX24575.31	Bit <i>bb</i> in register <i>rr</i>
<i>Hrr.bb</i>	H0.0	H511.31	Bit <i>bb</i> in register <i>rr</i>
<i>Brr.bb</i>	B0.0	B63.31	Bit <i>bb</i> in register <i>rr</i>

### Special comments about digital objects

If You choose to manouver a digital object, the terminal handle this by read before write. This means that the whole register is read and then the bit of interest is changed and the whole register is written back. If the controller changes some of the bits in the register during this communication, the controllers change is lost. If possible let the terminal / controller use different registers.

### Analog objects:

Device	Min Address	Max Address	Comment
<i>Prr</i>	P0	P955	Register <i>rr</i>
<i>NVPrr</i>	NVP0	NVP955	Register <i>rr</i>
<i>Xrr</i>	X8192	X24575	Register <i>rr</i>
<i>NVXrr</i>	NVX8192	NVX24575	Register <i>rr</i>
<i>Hrr</i>	H0	H511	Register <i>rr</i>
<i>Rrr</i>	R0	R63	Register <i>rr</i>

### Special comments about analog objects

All parameters, index and IPOS-variables are treated as 32-bit values.

For Gain and number of decimals refer to MoviDrive manual.

## 4.1 Station handling

In the Driver Configuration dialog you state the default station. The default station is the station the terminal checks communication towards at start up, and it is also the station for the device which is not assigned to any specific station. For communication with other stations the station number is given as a prefix to the device.

Example

13:P5    Parameter 5 in station 13

## 5 Efficient communication

To make the communication between the terminal and the drive inverter 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 drive inverter:

- 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

## 5.2 How to make the communication more efficient

### Group PLC-signals consecutively

The signals from the PLC system are read most rapidly if all signals in the list above are consecutive. If for example, 100 signals are defined, it is quickest to read these if they are linked to, for example, M0.0-M11.7. If the signals are spread out (e.g. I0.4, Q30.0, T45.3 etc.) the updating is slower.

### 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

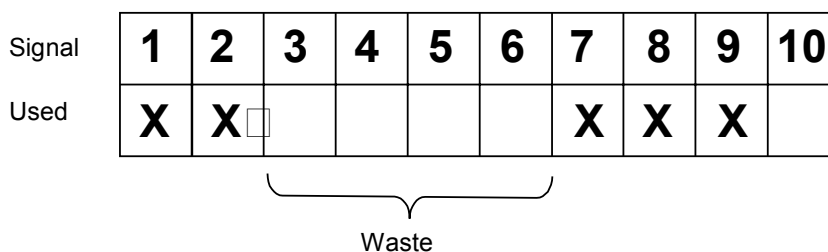
An extra load is put on communication if the clock of the PLC system is used since the clock register must be read up to the terminal. Downloading of the clock to the PLC system also creates an extra load. The interval between downloadings should therefore be as long as possible.

### Packaging of signals

When the signals are transferred between the terminal and the PLC system, all signals are not transferred simultaneously. Instead they are divided into packages with a number of signals in each package. To decrease the number of packages that have to be transferred and make the communication faster this number has to be considered. The number of signals in each package depends on the used driver. In the SEW Eurodrive MOVIDRIVE driver the number is 1 for analog devices and 32 for digital devices.

