SINUMERIK System 800
Universal Interface

Planning Guide

Edition 12.95

Manufacturer Documentation

SINUMERIK
System 800

Universal Interface

Planning Guide

Manufacturer Documentation

Valid for:

Control	*Software Version*
SINUMERIK 805	2
SINUMERIK 810 T / 810 TE (GA 1)	2
SINUMERIK 810 M / 810 ME (GA 1)	2
SINUMERIK 810 G	1
SINUMERIK 810 T / 810 TE (GA 2)	2
SINUMERIK 810 M / 810 ME (GA 2)	2
SINUMERIK 820 T/ TE	2
SINUMERIK 820 M/ ME	2
SINUMERIK 810 T / 810 TE (GA 3)	1
SINUMERIK 810 M / 810 ME (GA 3)	1
SINUMERIK 820 T/ TE (GA 3)	1
SINUMERIK 820 M/ ME (GA 3)	1
SINUMERIK 840T	1
SINUMERIK 840M	1
SINUMERIK 840C	5
SINUMERIK 850 T/ TE	4
SINUMERIK 850 M/ ME	4
SINUMERIK 880 T/ TE	5
SINUMERIK 880 M/ ME	5
SINUMERIK 880 N	4

December 1995 Edition

SINUMERIK® documentation

Printing history

Brief details of this edition and previous editions are listed below.

The status of each edition is shown by the code in the ”Remarks” column.

Status code in ”Remarks” *column*:

A . . . . New documentation **B** . . Unrevised reprint with new Order No.
C . . . . Revised edition with new status. If factual changes have been made on the page since the last edition, this is indicated by a new edition coding in the header on that page.

Edition	Order No.	Remarks
10.86	E80210-T77-X-A3	Revised edition
10.88	6ZB5 410-0AQ02-0BA0	**C**
07.90	6ZB5 410-0AQ02-0BA1	**C**
07.90	6ZB5 410-0AQ02-0BA2	**C**
03.91	6ZB5 410-0AQ02-0AA3	**C**
12.95	6ZB5 410-0AQ02-0AA4	**C**

Other functions not described in this documentation might be executable in the control. This does not, however, represent an obligation to supply such functions with a new control or when servicing.

This publication was produced on the Siemens 5800 Office System.
Subject to change without prior notice.

Preface

Notes for the reader

This documentation is intended for manufacturers of machine tools with the SINUMERIK System 800.
It describes data exchange with input**/**output devices (e.g. tape reader, tape punch, programmer, printer, magnetic tape unit, etc).

The SINUMERIK documentation is divided into three parts:
- General Documentation
- User Documentation
- Manufacturer Documentation
- Service Documentation

The **manufacturer documentation** for the **SINUMERIK System 800** controller is divided into the following parts:

- Instruction Manual
- Interface
  Part 1: Signals
  Part 2: Cables and Devices
- PLC Programming Guide
- Function Blocks
- Universal Interface
- Measuring Cycles
- CL - 800 Description

You can obtain more detailed information from your Siemens representative.

Contents

1 V.24 (RS 232 C) Interface

1.1 General notes

The V.24 interfaces of the SINUMERIK System 800 contain V.24 receivers and V.24 senders, conforming to DIN 66020.

DIN 66020 defines the interface between a DTE (data terminal equipment) and a DCE (data circuit terminating equipment). It is based on recommendations V.24 and V.28 of the CCITT, which were derived from the American EIA Standard RS 232.

The interfaces also conform to VDI guideline 2880, which specifies process and data traffic of programmable controllers.

The interface signals used in SINUMERIK System 800 are a subset of V.24 or RS 232 standard signals and therefore possess the same electrical characteristics.

1.2 V.24 (RS232C) interface lines

In terms of the DIN standard, SINUMERIK is regarded as a DTE (data terminal equipment).

SINUMERIK	–	DTE
Transmission line	–	DCE
I/O devices	–	DTE

The abbreviations E1, E2, D1, D2, S1.2, S2, M1, M2 refer to DIN 66020, the abbreviations 101 to 108.2 refer to CCITT (V.24).

Ground lines

E1: Protective Ground
(101)

E2: Signal Ground
(102)
This is the common return cable for all interface lines
(except E1).

Data lines

D1: Transmitted Data
(103 - TxD)
On this line data is transmitted from the DTE to the DCE.
Quiescent state is logic "High".

D2: Received Data
(104 - RxD)
On this line data is transmitted to the DTE from the DCE.
Quiescent state is logic "High".

Control lines

S1.2: Data Terminal Ready
(108/2 - DTR)
The DTE signals to the DCE that it is ready for data transmission.

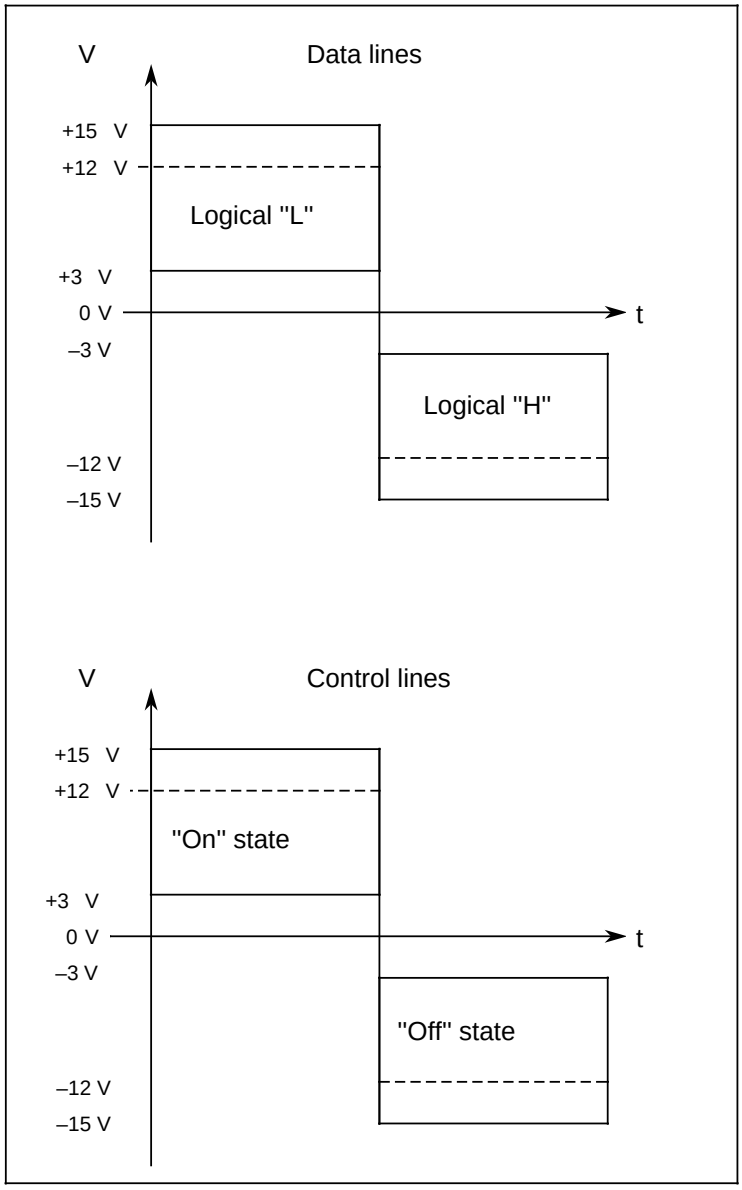
S2: Request to Send
(105 - RTS)
The DTE controls the send part of the data channel of the DCE.

Message lines

M1: Data Set Ready
(107 – DSR)
The DCE signals to the DTE whether or not it is ready for transmission.

M2: Clear to Send
(106 – CTS)
The DCE signals to the DTE whether or not it is ready to send data signals through the data channel.

1.3 Polarity and voltage level assignment of V.24 interface signals



Signal level of SINUMERIK interfaces: ±12 V

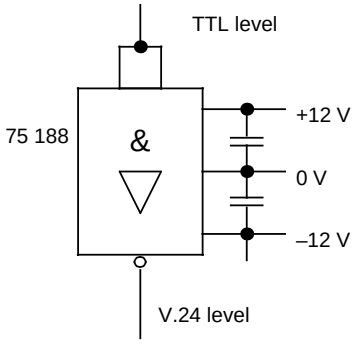
All signal levels refer to the signal ground E2 (102).

Within the transition range (+3 to –3 V) the signal state is undefined.
(Hysteresis range of the receiver circuits 75189 A)

1.4 V.24 drivers and receivers

1.4.1 V.24 drivers

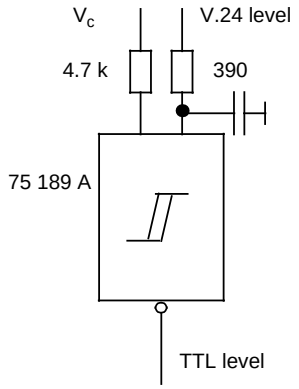
The V.24 output signals *TxD, RTS and DTR are generated in the V.24 driver block 75188 from the TTL signals of the USART 8251A.



Data of circuit 75188	
Max. supply voltage	V_{cc} ± 15 V
Max. output current (current limited)	I_o 10 mA
Operating voltage and V.24 level	V_{cc}± 12 V

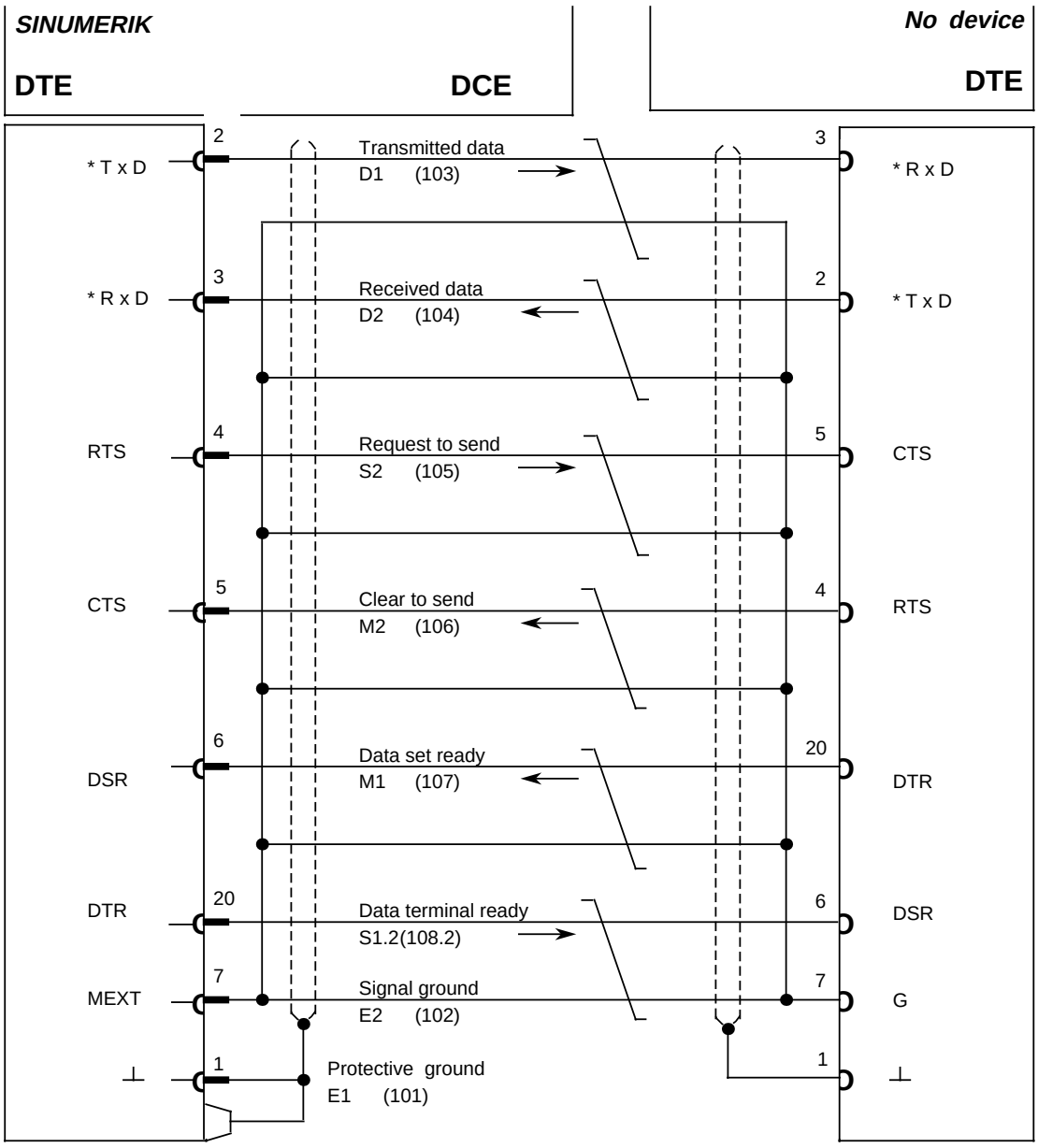
1.4.2 V.24 receivers

The V.24 input signals * RxD, CTS and DSR are put onto the receiver circuits 75189 after passing through an RC low-pass filter.



Data of circuit 75189A	
Max. input voltage	V_{cc} ± 30 V
Input resistance	390

1.5 Interface link to I/O device for V.24

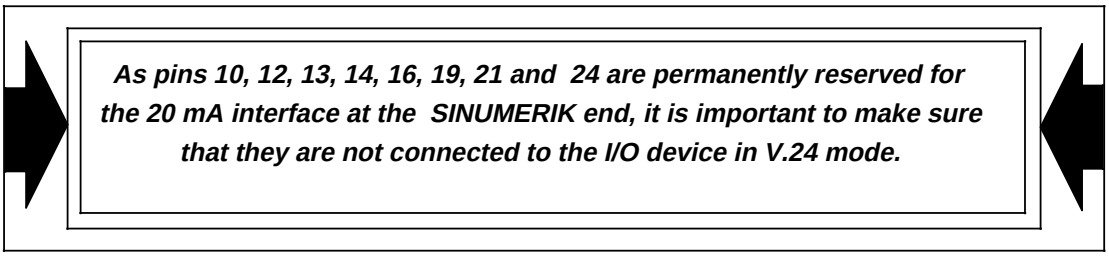


In all signal names and directions, the SINUMERIK is taken to be a DTE.

Which of the available control and message lines are used will depend on the I/O device. In the simplest case, lines E2 and D1 suffice for a receiving device (printer, punch) or E2 and D2 for a sending device (reader). The specification of an I/O device determines how it is connected.

In the interface link diagram, a device is assumed to comply with the RS232C standard. The interfaces conform to VDI guideline 2880 with SINUMERIK as a DTE. If it is linked to an I/O device which is also wired as a DTE, the appropriate lines must be crossed in the cable (sender with receiver).

Some of the interfaces contain both the V.24 signals and the signals for 20 mA current loop operation. A V.24 sender and a 20 mA sender may not be connected to a SINUMERIK interface at the same time.



The interface is not set to V.24 or 20 mA operation by jumpers but by the pin assignments in the cable plug.

1.6 Length of the transmission line

The maximum cable length for V.24 transmission is 30 m.

END OF SECTION

2 20 mA Current Loop Interface

2.1 General notes

The 20 mA interface is configured to VDI guideline 2880 as a duplex interface with two pairs of lines. At the SINUMERIK end it can be operated as an active or passive interface with the available sources of current by changing the pin assignments in the cable connector. This interface is also often referred to as a TTY interface.

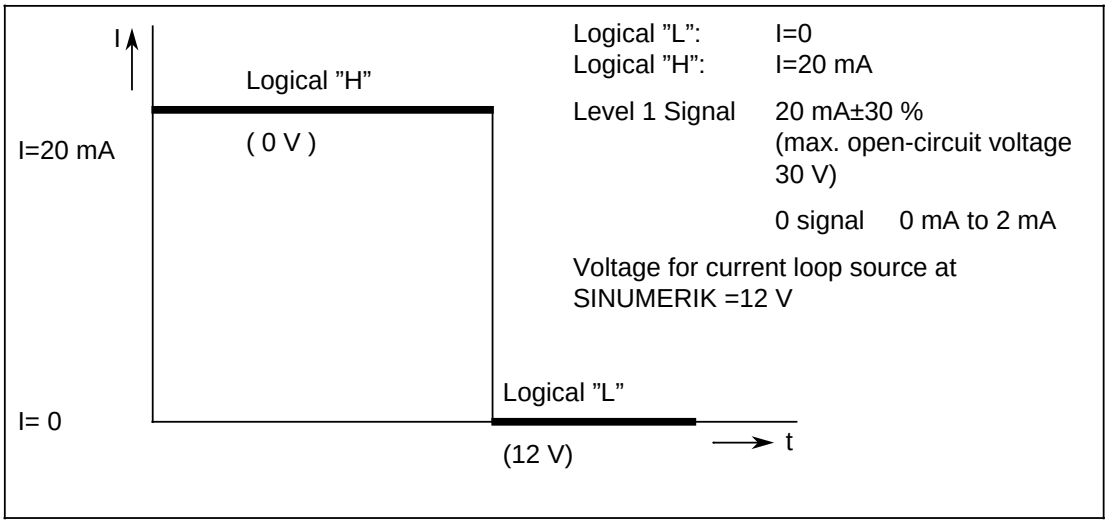
The following is equivalent in V.24 and 20 mA interfaces (except the signal level):

Signal	V.24	20 mA	
		+	–
Transmitted data Received data	D1 D2	TTY2 TTY4	TTY1 TTY3

In the signal designations, the SINUMERIK is taken to be a DTE.

2.2 20 mA signal level

In the 20 mA interface, unlike the V.24 interface, information is not transmitted by the voltage level but by impressed current.



2.3 Interface link to I/O device for 20 mA

20 mA interfaces are duplex interfaces with two pairs of lines. They can be operated as active or passive interfaces at the SINUMERIK end.

- **Active interface:**
  SINUMERIK supplies the 20 mA line current.

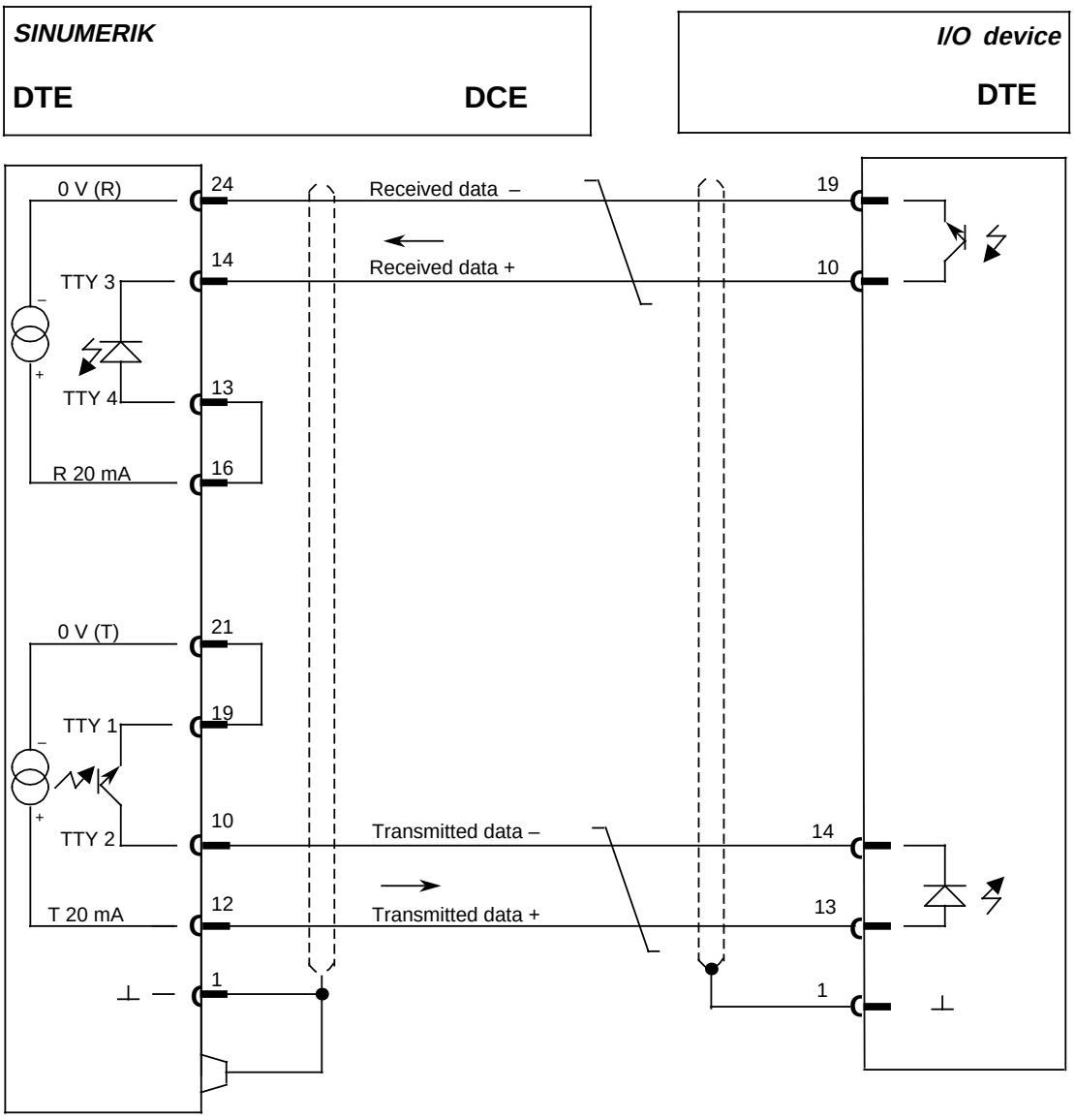
- **Passive interface:**
  The peripheral unit supplies the 20 mA line current.

The interface is set to ''active'' or ''passive'' at the SINUMERIK end by the wiring in the cable connector not by jumper setting on the module.

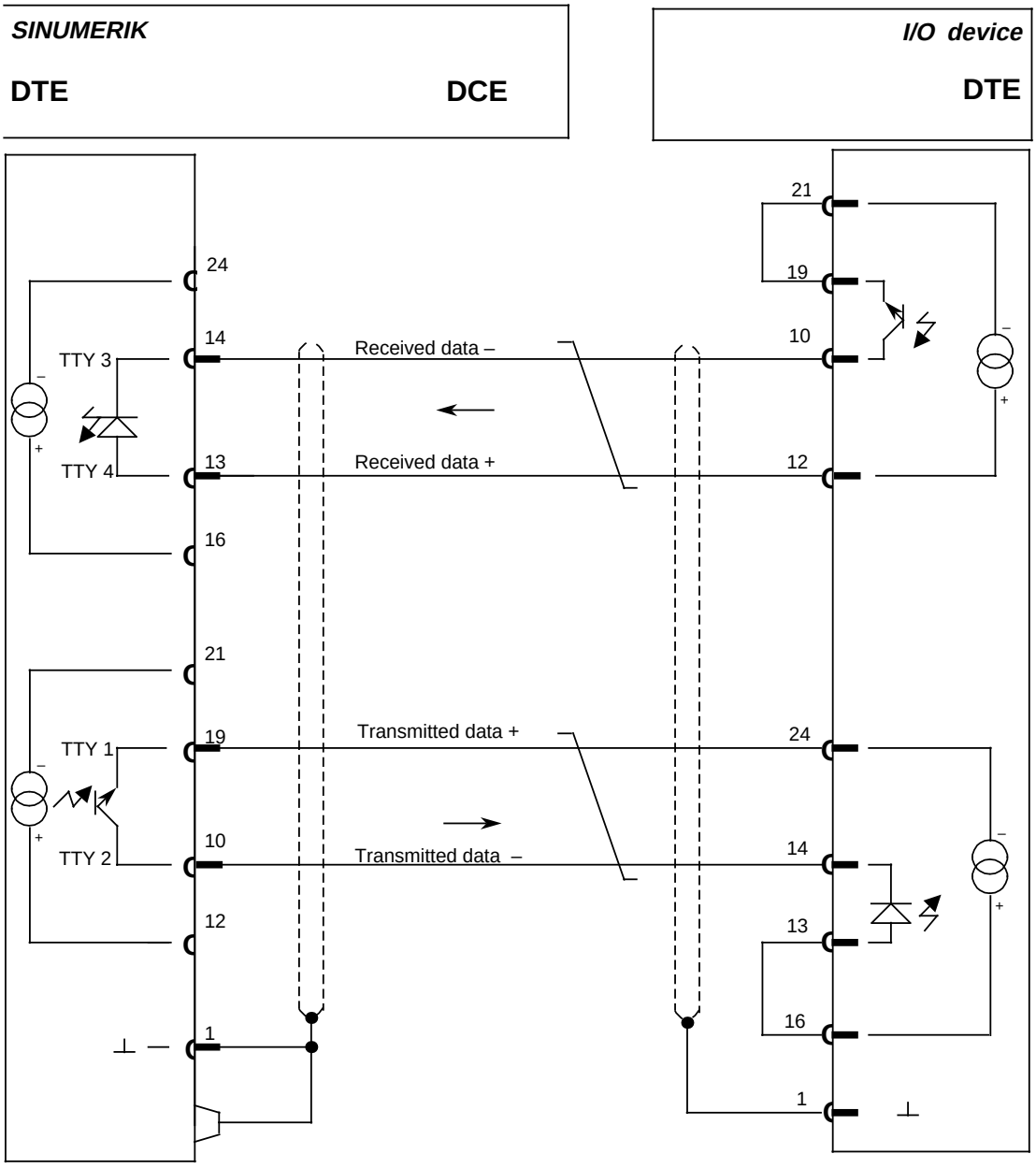
The line current should always be checked when the loop is closed (approx. 20 mA).

Refer also to Section 1.5.

2.3.1 Duplex interface — Active at SINUMERIK end



2.3.2 Duplex interface Passive at the SINUMERIK end



In all signal names and directions, the SINUMERIK is taken to be a DTE.

The specification of the I/O device determines how it is connected.

In the interface link diagram, the I/O device is assumed to comply with the VDI 2880 specification.

2.4 Length of the transmission line

The maximum cable length for the 20 mA current loop interface is 1 km.

END OF SECTION

3 RS 422 Interface

3.1 General notes

The function of the signals in the RS 422 interface is identical to those of the V.24 interface. However, instead of the V.24 signal level, transmission is via two-wire cables using differential drivers and receivers.

The RS 422 interface combines the advantages of the V.24 interface (modem capability by control signals) with those of the 20 mA interface (large transmission distances).

The following signals are the same for the V.24 interface and the RS 422 interface (except signal level):

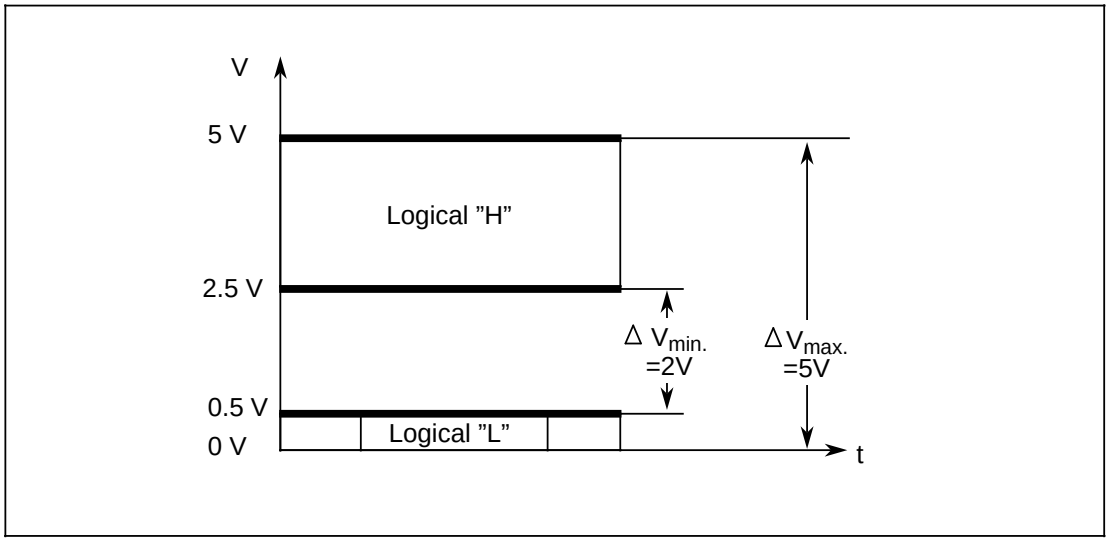
Data signals

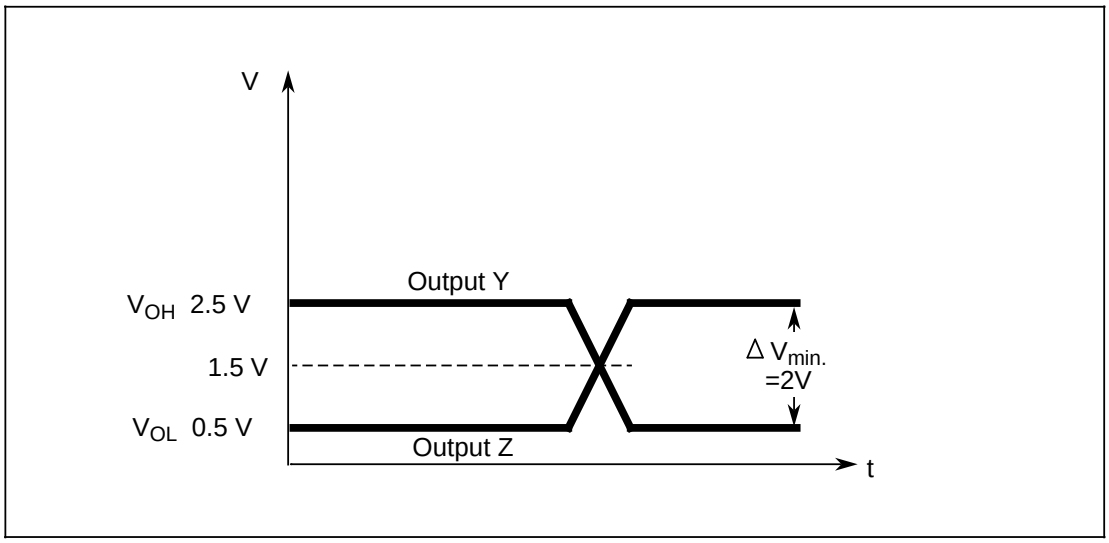
Signal	V.24	RS 422
Transmitted data Receive data	D1 D2	TxD RxD

Control signals

Signal	V.24	RS 422
Data terminal ready Request to send Data set ready Clear to send	S1.2 S2 M1 M2	DTR RTS DSR CTS

3.2 Polarity and voltage level assignment of the RS 422 interface





The voltage levels refer to the reference voltage of the driver circuit AM 26 LS 31.

The voltage between the differential lines is

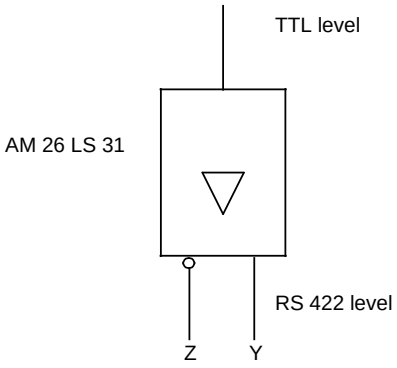
V_{min} = 2 V

V_{max} = 5 V

3.3 RS 422 drivers and receivers

3.3.1 RS 422 drivers

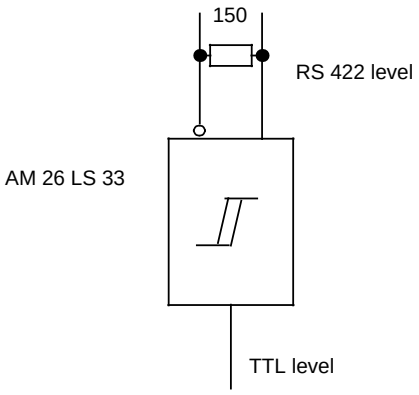
The RS 422 output signals are generated from the TTL signals of the USART 8251 via the AM 26 LS 31 line drivers.