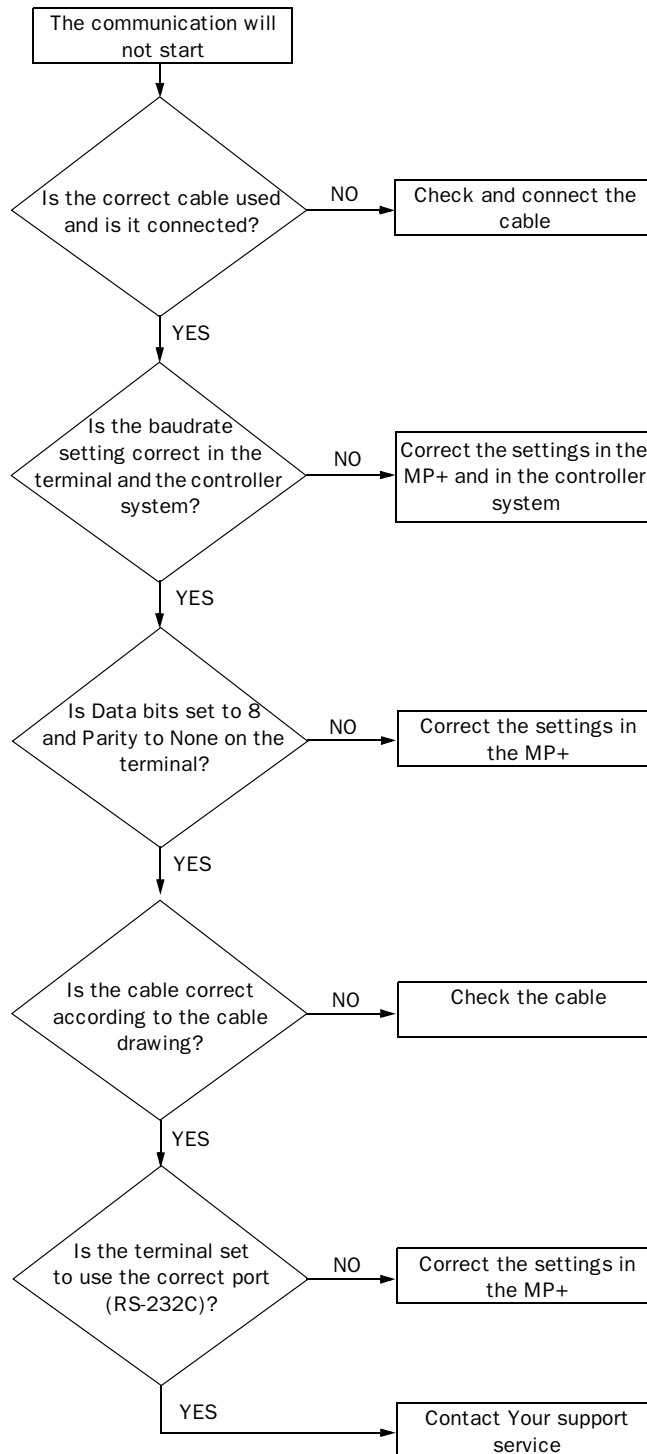
To make the communication as fast as possible the number of packages has to be minimized. Consecutive signals require a minimum of used packages but it is not always possible to have consecutive signals. In such cases the so-called waste between two signals has to be considered. The waste is the maximum distance between two signals you can have and still keep them in the same package.

The waste depends on the driver used. In the SEW Eurodrive MOVIDRIVE driver the number is 30 for digital devices. Analog devices don not cause any waste.



## 5.3 Trouble shooting schedule

The following trouble shooting schedule can help you to remember to check some settings, for example, if communication problems occurs.



# 6 Drawings

RS-232

Pin no	Name	Signal direction CIMREX ←→ XXX
2	TxD	→
3	RxD	←
5	OV	
7	CTS	←
8	RTS	→
9		