Data of the AM 26 LS 31 circuit			
Supply voltage	V_{cc}	=	5 V
Max. output voltage	V_{oL}	=	0.5 V
Min. output voltage	V_{oH}	=	2.5 V
Differential voltage	2	...	5 V

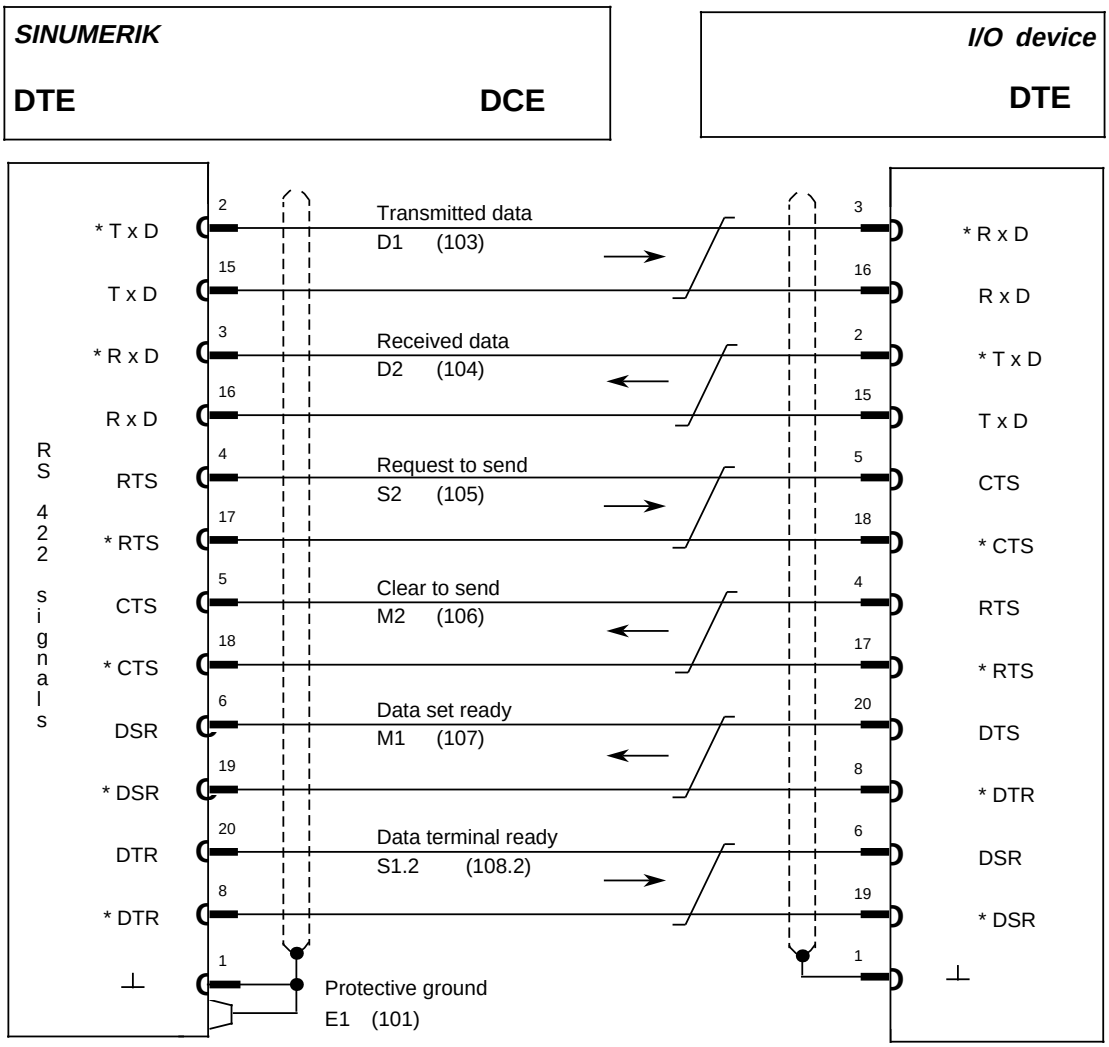
3.3.2 RS 422 receivers

The RS 422 input signals are converted to TTL signals via the AM 26 LS 33 line receivers.



Data of the AM 26 LS 33 circuit	
Supply voltage	V_{cc} = 5 V
Input parallel resistance	150 Ohm
Differential operation voltage	2 ... 5 V

3.4 Interface link to I/O device for RS 422



In all signal names and directions, the SINUMERIK is taken to be a DTE.

Which of the control and message lines are used will depend on the I/O device. The specification I/O device peripheral unit determines how it is connected.

In the interface link diagram, a device is assumed to comply with the SINUMERIK specification. The RS 422 interface is on a special connector.

3.5 Length of the transmission line

The maximum cable length for RS 422 transmission is 1 km.

3.6 Level conversion from V.24 to RS 422

With the SINUMERIK System 800 the V.24 level of the V.24 interfaces can be converted into a RS 422 level with a special cable. The converter electronics are integrated into the specific SINUMERIK cable connector (housing of fibre glass conductor).
The adjustable interfaces are listed in Section 7.1 corresponding to the controls.

END OF SECTION

4 Interface Overview

4.1 Pin assignments of the data interfaces

4.1.1 Pin assignments on the V.24/20 mA universal interface

D-Sub, 25-pin, socket on SINUMERIK.

Pin	Signal name SINUMERIK	Interface assignment	Signal name to DIN 66020 VDI 2880 (English from CCITT recommendation) (referring to SINUMERIK as a DTE)
1	⊥		Protective ground E1 (101)
2	*TxD	V.24	Transmitted data D1 (103)
3	*RxD	V.24	Received data D2 (104)
4	RTS	V.24	Request to send S2 (105)
5	CTS	V.24	Clear to send M2 (106)
6	DSR	V.24	Data set ready M1 (107)
7	MEXT	V.24	Signal ground E2 (102)
8			
9			
10	TTY2	20 mA	Transmitted data+
11			
12	T 20 mA	20 mA	Transmit source
13	TTY4	20 mA	Received data +
14	TTY3	20 mA	Received data –
15			
16	R 20 mA	20 mA	Receive source
17			
18			
19	TTY1	20 mA	Transmitted data –
20	DTR	V.24	Data terminal ready S1.2 (108.2)
21	0V (T)	20 mA	Current return
22			
23			
24	0V (R)	20 mA	Current return
25			

4.1.2 Pin assignments of the RS 422 interface

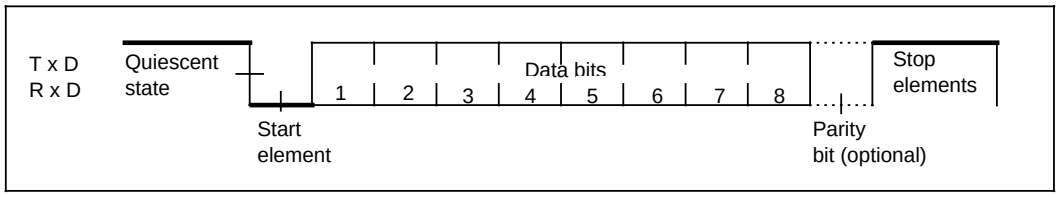
D-Sub, 25-pin, socket on SINUMERIK

Pin	Signal name SINUMERIK	Interface assignment	Signal name to DIN 66020 (English from CCITT recommendation) (referring to SINUMERIK as a DTE)	
1	⊥		Protective ground	E1 (101)
2	*TxD	RS 422	Transmitted data	D1 (103)
3	*RxD	RS 422	Received data	D2 (104)
4	RTS	RS 422	Request to send	S2 (105)
5	CTS	RS 422	Clear to send	M2 (106)
6	DSR	RS 422	Data set ready	M1 (107)
7				
8	*DTR	RS 422	Data terminal ready	S1.2 (108.2)
9				
10				
11				
12				
13				
14				
15	TxD	RS 422	Transmitted data	D1 (103)
16	RxD	RS 422	Received data	D2 (104)
17	*RTS	RS 422	Request to send	S2 (105)
18	*CTS	RS 422	Clear to send	M2 (106)
19	*DSR	RS 422	Data set ready	M1 (107)
20	DTR	RS 422	Data terminal ready	S1.2 (108.2)
21				
22				
23				
24				
25				

4.2 Explanation of signal names

CTS	Clear to Send
DSR	Data Set Ready
DTR	Data Terminal Ready
MEXT	External Ground
RTS	Request to Send
RxD	Receive Data V.24
R20mA	Receive Source 20 mA
TxD	Transmit Data V.24
TTY1	Teletype (– 20 mA) Transmit Data
TTY2	Teletype (+20 mA) Transmit Data
TTY3	Teletype (– 20 mA) Receive Data
TTY4	Teletype (+20 mA) Receive Data
T20mA	Transmit Source 20 mA
0V(R)	0V – Receive 20 mA
0V(T)	0V – Transmit 20 mA

4.3 Format of a serially transmitted character



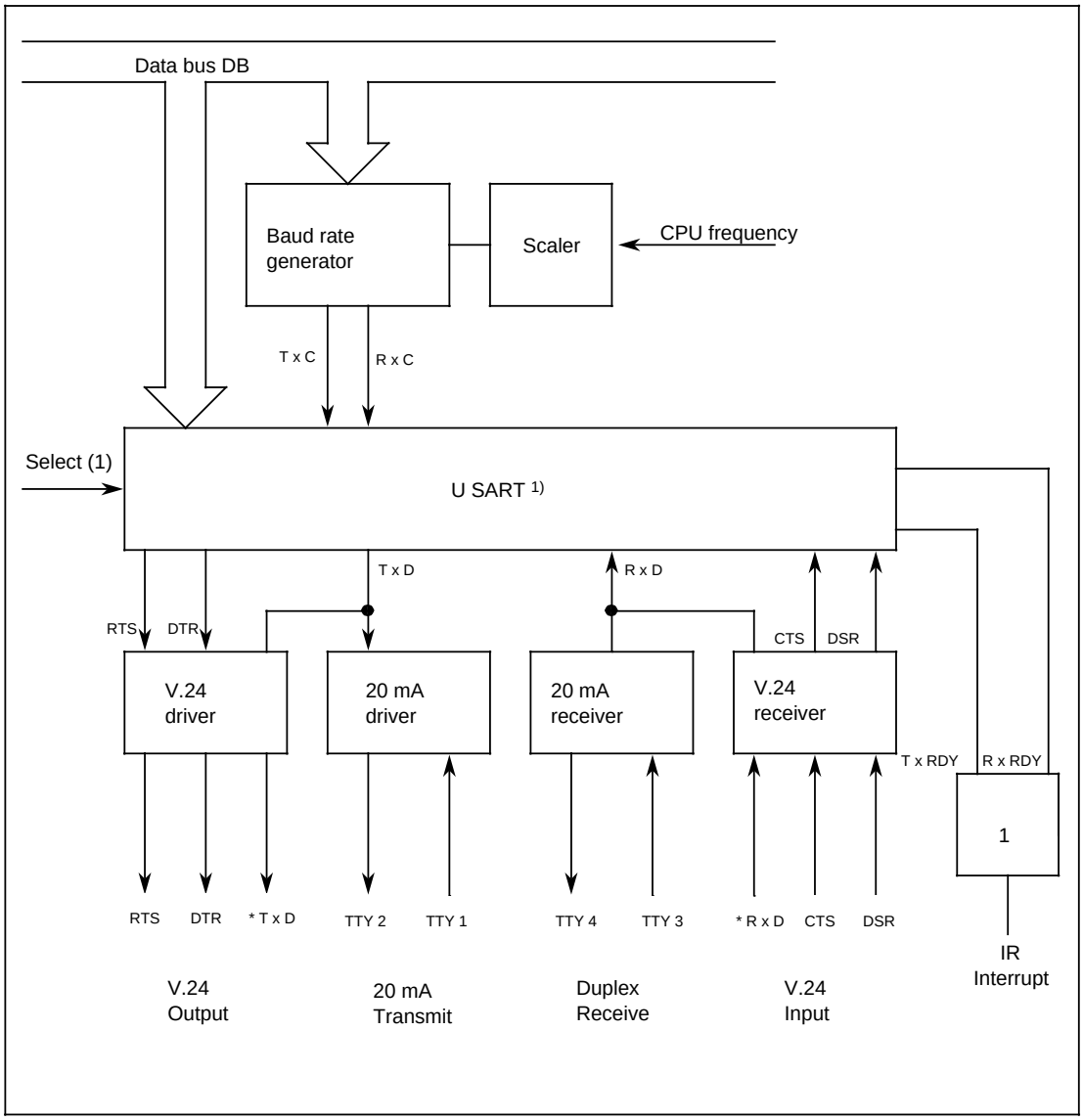
In the SINUMERIK universal interface the 8th bit of a character, which is normally the parity bit, is designated as 8th data bit.

The parity bit is an optional 9th bit added to an ASCII character on even, and to an EIA character on odd bit combinations. The 8th bit is always part of the data.

An additional parity bit (9th. bit) may be generated via setting data if desired for adaptation to certain I/O devices.

4.4 Block diagrams of the data interfaces

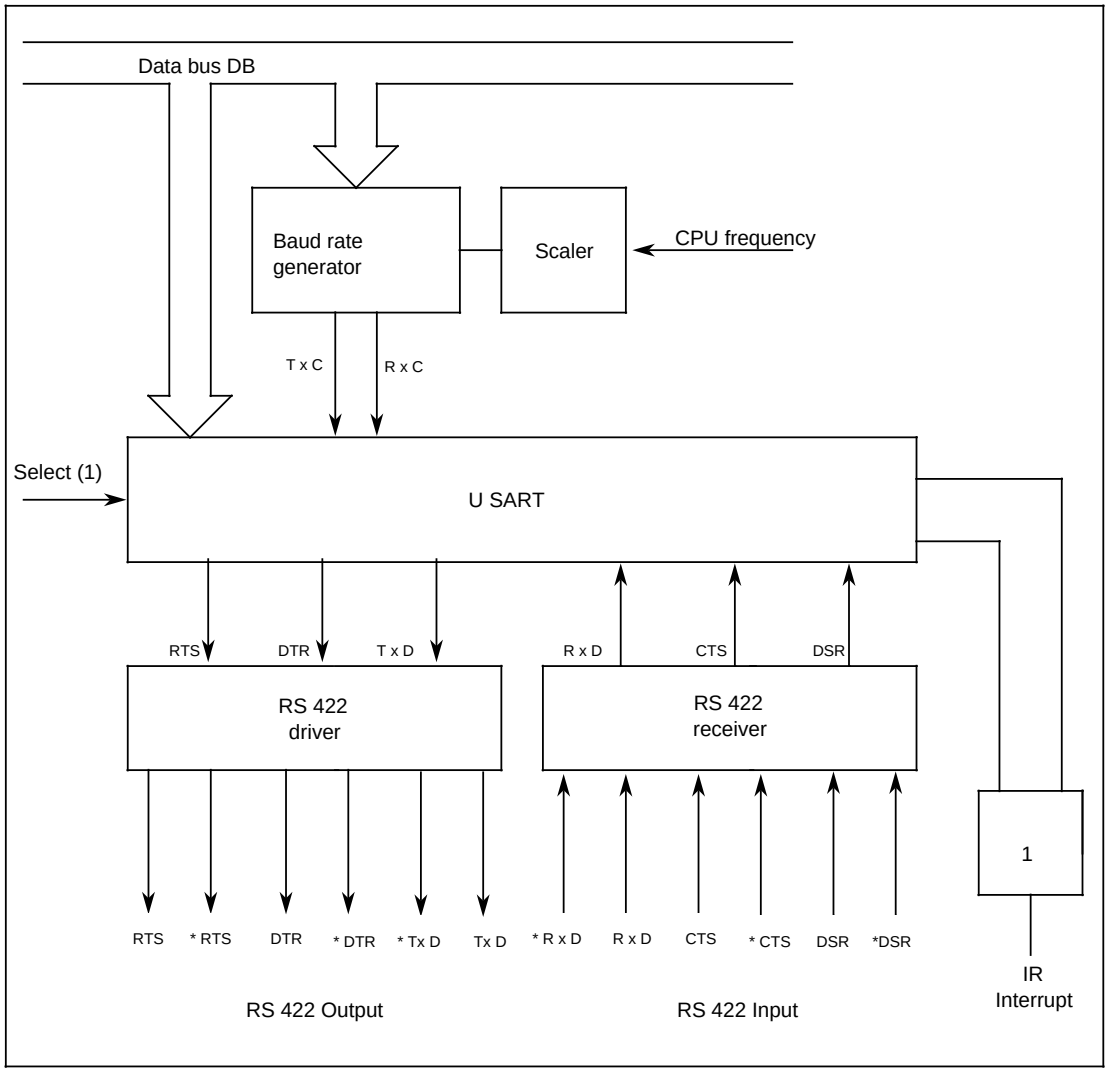
4.4.1 Block diagram of V.24/20 mA universal interface



1) USART = Universal Synchronous Asynchronous Receiver Transmitter
Its tasks are:

- Conversion of 8 bits parallel to 8 bits serial
- Transmitting and receiving at different baud rates (possibly simultaneously)
- Error detection
- Define and check parity

4.4.2 Block diagram of an RS 422 interface



END OF SECTION

5 Adapting the Interfaces to I/O Devices

5.1 General notes

Peripheral devices are subdivided according to the type of data transmission:

- **Line-controlled devices:**
  – Control via the control lines DSR, DTR, CTS, RTS

- **Uncontrolled devices:**
  – Asynchronous transmission without control

- **Character-controlled devices:**
  – Control using control characters on the data lines

Each interface and data direction is defined at the SINUMERIK end for the I/O device using setting data (see selection tables). The control lines are activated by connecting them.

On startup the default values of the machine data and setting data adapt the interface to the Siemens PT 80 page printer (universal device).

5.2 Setting data

SINUMERIK System 800 has one set of 8 bytes per interface for adapting the I/O devices. The input and output directions are set separately.

The setting of the EIA code for special characters ”@”, ”:”, ”=”, ”[”, ”]” and ”,” and the definition for the character ”End of transmission” is entered in 7 additional bytes for two interfaces.

Byte No.	Function Bit 7	6	5	4	3	2	1	0
1	Device coding - input-							
2	Transmission format - input -							
	Stop elements		Type of parity	Parity bit	Baud rate			
3	Device coding - output -							
4	Transmission format - output -							
	Stop elements		Type of parity	Parity bit	Baud rate			
5	Xon character (e.g. DC1 = 11_{hex})							
6	Xoff character (e.g. DC3 = 93_{hex})							
7	Special bits							
	Output without 1st Xon character	Program start with LF	End of block CR LF	Output in EIA code	Stop at character end of trans-mission	Evaluate data set ready DSR	Output without leader and trailer	Read-in progr. of systems 3, 8
8							Delete program without reorgan.	Switch off time watchdog
9	EIA code for ”@” (e.g. $6D_{hex}$)							
10	EIA code for ”:” (e.g. 46_{hex})							
11	Code for ”End of transmission” (e.g. ETX=03_{hex} in ISO)							
12	EIA Code for ”=” (e.g. $1C_{Hex}$)							
13	EIA code for ”[”							
14	EIA code for ”]”							
15	EIA code for ”,”							

5.2.1 Explanation of the setting data

Specific data per interface

Byte 1, 3: Device code

00 $_{Hex}$ = Line controlled devices
(data traffic according to standard)

01 $_{Hex}$ = Xon/Xoff character-controlled devices

02 $_{Hex}$ = SINUMERIK reader T10 and T20

04 $_{Hex}$ = Siemens PLC programmer
PG 670/675/685/635/750/615

Device setting data are listed in the selection table in Section 8.1.

Byte 2, 4: Transmission format

– Bit 3 ... 0: Baud rate

0000 = 110 baud
0001 = 150 baud
0010 = 300 baud
0011 = 600 baud
0100 = 1200 baud
0101 = 2400 baud
0110 = 4800 baud
0111 = 9600 baud

– Bit 4: Parity bit

0 = without parity
1 = with parity

Determines whether after the 8th data bit a 9th bit should be generated and transmitted as a parity bit.

– Bit 5: Type of parity

0= even
1= odd

Determines whether the additionally generated parity bit should complement the 8-bit data on even or odd bit combinations.
If bit 4 is 0, bit 5 has no meaning.

– Bit 7 and 6: Number of stop elements

00=1 stop element
01=1 stop element
10=1 1/2 stop elements
11=2 stop elements

Byte 5: Xon character

Sets the Xon character for character-controlled transmission.

Byte 6: Xoff character

Sets the Xoff character for character-controlled transmission.

Byte 7: Special bits

– Bit 0 Read in subroutines of Systems 3 and 8
  0 = Read in main programs and subroutines to System 800 format
  1 = Read in main programs and subroutines to System 3, 8 format
  When subroutines are read in to System 3, 8 format the identifier 00 of the subroutine no. is eliminated.

– Bit 1 Output without leader and trailer
  0 = Data output with leader and trailer (as punched tape)
  1 = Data output without leader and trailer (in memory)

– Bit 2 Evaluate data set ready DSR
  0 = Line ”DSR” (pin 6) is not evaluated
  1 = Line ”DSR” (pin 6) is evaluated

– Bit 3 Stop at ”End of transmission” character
  0=Read-in stop at M02/M30
  1=Read-in stop at end of transmission character
  Allows several programs to be read in en bloc (e.g. the main programs, subroutines, tool data and blocks belonging to a workpiece)

– Bit 4 Output in the EIA code
  0 = Output in ISO code
  1 = Output in EIA code

– Bit 5 End of block CR LF
  0 = End of block when output with LF CR CR
  1 = End of block when output with CR LF

– Bit 6 Program start with LF
  0 = Read-in begin with %
  1 = Read-in begin with LF
  Allows part program to be read in. The next LF read is interpreted as the beginning of a program and this program is stored in the part program memory as %0.

– Bit 7 Output without 1st Xon character
  0 = Output begin after request via Xon character
  1 = Output begin without request

  When character control devices are connected, data output is initiated with data start without waiting for the Xon character from the external unit. Further starts and stops use the Xon, Xoff characters.

Byte 8: Special bits

– Bit 0 Time watchdog switched off

  0 = Time watchdog active
  If on transmission no character is sent for 60 s, the NC interrupts the transmission line and sets interrupt 22.
  1 = Time watchdog switched off

– Bit 1 Delete program without reorganizing

  0 = Reorganize
  After a program has been deleted via V.24, automatic reorganization is activated.
  1 = No reorganizing
  After a program has been deleted via V.24, automatic reorganization is suppressed.

Data common to both interfaces

Byte 9 EIA code for ″@″

Byte 10 EIA code for ″:″

Definition of substitute characters for the″@″ and ″:″ characters missing in the EIA code.

Byte 11 Code for ″End of transmission″

Definition of character for end of transmission in ISO code (e.g. ETX = 03_{Hex}) or in EIA code.

Byte 12 EIA code for ″=″

Definition of substitute character for the ″=″ character missing in the EIA code.

Byte 13 EIA code for ″ [″

Definition of substitute character for the ″ [″ character missing in the EIA code.

Byte 14 Code for ″] ″

Definition of substitute character for the ″] ″ character missing in the EIA code.

Byte 15 EIA code for ″,″

Definition of substitute character for the ″,″ character missing in the EIA code.

5.3 Notes on the format of special characters

Special characters and substitute characters must always be entered in the setting data including the paraity bit (8th data bit).
It is important to note that the bit combination is even when using the ISO code and odd when using the EIA code.

Example:
The Xoff character DC 3 with ASCII code 13_{HEX} is odd and must therefore be entered as an item of setting data in ISO code as 93_{HEX}.

5.4 Notes on using the EIA code

Not all ISO characters can be represented in the EIA code. For this reason, interrupt 33 (program read in program stored) can occur when a program written in ISO code and stored in the NC is compared with its equivalent converted into EIA code.

Example:
Block in NC memory
N 10 ... (... = ...)*

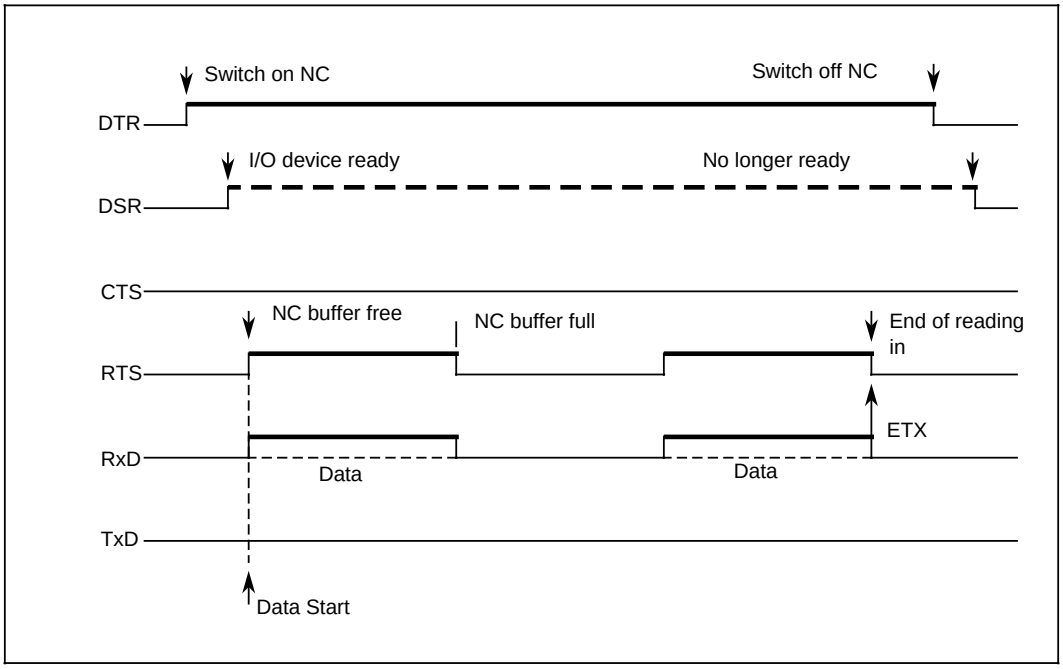
Block output in EIA code
N 10 ... (... __ ....)*

END OF SECTION

6 Signal Timing for Data Transmission

6.1 Signal timing with line-controlled devices

6.1.1 Data input (I/O device to NC)



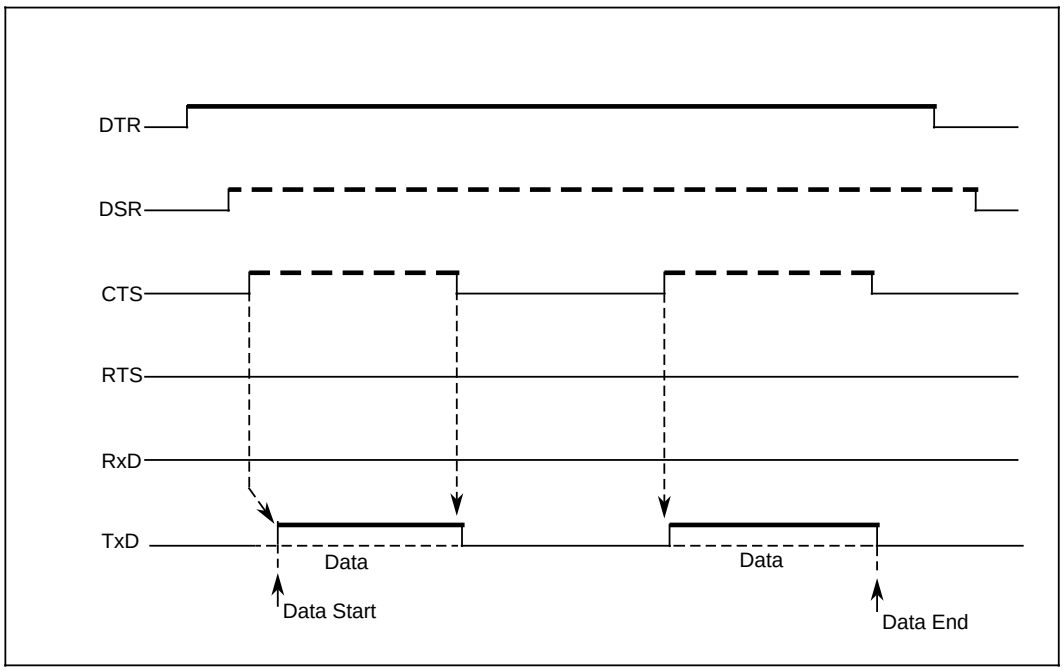
When the NC is switched on, DTR of all interfaces goes to High = ″1″. If the readiness of the device is to be evaluated, the DSR line must be connected.

Reading in the data is started with ″Data Start″ and controlled with ″RTS″. With data start, RTS goes to ″1″ and the I/O device can send data.

If the NC cannot keep up with data input, transmission is stopped by cancelling RTS. When the NC buffer becomes free again RTS is reset to ″1″ and transmission is again enabled.

If the NC reads the ″End of Transmission″ character (M02 or M30 or ETX), transmission is stopped by cancelling of RTS.

6.1.2 Data output (NC to I/O device)

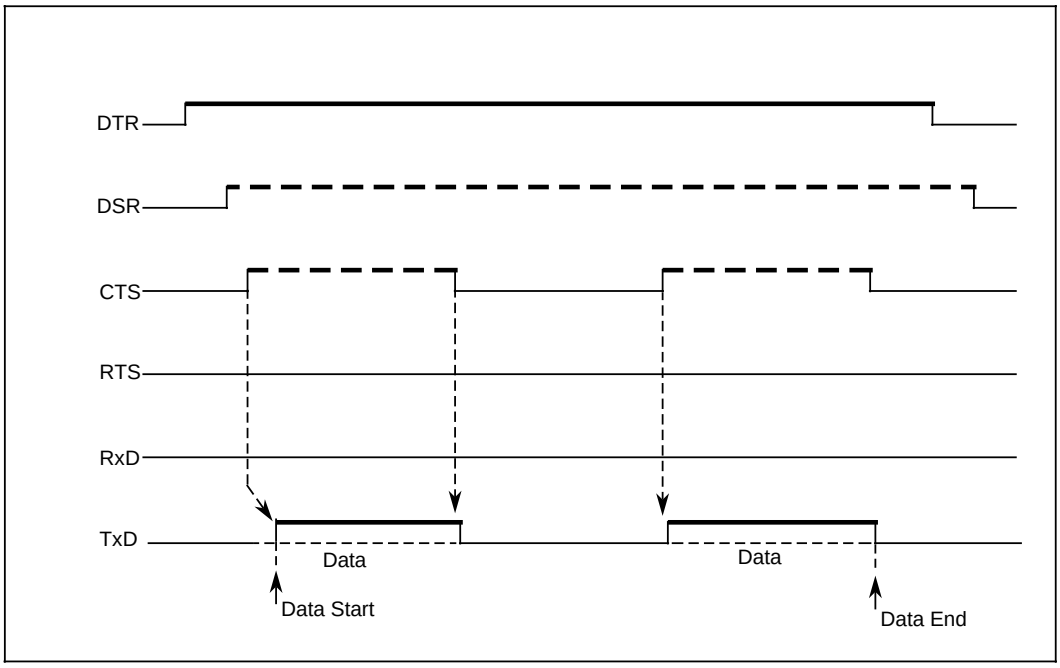


When the NC is switched on, DTR of all interfaces goes to ″1″. If the readiness of the I/O device is to be evaluated the DSR line must be connected.

If the external device is to control data transmission, the CTS line must be connected.

Data read-out is started with Data Start, when CTS is ″1″ (if connected). If the device cannot keep up with data input it stops transmission by cancelling CTS. If its buffer is free again, CTS is reset to ″1″ and transmission restarted. The NC terminates data transmission when the end of program has been output or ETX and a trailer.

In the SINUMERIK 805**/**810**/**820**/**840**/**850**/**880, the RTS signal stays at ”0” during data output.

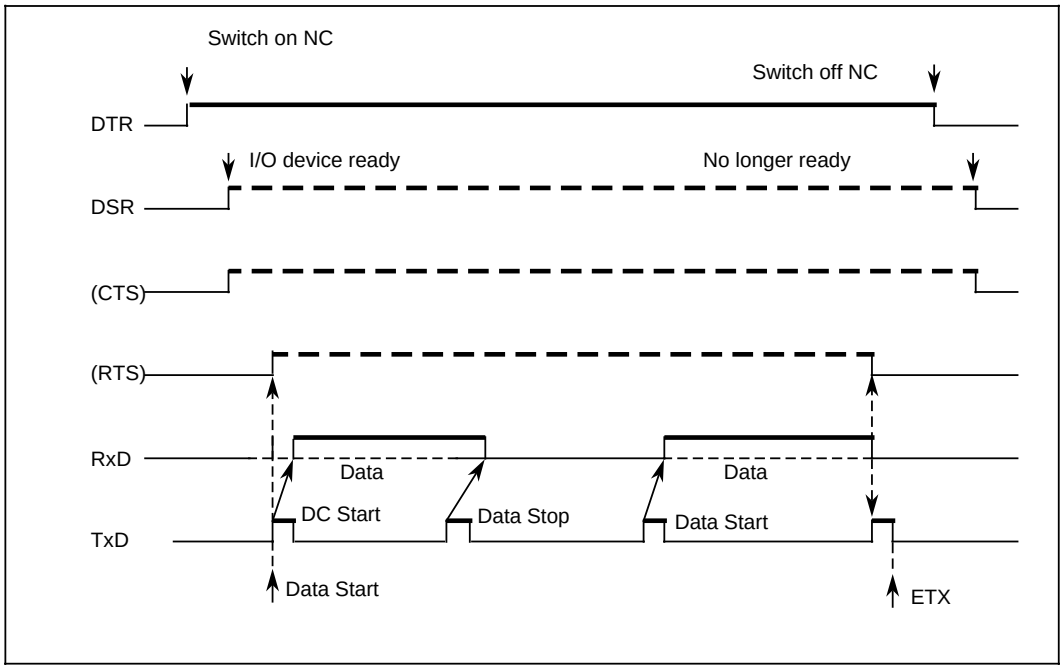


In the SINUMERIK 840C Basic Version and SINUMERIK 840C OEM Version for Windows, the signal chart is slightly different from that above.

The RTS signal is reset to ”0” on activating the interface for data output, i.e. with Data Start on ”1” and at the end of data transfer.

6.2 Signal timing with character-controlled devices

6.2.1 Data input (I/O device to NC)



When the NC is switched on, the DTR of all signals goes to ″1″. If the readiness of the I/O device is to be evaluated the DSR line must be connected.

With ″Data Start″ the NC sets the RTS signal to ″1″. RTS is only cancelled at the end of transmission or if an error occurs.

The NC enables reading in data by transmitting the character ″Xon″ (setting byte no. 5). The I/O device then transmits data to the NC. If the NC cannot keep up with data input it stops transmission by transmitting the character ″Xoff″ (setting byte no. 6).