D-sub  
9-pin Male

RS-422

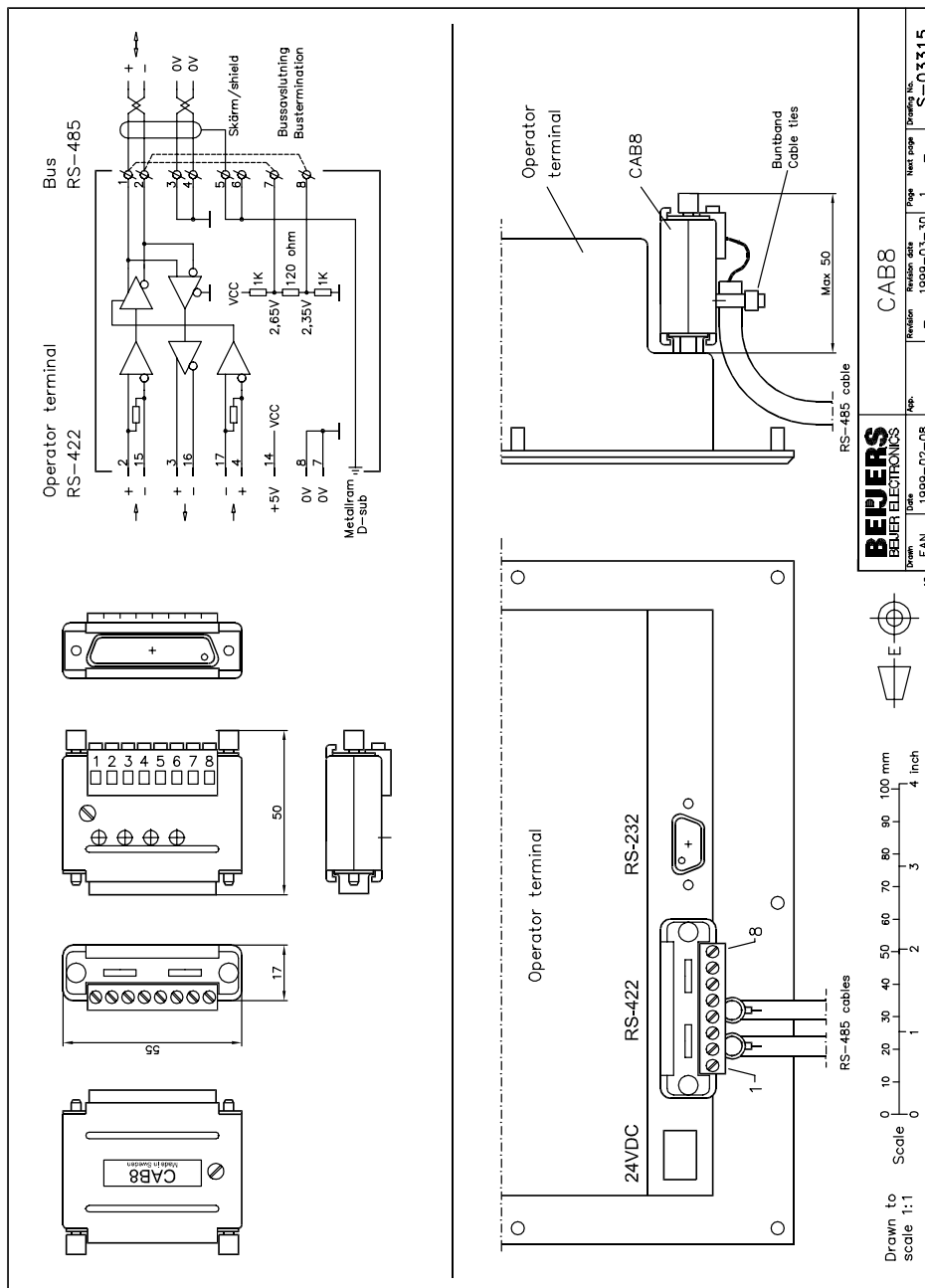
Pin no	Name	Signal direction CIMREX ←→ XXX
2	+TxD	→
15	-TxD	
3	+RxD	←
16	-RxD	
4	+RTS	→
17	-RTS	
5	+CTS	←
18	-CTS	
20	1)	
21	1)	
7,8	OV	
14	+5V <50mA	→
12,13 24,25	2) +5V >200mA	←

D-sub  
25-pin Female

1) Pin no 20 connected to pin no 21 internal in the terminal  
 2) Only for CIMREX 10

		CIMREX RS-232/RS-422	
		Drawn	Date
SLG	1998-12-01	Rev.	
		Revision	Revision date
		Page	Sheet page
		1	5-02467



<b>BEIJERS</b>		<b>CAB8</b>	
BEIJERS ELECTRONICS		Revision date	
Drawn	Date	Revision	Page
EAN	1999-02-08	-	1999-03-30
Ap		Next paper	
S-03315		Drawing No.	