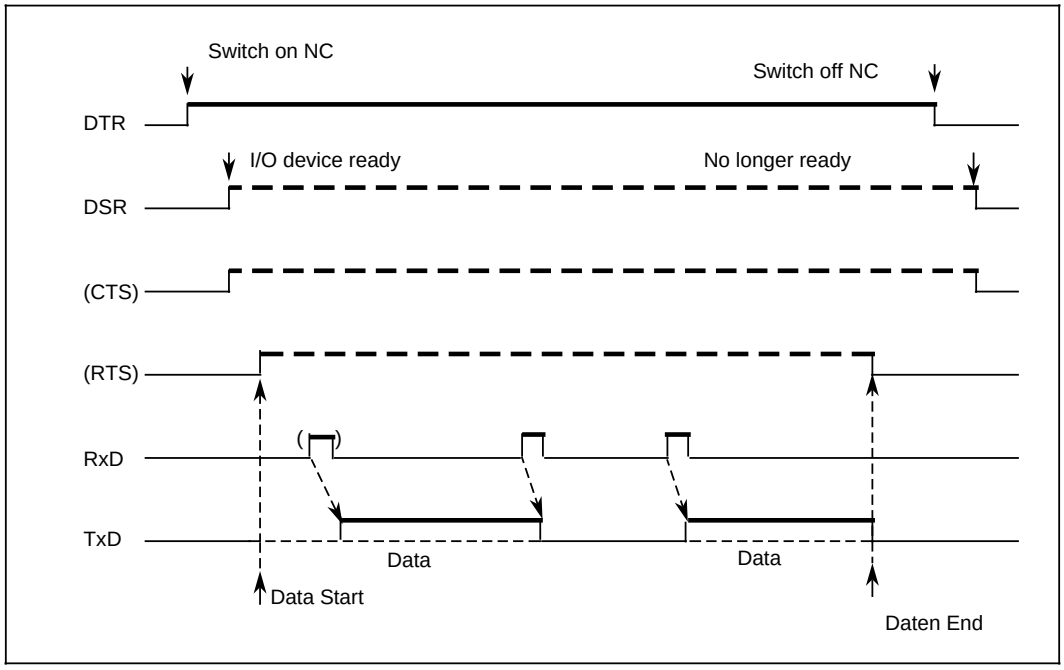
As the I/O device generally cannot stop at a precise character the NC is able to read a few more characters. If the NC is ready to receive again, transmission is again enabled by ”Xon”.

If the NC reads the ″End of Transmission″ character (M02 or M30 or ETX), it transmits the character ″Xoff″ and sets RTS to ″0″.

If the CTS line is connected it must already be ″1″ at Data Start and may only be set to ″0″ after the end of transmission.

In character-controlled transmission, the RTS and CTS lines do not normally have to be connected to the external device.

6.2.2 Data output (NC to I/O device)



When the NC is switched on, the DTR of all interfaces goes to ″1″. If the readiness of the I/O device is to be evaluated the DSR line must be connected.

With ″Data Start″ the NC sets the RTS signal to ″1″. RTS is only withdrawn at the end of transmission or if an error occurs.

The NC starts reading out data after it has received the ″Xon″ character. If bit 7 of setting data 7 (output without 1st Xon character) is set, the NC starts reading out data with Data Start.

If the I/O device cannot keep up data input, it stops transmission by sending the control character ″Xoff″. The NC can then send two more characters before transmission is terminated. If the I/O device is ready again it restarts transmission by sending the control character Xon.

The NC terminates transmission after output of end of program or ETX (and a trailer) by cancelling RTS.

If the CTS line is connected this must already be ″1″ at Data Start and may only be set to ″0″ after end of transmission.

For character-controlled transmission, RTS and CTS do not normally need to be connected to the external device.

END OF SECTION

7 Serial Interfaces on the SINUMERIK System 800

7.1 Interfaces on the various controls

7.1.1 SINUMERIK 805

1st interface: PCB 6FX1144-4BA, connector X122 central controller

V.24 and 20 mA interface

25-way connector, D-subminiature, socket
Housing of the cable connector
SINUMERIK type, position 1 below
optional: slide latch type

2nd interface (option): PCB 6FX1144-4BA, connector X132 central controller

V.24 interface
can be used for adaptation of RS 422 special cable

25-way connector, D-subminiature, socket
Housing of the cable connector
SINUMERIK type, position 1 below
optional: slide latch type

7.1.2 SINUMERIK 810 GA1

1st interface: Operator panel front

V.24 and 20 mA interface
(Connected within the SINUMERIK by cable on PCB 6FX1125-8AB, connector X111
Slot A6, X111)

25-way connector, D-subminiature, socket
Housing of the cable connector:
slide latch type, position 1 below

2nd interface (option): PCB 6FX1125-8AB, connector X121 operator panel rear
Slot A6, X121

V.24 interface

25-way connector , D-subminiature, socket
Housing of the cable connector:
SINUMERIK type, position 1 below
optional: slide latch type

7.1.3 SINUMERIK 810 GA2/820 GA2

1st interface: Operator panel front

V.24 and 20 mA interface
(Connected within the SINUMERIK by cable on PCB
6FX1132-8BB, connector X121
Slot A6, X121)

25-way connector, D-subminiature, socket
Housing of the cable connector:
slide latch type, position 1 below

2nd interface (option): PCB 6FX1132-8BB, connector X131 operator panel rear
Slot A6, X131

V.24 interface
can be used for adaptation of RS 422 special cable

25-way connector, D-subminiature, socket
Housing of the cable connector:
SINUMERIK type, position 1 below
optional: slide latch type

7.1.4 SINUMERIK 810 GA3/820 GA3

1st interface: Operator panel, front

V.24 and 20 mA interface
(Connected within the SINUMERIK by cable on
PCB 6FX1138-5BA, connector X121
slot A6, X121)

25-way connector, D-subminiature, socket
Housing of the cable connector:
SINUMERIK type, position 1 below

2nd interface (option): PCB 6FX1138-5BA, connector X131 operator panel, rear
slot A6, X131

V.24 interface
can be used for adaptation of RS 422 special cable

25-way connector, D-subminiature, socket
Housing of the cable connector:
SINUMERIK type, position 1 below
optional: slide latch type

7.1.5 SINUMERIK 840

1st interface: Maschine control panel front

V.24 and 20 mA interface
(Connected within the SINUMERIK by 6FC9344-1F cable on PCB 6FC1123-3CA, connector X131 central controller Slot B1, X131)

25-way connector , D-subminiature, socket
Housing of the cable connector:
slide latch type, position 1 below

2nd interface (option): PCB 6FX1120-4BA, connector X131operator panel rear Slot A4, X131

V.24 interface
can be used for adaptation of RS 422 special cable

25-way connector, D-subminiature, socket
Housing of the cable connector:
SINUMERIK type, position 1 below
optional: slide latch type

7.1.6 SINUMERIK 850

1st interface: Machine control panel front

V.24 and 20 mA interface
(Connected within the SINUMERIK by cable on PCB
6FX1120-4BA, connector X121
Slot A4, X121)

25-way connector , D-subminiature, socket
Housing of the cable connector:
slide latch type, position 1 below

2nd interface (option): PCB 6FX1120-4BA, connector X131 operator panel rear
Slot A4, X131

V.24 interface
can be used for adaptation of RS 422 special cable from
PCB 6FX1120-4BA02

25-way connector, D-subminiature, socket
Housing of the cable connector:
SINUMERIK type, position 1 below
optional: slide latch type

3rd interface: PCB 6FX1120-4BA, connector X121 central controller
Slot B3, X121

V.24 und 20 mA interface
can be used for adaptation of RS 422 special cable from
PCB 6FX1120-4BA02

25-way connector, D-subminiature, socket
Housing of the cable connector:
SINUMERIK type, position 1 below
optional: slide latch type

4th interface (option): PCB 6FX1120-4BA, connector X131 central controller
Slot B3, X131

V.24 interface
can be used for adaptation of RS 422 special cable from
PCB 6FX1120-4BA02

25-way connector, D-subminiature, socket
Housing of the cable connector:
slide latch type, position 1 below
optional: slide latch type

7.1.7 SINUMERIK 880

1st interface: Operator panel front

V.24 and 20 mA interface
(Connected within the SINUMERIK by cable on
PCB 6FX1120-4BB, connector X121
Slot A4, X121)

25-way connector, D-subminiature, socket
Housing of the cable connector:
Slide latch type, position 1 below

2nd interface (option): PCB 6FX1120-4BB, connector X131 operator panel rear
Slot A4, X131

V.24 interface
can be used for adaptation of RS 422 special cable

25-way connector, D-subminiature, socket
Housing of the cable connector:
SINUMERIK type, position 1 below
optional: slide latch type

3rd interface: PCB 6FX1120-4BB, connector X121 central controller
Slot B2, X121 (types 1, 2, 3, 7)
Slot B3, X121 (types 4, 5, 6)

V.24 and 20 mA interface
can be used for adaptation of RS 422 special cable

25-way connector, D-subminiature, socket
Housing of the cable connector:
SINUMERIK type, position 1 below
optional: slide latch type

4th interface (option): PCB 6FX1120-4BB, connector X131 central controller
Slot B2, X131 (types 1, 2, 3, 7)
Slot B3, X131 (types 4, 5, 6)

V.24 interface
can be used for adaptation of RS 422 special cable

25-way connector, D-subminiature, socket
Housing of the cable connector:
SINUMERIK type, position 1 below
optional: slide latch type

7.2 Setting data for the various controls

SINUMERIK Type	Interface No.			
805	1	2	–	–
810	1	2	–	–
820	1	2	–	–
840	1	–	2	–
850	1	2	3	4
880	1	2	3	4
Byte No.	**Setting data**			
1	5010	5018	5030	5038
2	5011	5019	5031	5039
3	5012	5020	5032	5040
4	5013	5021	5033	5041
5	5014	5022	5034	5042
6	5015	5023	5035	5043
7	5016	5024	5036	5044
8	5017	5025	5037	5045
9	5026		5046	
10	5027		5047	
11	5028		5048	
12	5029		5049	
13 [1)]	5050		5060	
14 [1)]	5051		5061	
15 [1)]	5052		5062	

END OF SECTION

1) only for:
SINUMERIK 840 and SINUMERIK 880 from software version 4

8 Connecting I/O Devices in Practice

The following examples describing how to connect certain devices are based on their state of development at the time of printing. We cannot guarantee that the same information will apply to devices developed beyond this stage, so the examples can only be regarded as recommendations.

8.1 Device setting data (selection table)

Flag Device type	Setting data			Device
	1 Device code - input - 2 Transmission format - input - 3 Device code - output - 4 Transmission format - output - 5 DC - Start character 6 DC - Stop character 7 Special bits 11 Code for end of transmission			
	Byte	Binary code	HEX code	
RTS-LINE	1 2 3 4	0000 0000 1100 0010 0000 0000 1100 0010	00_{Hex} $C2_{Hex}$ 00_{Hex} $C2_{Hex}$	Siemens PT 80 page printer 20 mA V.24, 300 baud
RTS-LINE	1 2 3 4	 0000 0000 1100 0111	– – 00_{Hex} $C7_{Hex}$	Siemens PT 88 printer V.24, 9600 baud
RTS-LINE	1 2 3 4	0000 0000 1100 0111	00_{Hex} $C7_{Hex}$ – –	SINUMERIK T40 tape readers T50 T60 V.24, 9600 baud
RTS-LINE	1 2 3 4	0000 0000 0000 0100 0000 0000 0000 0100	00_{Hex} 04_{Hex} 00_{Hex} 04_{Hex}	Sanyo Cassette M2502U-ZE601 V.24, 1200 baud
RTS-LINE	1 2 3 4	0000 0000 1100 0000 0000 0000 1100 0000	00_{Hex} $C0_{Hex}$ 00_{Hex} $C0_{Hex}$	Teletype, ASR33 Duplex 20 mA, 110 baud
RTS-LINE	1 2 3 4	0000 0000 1100 0100 0000 0000 1100 0100	00_{Hex} $C4_{Hex}$ 00_{Hex} $C4_{Hex}$	Facit 4040, 4042 tape reader/punch V.24, 1200 baud

Flag Device type	Setting data 1 Device code - input - 2 Transmission format - input - 3 Device code - output - 4 Transmission format - output - 5 DC - Start character 6 DC - Stop character 7 Special bits 11 Code for end of transmission			Device
	Byte	Binary code	HEX code	
RTS-LINE	1 2 3 4	 0000 0000 1100 0011	– – 00_{Hex} $C3_{Hex}$	Facit tape punch 4070/MI77 V.24, 600 baud
RTS-LINE	1 2 3 4	0000 0000 1100 0100	00_{Hex} $C4_{Hex}$ – –	Facit tape reader 4030 V.24, 1200 baud
RTS-LINE	1 2 3 4 7 11	0000 0000 1100 0111 0000 0000 1100 0111 0010 1000 0000 0011	00_{Hex} $C7_{Hex}$ 00_{Hex} $C7_{Hex}$ 28_{Hex} 03_{Hex}	Facit N 1000 Facit N 1100 NC-Walk Disk V.24, 9600 baud
RTS-LINE	1 2 3 4 7 11	0000 0000 1100 0111 0000 0000 1100 0111 0010 1010 0000 0011	00_{Hex} $C7_{Hex}$ 00_{Hex} $C7_{Hex}$ $2A_{Hex}$ 03_{Hex}	Siemens Floppy disk drive DSG 3.5 disk drive DSG 2S disk drive V.24, 9600 baud
RTS-LINE	1 2 3 4	0000 0000 1100 0111 0000 0000 1100 0111	00_{Hex} $C7_{Hex}$ 00_{Hex} $C7_{Hex}$	Sommer terminal MDC-3 SNC Cassette drive V.24, 9600 baud
RTS-LINE	1 2 3 4 7 11	0000 0000 1100 0111 0000 0000 1100 0111 0010 1010 0010 0011	00_{Hex} $C7_{Hex}$ 00_{Hex} $C7_{Hex}$ $2A_{Hex}$ 03_{Hex}	Tekelec Floppy disk drive FDS 300, FDS 500 V.24, 9600 baud
RTS-LINE	1 2 3 4 7 11	0000 0000 1100 0111 0000 0000 1100 0111 0010 1010 0000 0011	00_{Hex} $C7_{Hex}$ 00_{Hex} $C7_{Hex}$ $2A_{Hex}$ 03_{Hex}	Tekelec magnetic tape Cartridge drive CDS 1.58 V.24, 9600 baud

Flag Device type	Setting Data 1 Device code - input - 2 Transmission format - input - 3 Device code - output - 4 Transmission format - output - 5 DC - Start character 6 DC - Stop character 7 Special bits 11 Code for end of transmission			Device
	Byte	Binary code	HEX code	
RTS-LINE	1 2 3 4 7 11	0000 0000 1100 0111 0000 0000 1100 0111 0010 1010 0000 0011	00_{Hex} $C5_{Hex}$ 00_{Hex} $C5_{Hex}$ $2A_{Hex}$ 03_{Hex}	CAN NC recorder FD/FH V.24, 9600 baud
RTS-LINE	1 2 3 4 7 11	0000 0000 1100 0111 0000 0000 1100 0111 0010 1010 0000 0011	00_{Hex} $C7_{Hex}$ 00_{Hex} $C7_{Hex}$ $2A_{Hex}$ 03_{Hex}	GNT 7101 NC data carrier V.24, 9600 baud
RTS-LINE	1 2 3 4 7 11	0000 0000 1100 0110 0000 0000 1100 0110 0010 1000 0000 0011	00_{Hex} $C6_{Hex}$ 00_{Hex} $C6_{Hex}$ 28_{Hex} 03_{Hex}	GNT 4604 Tape reader/punch station V.24, 4800 baud
RTS-LINE	1 2 3 4	0000 0000 1100 0111 0000 0000 1100 0111	00_{Hex} $C7_{Hex}$ 00_{Hex} $C7_{Hex}$	NC workstation SINUMERIK WS800/WS800A V.24, 20 mA 9600 baud
RTS-LINE	1 2 3 4 7 11	0000 0000 1100 0111 0000 0000 1100 0111 0010 1000 0000 0011	00_{Hex} $C7_{Hex}$ 00_{Hex} $C7_{Hex}$ 28_{Hex} 03_{Hex}	SIMATIC programmer PG 675/685/635 (PG IN) PC 750 (PC IN) V.24, 9600 baud Printer interface COM 1 interface (PG 750)
RTS-LINE	1 2 3 4 7	0000 0000 1100 0111 0000 0000 1100 0111 0010 0010	00_{Hex} $C7_{Hex}$ 00_{Hex} $C7_{Hex}$ 22_{Hex}	SINUMERIK System 800 NC-NC link V.24, 9600 baud

Flag Device type	Setting data 1 Device code - input - 2 Transmission format - input - 3 Device code - output - 4 Transmission format - output - 5 DC - Start character 6 DC - Stop character 7 Special bits 11 Code for end of transmission			Device
	Byte	Binary code	HEX code	
XON/XOFF	1 2 3 4 5 6	0000 0001 1100 0110 0001 0001 1001 0011	01_{Hex} $C6_{Hex}$ – – 11_{Hex} 93_{Hex}	SINUMERIK T30 tape reader V.24, 4800 baud
PTR	1 2 3 4 5 6	0000 0010	02_{Hex} – – –	SINUMERIK T10, T20 tape readers V.24, 9600 baud
RTS-LINE	1 2 3 4 7	0000 0000 1100 0111 0000 0000 1100 0111 0010 0010	00_{Hex} $C7_{Hex}$ 00_{Hex} $C7_{Hex}$ 22_{Hex}	Siemens PD...PG programming station V.24, 9600 baud
PLC-PROG	1 2 3 4	0000 0100 0000 0111	04_{Hex} 07_{Hex} – –	SIMATIC PG 670/675/685/635/615 programmer 20 mA, 9600 baud interface AG S5
PLC-PROG	1 2 3 4	0000 0100 0000 0111	04_{Hex} 07_{Hex} – –	SIMATIC PG 750 programmer V.24, 9600 baud COM 1 interface

8.2 Device connection data

8.2.1 Siemens PT80 page printer

Cable order no. 6FC9 340-8C (V.24)
6FC9 340-8T (20 mA)

Device data

Transmission rate 300 baud
Character format 1 start element
8 data bits
2 stop elements

Order no. for PT 80 to SINUMERIK specification:

V.24: L22751-A80-D442
(Interface PCB STT104)

20 mA: L22751-A80-D441
(Interface PCB SST104 + LAT101)
Additional cable for terminal connection:
6FC9 340-4KA

On the unit with the 20 mA interface, no NC-controlled (start/stop) reader mode is possible.

8.2.2 Siemens PT88 printer

Cable order no.: 6FC9 340-8D

Device data

Interface adapter SAP-S1 (V.24)

Mode switch settings

Switch S1

1	2	3	4	5	6
ON	ON	ON	OFF	OFF	OFF

Transmission rate 9600 baud

Switch S2

1	2	3	4	5	6
OFF	ON	OFF	ON	OFF	ON

Line BUSY (X2.10) connected to BUSY line (X1.25) and negative potential.

8.2.3 SINUMERIK T40 and T50 tape readers

Type GNT 28 and GNT 27

Cable order no. 6FC9 340-8S

Device data

Transmission rate	9600 baud
Character format	1 start element
	8 data bits
	2 stop elements

Settings on the T40 printer

Switch row A:

1	2	3	4	5	6	7	8
ON	ON	-	OFF	OFF	OFF	OFF	OFF

Switch row B:

1	2	3	4	5	6	7	8
ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF

Settings on the T50 tape reader

Jumpering 27 P01	not assigned
Jumpering 27 P02	Jumpers 2 + 5 closed
Jumpering 27 S02	Jumpers 1, 2, 3, 4 open

Operating notes

To perform an automatic start from the SINUMERIK, the tape reader must be ready, i.e. the ″Reader start″ LED must be lit. It is not possible to stop at a precise character. If several programs are punched onto one tape they must be separated by approx. 20 blanks.

If the programs are punched from SINUMERIK these blanks are generated automatically provided the ″Output without trailer and leader″ setting data (byte 7, bit 1) is not set.

8.2.4 SINUMERIK T60 tape reader (hand-held)

Type GNT 2910

Cable order no. 6FC9 344-2C

Device data

Transmission rate	9600 baud
Character format	1 Start element 8 Data bits 2 Stop elements

Settings

DIP switch in the unit:

1	2	3	4	5	6	7	8
OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF

Operating notes

Before switching on the device, the punched tape must be inserted. If an error occurs the green LED flashes, acknowledgement by switching the device off and on. The start of reading is controlled from the SINUMERIK.

Special operating conditions

The device stops at precise characters.

8.2.5 Sanyo M2502U cassette

with ZE601 (V.24) interface

Cable order no. -

Device data

Transmission rate	1200 baud
Character format	1 start element 8 data bits 1 stop element

Special operating conditions of the Sanyo cassette

– No controlled (start/stop) operation from the NC possible.
(To achieve this the RTS signal from the NC would have to be logical ″H″ on both reading and writing. This does not conform to the standard. RTS is ″H″ on reading and ″L″ on writing.)

– The tape cannot stop at precise characters.
(This could lead to USART interrupts from the NC especially in the case of ″Program start with LF″.)

– Leave enough space on the tape between two programs, possibly put some speech between them.

–If spoken text lasts longer than 60 seconds, a time monitoring alarm will occur on reading.

Supplier
Indexim GmbH
Schweidnitzer Straße 6
1000 Berlin 31
Tel. 030/8926000

8.2.6 ASR3320/3WE teletype

Duplex mode

Cable order no. -

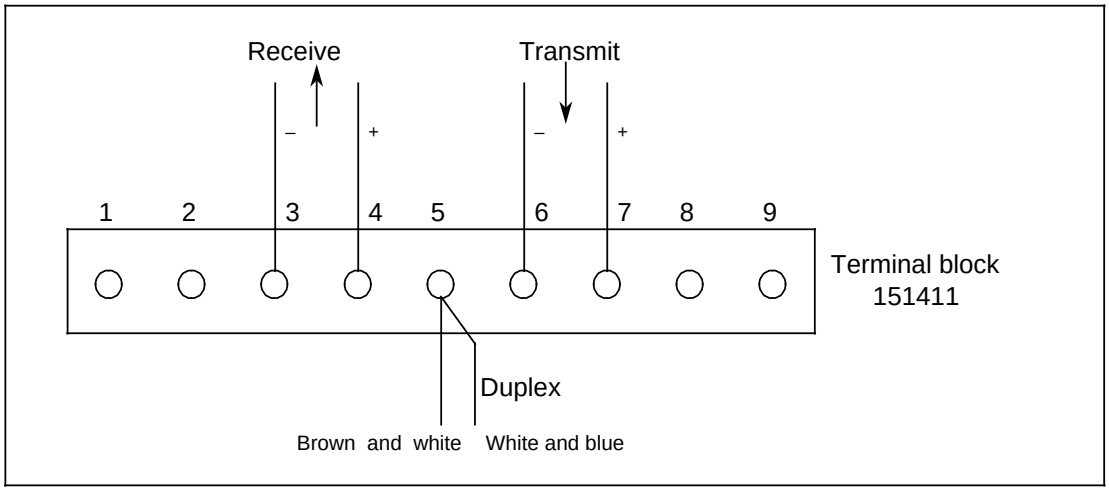
Device data

Interface	20 mA duplex
Transmission rate	110 baud
Character format	1 start element
	8 data bits
	2 stop elements

Connection data

The teletype interface receives data via the TTY1/TTY2 current loop and transmits data via the TTY3/TTY4 current loop.

Terminal block on the teletype



8.2.7 Facit 4040, 4042 punch/tape reader combination

with PI81 interface

Cable order no. 6FC9 340-8V

Device data

Interface	V.24
Transmission rate	1200 baud
Character format	1 start element 8 data bits 2 stop elements

Switch settings on the PI81 Interface

1 = Switch position ON
0 = Switch position OFF

Switch 1 (S1)	1.1	1.2	1.3	1.4	1.5	1.6	1.7		
	0	0	1	1	1	0	0		
Switch 2 (S2)	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9
	0	0	0	0	0	1	0	0	0
Switch 3 (S3)	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9
	0	0	0	0	0	1	0	0	0
Switch 4 (S4)	4.1	4.2	4.3	4.4	4.5	4.6			
	1	1	0	0	0	0			

Transmission controlled via RTS, CTS

8.2.8 Facit 4070 punch

with MI77 Interface

Cable order no. 6FC9 340-8J

Device data

Interface	V.24
Transmission rate	600 baud
Character format	1 start element 8 data bits 2 stop elements

Switch settings on the MI77 Interface

Switch for mode selection
Right position: serial

Switch S1 S1-1 to S1-8 OFF

Switch S2	S2-1	2	3	4	5	6	7	8
	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF

Switch S3 Position V.24/$\overline{\text{TTY}}$

Switch S4 Position 6: 600 baud

8.2.9 Facit 4030 tape reader

Cable order no. -

Device data

Interface	V.24
Transmission rate	1200 Baud
Character format	1 start element
	8 data bits
	2 stop elements

Settings on the interface PCB

Jumper	Function	Jumper name
A	V.24 or current loop	W1
E	Protective ground on chassis	W2
G	V.24	W3
O	1200 baud	W4
U	All baud rates except 110 baud	W6

All jumpers open.

8.2.10 Facit, N1000 NC-Walk-Disk

Floppy disk drive

Cable order no. 6FC9 344-2M

Device data

GRP1 Parameters

1-1	INPUT	=	V.24
1-2	OUTPUT	=	V.24
1-3	INPUT CODE	=	ASC
1-4	OUTPUT CODE	=	ASC
1-5	PRG MARK	=	OFF
1-7	DC TRANSMIT	=	OFF
1-8	LRC	=	OFF

GRP2 parameters

2-1	V.24	=	9600 BPS
2-2	V.24 WORD LENGTH	=	7
2-3	V.24 STOP ELEMENT	=	2
2-4	V-PARIT	=	EVEN
2-5	V-XON/XOFF	=	OFF
2-6	V-READY/BUSY	=	P 19

Save parameters on diskette!

8.2.11 Facit, N1100 NC-Walk-Disk

Floppy disk drive

Cable order no.: 6FC9 344-2M

Device data

Parameters GRP1

1-1	INPUT	= V.24/1
1-2	OUTPUT	= V.24/2
1-3	free	
1-4	INPUT CODE	= ISO
1-5	OUTPUT CODE	= ISO
1-6	INPUT PRG MARK	= ON
1-7	INPUT PRG MARK PM	= c (Ctrl C ETX)
1-8	OUTPUT PRG MARK	= OFF
1-10	LRC	= OFF
1-11	SUBROUTINE	= OFF
1-13	SAVE PRG MARK	= ON

Parameters GRP2

2-1	V.24/1 BAUD RATE	= 9600 BPS
2-2	V.24/1 WORD LENGTH	= 7 BITS
2-3	V.24/1 STOP ELEMENT	= 2
2-4	V.24/1 PARIT	= EVEN
2-5	V.24/1 XON/XOFF	= OFF

Save parameters on diskette!

Supplier of Facit devices

Facit GmbH
Willstätter Str. 11
4000 Düsseldorf 11
Tel. 0211/5286-131

8.2.12 Siemens DSG 3.5 floppy disk drive

Panel-mounted unit, free-standing unit

Cable order no.: 6FC9 344-2P

Device data

Interface	V.24
Transmission rate	9600 baud
Character format	1 start element
	8 data bits
	2 stop elements

The device is equipped with 3 interface connectors for simultaneous linking of 3 SINUMERIK controls.
The device works with automatic interface generation. Operation is as described in the user guide accompanying the device.

8.2.13 Siemens DSG 2S floppy disk drive

Panel mounted unit

Cable order no.: 6FM1 590-7B 00

Device for ”JOB-List” and ”Program sequential operation” function

Device data

Interface	V.24
Transmission rate	9600 baud
Character format	1 start element 8 data bits 2 stop elements

Interface : X1

Operation is as described in the instruction manual.

8.2.14 Sommer MDC-3 SNC cartridge drive terminal

Panel-mounted unit: Type 1, 2, 3, 5 (SINUMERIK interface)

Cable order no.: 6FC9 344-1C

Device data

Interface	V.24
Transmission rate	9600 baud
Character format	1 start element 8 data bits 2 stop elements

DIP switch settings on the PCB

Switch	1	2	3	4	5	6	7	8
	OFF	OFF	OFF	ON	ON	ON	ON	ON

Operating notes

Insert cartridge:

Tape facing downwards, full spool on the left,
press reset key on the terminal.

- Data output NC terminal
  – Preselect data output to NC
  – Press write key on the terminal
  – Start data output to the NC
  – Press the write key again after termination of all transmissions
  – Press reset key to rewind
- Data input NC terminal
  – Select data input to NC
  – Press read key on the terminal
  – Start data input to NC (for every program)
  – Press reset key to rewind after termination of all transmissions

8.2.15 Tekelec FDS 300, FDS 500 floppy disk drive

Cable Order No.: 6FC9 344-2F

Device data

Interface	V.24
Transmission rate	9600 baud
Character format	1 start element 8 data bits 2 stop elements

Device settings

in accordance with the	Manual	System Operation	Interface
	Baud rate	br 9.6	9600 baud
	Bits per character	bc 8	8 bits
	Stop elements	sb 2	2 stop elements
	Parity	PA n P	No parity
	CR LF	CL OF	OFF

8.2.16 Tekelec Magnetic Tape Cartridge Drive, Model CDS 1.58

Cable order no.: 6FC9 344-2F

Device data

Interface	V.24
Transmission rate	9600 baud
Character format	1 start element 8 data bits 2 stop elements

DIP switch settings on the rear of the unit

Switches	1	2	3	4	5	6	7	8
	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

OFF = switch down

Supplier

Tekelec Airtronic GmbH
Postfach 152 027
8000 München 15
Tel. 089/5164-0

8.2.17 CAN NC recorder FD/FH

Floppy disk drive

Cable order no.: 6FC9 344-2P

Device data

Interface	V.24
Transmission rate	9600 baud
Character format	1 start element
	8 data bits
	2 stop elements

Settings for CAN NC Recorder FD/FH

Baud rate	=	2400
Data bit	=	8
Stop element	=	2
Parity	=	no
Mode	=	R/CTS

– Parameter setting is selected by pressing the ”Change name” key.
– Parameters are changed by pressing the ″Clear″ key until the required value appears.
– When the correct parameter setting appears, press ″Enter″ key.

Supplier
Hasow Systems
Hans-Vogel-Str. 35
8510 Fürth
Tel. 0911/79 80 15

8.2.18 GNT 7101 NC data carrier

Portable floppy disk drive 3,5”

Cable order no.: 6FC9 344-2P

Device data

Interface	V.24
Transmission rate	9600 baud
Character format	1 start element
	8 data bits
	2 stop elements

Device settings

Parameter input

1.	Code	=	ISO
2.	Baud rate	=	9600
3.	Stop element	=	2
4.	Protocol	=	Mode
5.	% Check	=	NO
6.	EOB Code	=	CR LF
7.	TV Check	=	NO
8.	NUL-Code	=	NO

Interface : DTE RS 232C/20 mA

Operation is as described in the instruction manual accompanying the device.

8.2.19 GNT 4604 Tape reader / punch station

Cable order no.: 6FC9 344-1B

Device data

Interface	V.24
Transmission rate	4800 baud
Character format	1 start element 8 data bits 2 stop elements

DIP switch setting in the device

Switch	Position
1	OFF
2	OFF
3	OFF
4	OFF
5	ON
6	OFF
7	OFF
8	ON

Switch setting in the rear of the operator panel

Switch	Position
MODE	LINE
DC CODES	OFF
CONV	OFF
SPEED	HIGH

Interface: DTE (Terminal)

Operation is as described in the instruction manual accompanying the device.

Supplier of the GNT device
GN Telematic GmbH
Rosenkavalierplatz 18
8000 München 81
Tel. 089/926900-0

8.2.20 SINUMERIK WS 800, NC workstation

Cable order no.: 6FC9 344-1B (V.24)
6FC9 344-1Q (TTY)

Device data

Interface	V.24 or 20 mA current loop (TTY)
Transmission rate	9600 baud
Character format	1 start element 8 data bits 2 stop elements

Settings on the DF 20 interface board

Interface:	SS2	
V.24	No hardware setting	
TTY:	Passive	
	X9 socket	
	Jumpers	2-14 receiver 3-13 6-10 transmitter 7-9

8.2.21 SINUMERIK WS 800 A, NC workstation

Device:	PC (AT compatible)		
Cable order no.:	6FC9 344-4T	Interface module:	SPB 32 E
Cable order no.:	6FC9 344-4H	Interface module:	DF 20 D

Device data

Interface	V.24
Transmission rate	9600 baud
Character format	1 start element 8 data bits 2 stop elements

Setting data

WS 800 A COM configuration

NC interface COM. 9600 baud

Windows COM configuration

Baud rate	=	9600
Word length	=	7
Parity	=	even
Stop elements	=	2
Handshake	=	no
Interface	=	Com.

Operation is as described in the WS 800 A user's guide.

8.2.22 SIMATIC programmer PG 675/685/635

for data transfer TRANS-PG IN

Interface :	Printer
Cable order no.:	6FC9 344-1A

Device data

Interface	V.24
Transmission rate	9600 baud
Character format	1 start element 8 data bits 2 stop elements

Operating conditions

The archiving of NC cycles and programs on floppy disk and the transmission to and from the NC and development of programs can all be done via the PG. The PG is linked from its printer interface to a V.24 interface of the SINUMERIK.

Preconditions

– Load the PG 675 with the CP/M-86 operating system
– Load the PG 685 and the PG 635 with the PCP/M-86 operating system
– Data is output from the NC to the PG by means of the ”Data transmission” floppy disk program, file PG IN
– Programs are created on the PG using the Word Star WS or VEDIT floppy disk program.

8.2.23 PG 750 SIMATIC programmer

for data transfer TRANS-PC IN

Interface : COM 1

Cable order no.: 6FC9 344-4R

Device data

Interface	V.24
Transmission rate	9600 baud
Character format	1 start element 8 data bits 2 stop elements

Operating conditions

The archiving of NC cycles and programs on floppy disk and the transmission to and from the NC and development of programs can all be carried out using the PG. The PG is linked over the COM 1 interface to a V.24 interface of the SINUMERIK for the purposes of data transmission.

Preconditions

– Load the PG 750 with the operating systems MS-DOS and PCP/M-86
– Data is output from the NC to the PG by means of the ”Data transmission” floppy disk program, file PC IN
– Programs are created on the PG using an ASCII text editor of your choice e.g. VEDIT.

8.2.24 SINUMERIK System 800, RS 232 C, NC-NC link

Cable order no.: 6FC9 340-8W

Device data

Interface	V.24
Transmission rate	9600 baud
Character format	1 start element 8 data bits 2 stop elements

Control of data transfer via the RTS and CTS lines. (Character-controller transmission via Xon/Xoff possible.)

Data Start must be given for both controls when transmitting and receiving. The order in which they start is the immaterial. Start interval max. 60 sec.

8.2.25 SINUMERIK T30 tape reader

Fanuc, portable unit

Cable order no.: 6FC9 340-8F

Device data

Interface	V.24
Character-controlled transmission	via Xon/Xoff
Transmission rate	4800 baud
Character format	1 start element 8 data bits 2 stop elements

Special operating conditions

– The character at the place where the tape reader is located is not read on starting.

– The reader cannot stop on precise characters. It therefore necessary, to be able to read in a series of programs, to insert a leader of at least three feed holes between the end of program (M30*) and the beginning of the following program. (When programs are punched on paper tape by the NC a leader of 20 feed holes is automatically generated.)

– The comments (....) may not contain a % sign.

8.2.26 Siemens T10 and T20 tape reader

Fanuc

Cable order no.: 6FC9 344-1C

Special device, device code 02_{Hex}

Device data

Interface	V.24
Character-controlled transmission	Via Xon/Xoff
Transmission rate	9600 Baud
Character format	1 start element 8 data bits 1 parity bit (even parity) 2 stop elements

Reading speed

Forwards to	250 (300) cps at 50 (60) Hz
Backwards at	500 (600) cps at 50 (60) Hz

using manual starting on the reader

8.2.27 Siemens PD...PG programming workstation

Fanuc

Cable order no.: 6FC9 340-8E

Device data

Interface	V.24
Transmission rate	9600 baud
Character format	1 start element 8 data bits 2 stop elements

Operating Conditions

For information on how to operate the programming workstation with SINUMERIK, please consult the relevant hardware information services of Siemens AG, Dept. DI V16, Nürnberg, Fed. Rep. of Germany.

8.2.28 SIMATIC PG 670/675/685/635 programmer

for PLC programming

Interface: AG S5

Cable Order No.: 6FC9 340-8G

Does not apply to SINUMERIK 850. The link with the PG 670/675/685/635 is made via the

AS 511 interface module in the PLC.

Special device, device code 04_{Hex}

Device data

Interface	20 mA current loop
Transmission rate	9600 baud
Character format	1 start element
	8 data bits
	1 parity bit (even parity)
	2 stop elements

Operating conditions

To program a PLC the PG programmer is directly linked to a 20 mA current loop interface of the SINUMERIK. The AS 511 interface module is not required.

- Interface numbers for the various controls:
  - SINUMERIK 805 - Interface 1
  - SINUMERIK 810 - Interface 1
  - SINUMERIK 820 - Interface 1
  - SINUMERIK 840 - Interface 1
  - SINUMERIK 880 - Interface 3

When the link has been established, the interface must be activated using the following NC operator routines:

- Setting the interface
  - ″Setting Data″ softkey
  - ″ETC″ key [>]
  - ″Setting Bits″ softkey
  - Input of device code ″04_{Hex}″, byte 1, into the appropriate setting byte of the interface no.
  - Input of the baud rate, standard ″07_{Hex}″, byte 2, into the appropriate setting byte of the interface no.
- Activation of the interface
  - ″Recall″ key [ ]
  - ″Data In/Out″ softkey
  - Input of the interface no.
  - ″Start″ softkey
- Deselection of the interface, termination of transmission
  - ″Stop″ softkey

8.2.29 SIMATIC PG 750 programmer

for PLC programming

Interface: COM 1

Cable Order No.: 6FC9 344-4R

Does not apply to SINUMERIK 850. Here the PG 750 is connected via the AS 511 link module in the PLC.

Special device, device code 04_{Hex}

Device data

Interface	V.24
Transmission rate	9600 baud
Character format	1 start element 8 data bits 1 parity bit (even parity) 2 stop elements

Operating conditions

The programmer is directly linked to the V.24 interface of the SINUMERIK for PLC programming. The AS 511 interface module is not required.

- Interface numbers for the various controls:
  - SINUMERIK 805 - Interface 1
  - SINUMERIK 810 - Interface 1
  - SINUMERIK 820 - Interface 1
  - SINUMERIK 840 - Interface 1
  - SINUMERIK 880 - Interface 3

When the link has been established, the interface must be activated using the following NC operator routines:

- Setting the interface
  - ″Setting Data″ softkey
  - ″ETC″ key [>]
  - ″Setting Bits″ softkey
  - Input device code ″04_{Hex}″, byte 1, into the appropriate setting datum of the interface no.
  - Input of the baud rate, standard ″07_{Hex}″, byte 2, into the appropriate setting byte of the interface no.
- Activation of the interface
  - ″Recall″ key [ ]
  - ″Data In/Out″ softkey
  - Input of the interface no.
  - ″Start″ softkey
- Deselection of the interface, termination of transmission
  - ″Stop″ softkey

8.2.30 SIMATIC PG 615 programmer

with PG 615 adapter and power supply unit

Interface : AG

Cable order no.: 6FC9 340-8H

Does not apply to SINUMERIK 850. The PG 615 is linked using the AS 511 interface module in the PLC.

Special device, device code 04_{Hex}

Device data

Interface	20 mA current loop
Transmission rate	9600 baud
Character format	1 start element
	8 data bits
	1 parity bit (even parity)
	2 stop elements

Operating conditions

To program a PLC the PG 615 is directly linked to a 20 mA current loop interface of the SINUMERIK via its adapter and a cable. The AS 511 interface module is not required.

- Interface numbers for the various controls:
  - SINUMERIK 805 - Interface 1
  - SINUMERIK 810 - Interface 1
  - SINUMERIK 820 - Interface 1
  - SINUMERIK 840 - Interface 1
  - SINUMERIK 880 - Interface 3

When the link has been established the interface is activated using the following NC operating routines:

- Setting the interface
  - ”Setting data” softkey
  - ”ETC” key [>]
  - ”Setting Bits” softkey
  - Input of device code”04_{Hex}”, byte 1, into the appropriate setting byte of the interface no.
  - Input of the baud rate standard ”07_{Hex}”, byte 2, into the appropriate setting byte of the interface no.

- Activation of the interface
  - ”Recall” key [ ]
  - ”Data In/Out” softkey
  - Input of the interface no.
  - ”Start” softkey
- Deselection of interface, termination of transmission
  - ”Stop” softkey

8.3 Ordering data of the connecting cables

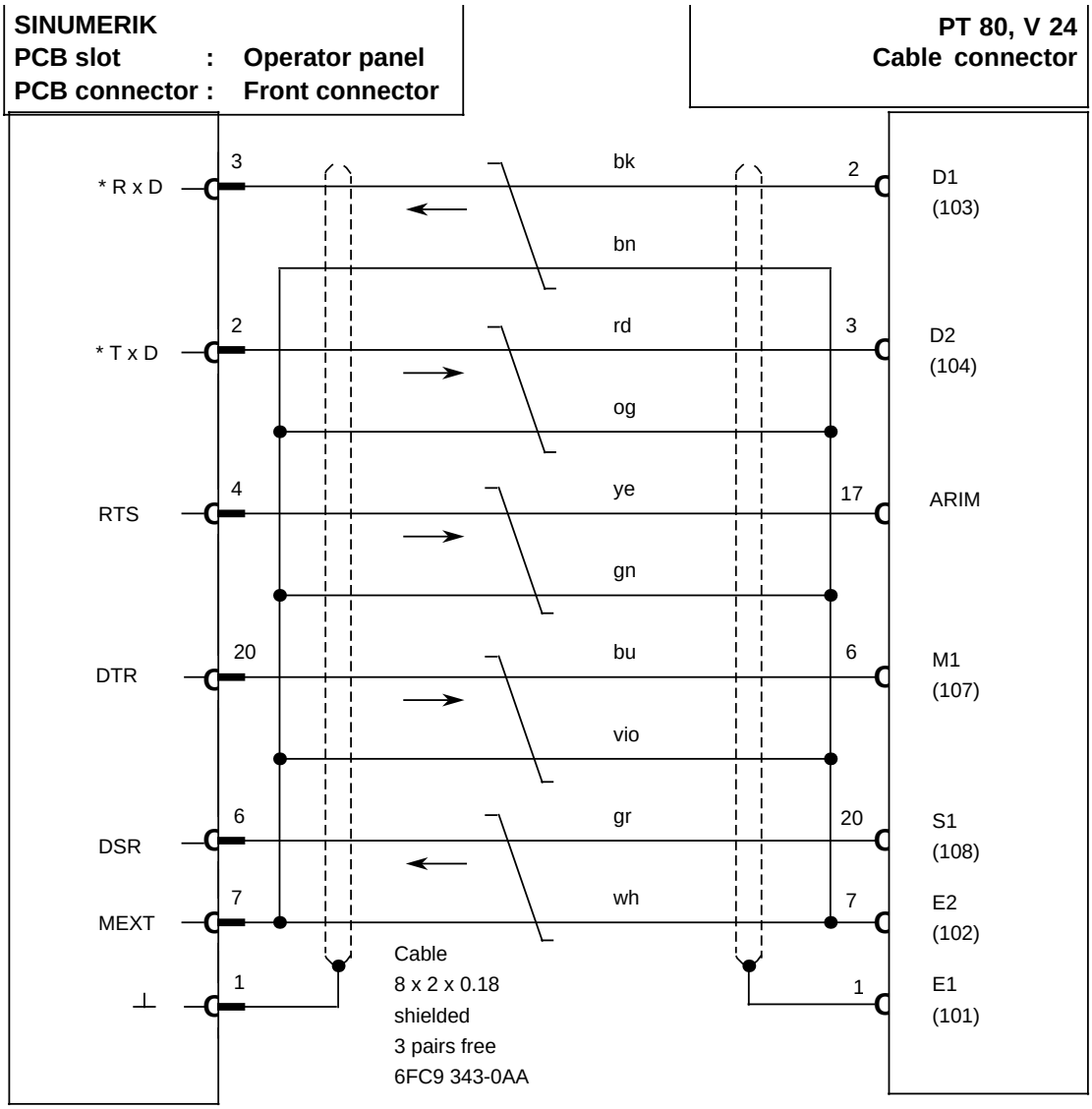
Device **Cable, complete**	Max. possible length	Order no.
Siemens PT 80 page printer (V.24) Length **5 m** Length **10 m**	30 m	 **6FC9 340-8CB** **6FC9 340-8CC**
Siemens PT 80 page printer (20 mA) Length **5 m** Length **10 m**	30 m	 **6FC9 340-8TB** **6FC9 340-8TC**
Siemens PT88 printer Length **5 m** Length **10 m**	30 m	 **6FC9 340-8DB** **6FC9 340-8DC**
SINUMERIK T40, T50 GNT tape reader without/with winder Length **5 m** Length **10 m** Length **18 m**	30 m	 **6FC9 340-8SB** **6FC9 340-8SC** **6FC9 340-8SE**
SINUMERIK T60 GNT tape reader portable Length **5 m** Length **10 m**	30 m	 **6FC9 344-2CB** **6FC9 344-2CC**
Facit 4040, 4042 punch reader with PI 81 Length **5 m**	30 m	 **6FC9 340-8VB**
Facit 4070 punch with MI 77 Length **5 m**	30 m	 **6FC9 340-8JB**
Facit NC Walk Disk N1000, N1100 Length **5 m**	30 m	 **6FC9 344-2MB**
Siemens DSG 3.5 floppy disk drive Length **5 m**	30 m	 **6FC9 344-2PB**
Siemens DSG 2S floppy disk drive (V.24) Length **2 m** Length **5 m** Length **10 m** Length **18 m**	30 m	 **6FM1 590-7BA00** **6FM1 590-7BB00** **6FM1 590-7BC00** **6FM1 590-7BD00**
Sommer MDC 3 SNC terminal, Type 1, 2, 3, 5 Length **5 m**	30 m	 **6FC9 344-1CB**
Tekelec FDS 300, FDS 500 floppy disk drive Tekelec CDS 1.58 magnetic tape cartridge drive Length **5 m**	30 m	 **6FC9 344-2FB**
CAN NC Recorder FD/FH GNT 7101 NC data carrier Length **5 m**	30 m	 **6FC9 344-2PB**
SINUMERIK WS 800 NC workstation (V.24) GNT 4604 reader/punch station Length **5 m** Length **10 m** Length **18 m**	30 m	 **6FC9 344-1BB** **6FC9 344-1BC** **6FC9 344-1BE**

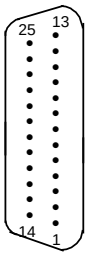
Device **Cable, complete**	Max. possible length	Order no.
SINUMERIK WS 800 NC workstation (20 mA) Length **18 m** Length **25 m**	100 m	 **6FC9 344-1QE** **6FC9 344-1QF**
SINUMERIK WS 800 A NC workstation (V.24), DF 20 D Length **5 m** Length **10 m** Length **18 m**	30 m	 **6FC9 344-4HB** **6FC9 344-4HC** **6FC9 344-4HE**
SINUMERIK WS 800 A NC workstation (V.24), SPB32E Length **5 m** Length **10 m** Length **18 m**	30 m	 **6FC9 344-4TB** **6FC9 344-4TC** **6FC9 344-4TE**
SIMATIC PG 675, PG 685, PG 635 Printer interface (TRANS PG IN) Length **18 m**	30 m	 **6FC9 344-1AE**
SIMATIC PG 750 COM 1 interface (TRANS PC IN and PLC programming) Length **5 m** Length **10 m** Length **18 m**	30 m	 **6FC9 344-4RB** **6FC9 344-4RC** **6FC9 344-4RE**
SINUMERIK System 800, RS 232 C, NC-NC link Length **18 m** Length **25 m**	30 m	 **6FC9 340-8WE** **6FC9 340-8WF**
SINUMERIK T30 reader, Fanuc portable Length **5 m** Length **10 m**	30 m	 **6FC9 340-8FB** **6FC9 340-8FC**
SINUMERIK T10, T20 tape reader, Fanuc without/with winder Length **5 m**	30 m	 **6FC9 340-1CB**
Siemens PD...PG programming workstation (Fanuc) Length **5 m** Length **10 m**	30 m	 **6FC9 340-8EB** **6FC9 340-8EC**
SIMATIC PG 670/675/685/635 AG interface S5 (PLC programming) Length **5 m** Length **10 m**	30 m	 **6FC9 340-8GB** **6FC9 340-8GC**
SIMATIC PG 615 programmer AG interface (PLC programming) Length **5 m** Length **10 m**	30 m	 **6FC9 340-8HB** **6FC9 340-8HC**
SINUMERIK System 800, RS 232 C / RS 422 Conversion Length Special length according to order	100 m	 **6FC9 344-2VZ**

8.4 Device cable diagrams

The cable diagrams for the devices described in Section 8.2 and the cables listed in Section 8.3 are given in the same order on the following pages.

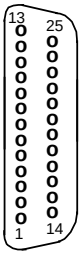
Cable name: Siemens PT 80 page printer (L22751 - A 80 - D442)
Order no.: **6FC9 340-8C**



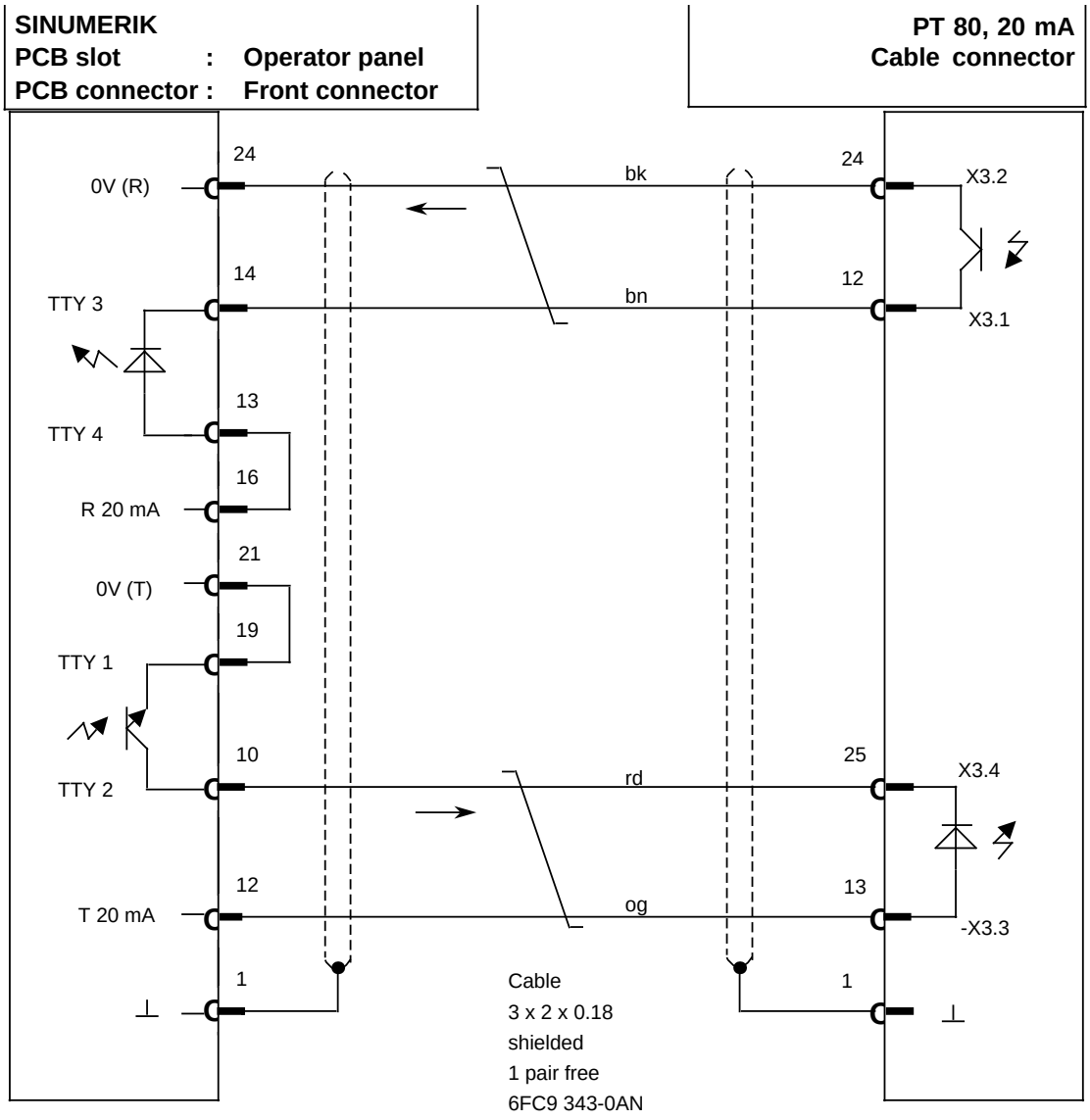


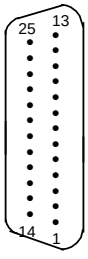
Connector
Position 1 below
D - sub
25-way plug
connection side
casing with slide latch
6FC 9 341 - 2AA
Designation: NC

Connector
Position 1 below
D - sub
25-way plug
connection side
post office casing with spacer
6FC 9 341 - 1ER
Designation: PT 80



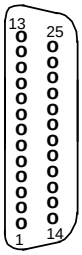
Cable name : PT 80 page printer (L22751 - A 80 - D441)
Order No. : **6FC9 340-8T**



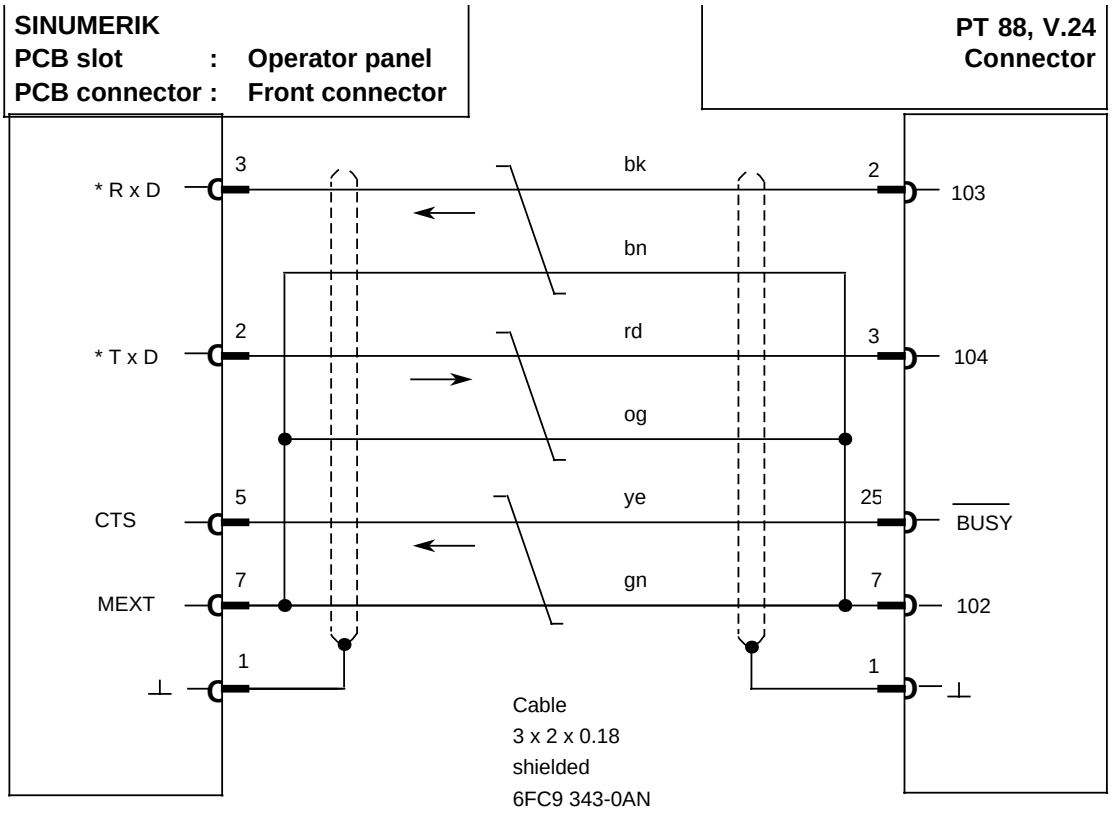


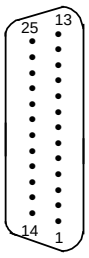
Connector
Position 1 below
D - sub
25-way plug
connection side
casing with slide latch
6FC 9 341 - 2AA
Designation: NC

Connector
Position 1 below
D - sub
25-way plug
connection side
post office casing with spacer
6FC 9 341 - 1ER
Designation: PT 80



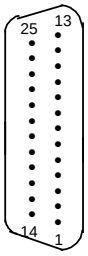
Cable name : Siemens PT 88 page printer, V.24
Order no. : **6FC9 340-8D**



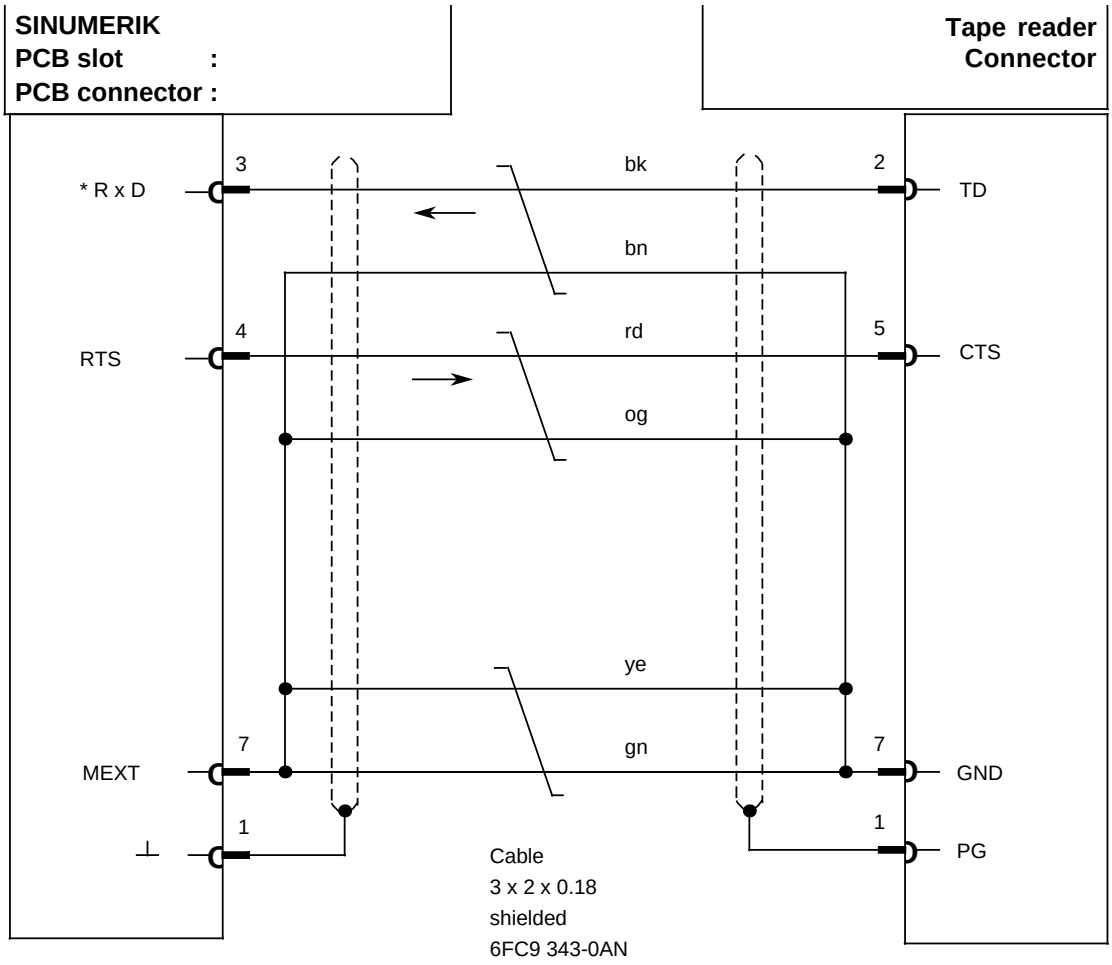


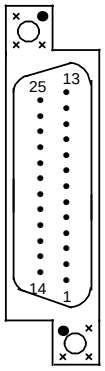
Connector
Position 1 below
D - sub
25-way plug
connection side
casing with slide
latch
6FC 9 341 - 2AA
Designation: NC

Connector
Position 1 below
D - sub
25-way plug
connection side
post office casing
6FC 9 341 - 1ES
Designation: PT 88



Cable name : SINUMERIK T40 and T50 tape reader
Order no. : **6FC9 340-8S**





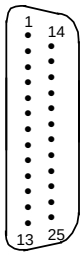
Connector
Position 1 below
D - sub
25-way plug
connection side
SINUMERIK casing

6FC9 341-2AB
Designation: NC

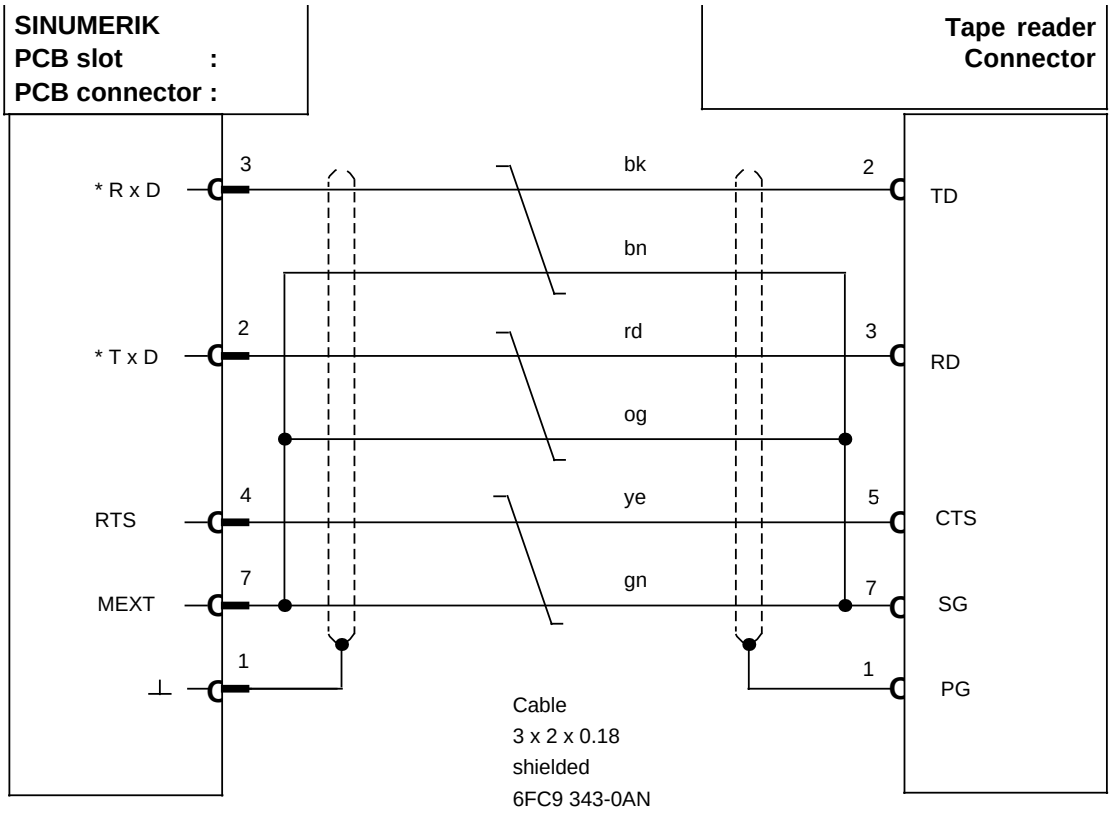
Connector code

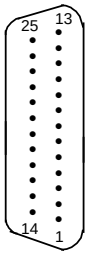
● coding pin
× no coding pin

Connector
Position 1 below
D - sub
25-way plug
connection side
casing with slide
latch
6FC 9 341 - 2AA
Designation: PTR



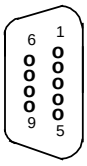
Cable name : SINUMERIK T60 tape reader
Order no : **6FC9 344-2C**



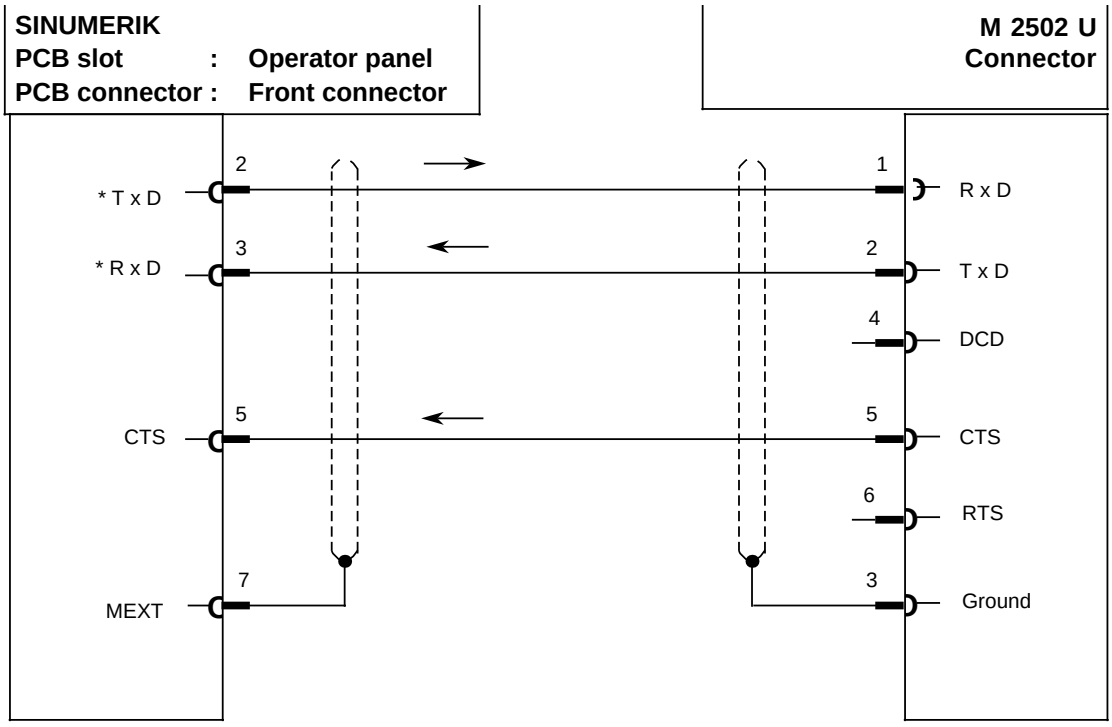


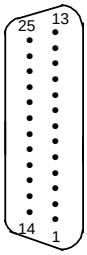
Connector
Position 1 below
D - sub
25-way plug
connection side
casing with slide
latch
6FC 9 341 - 2AA
Designation: NC

Connector
Position 1 above
D - sub
9-way socket
connection side
casing with slide
latch
6FC 9 341 - 1FM
Designation: PTR



Cable name : Sanyo Cassette M 2502 U - ZE 601
Order no. : -

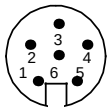




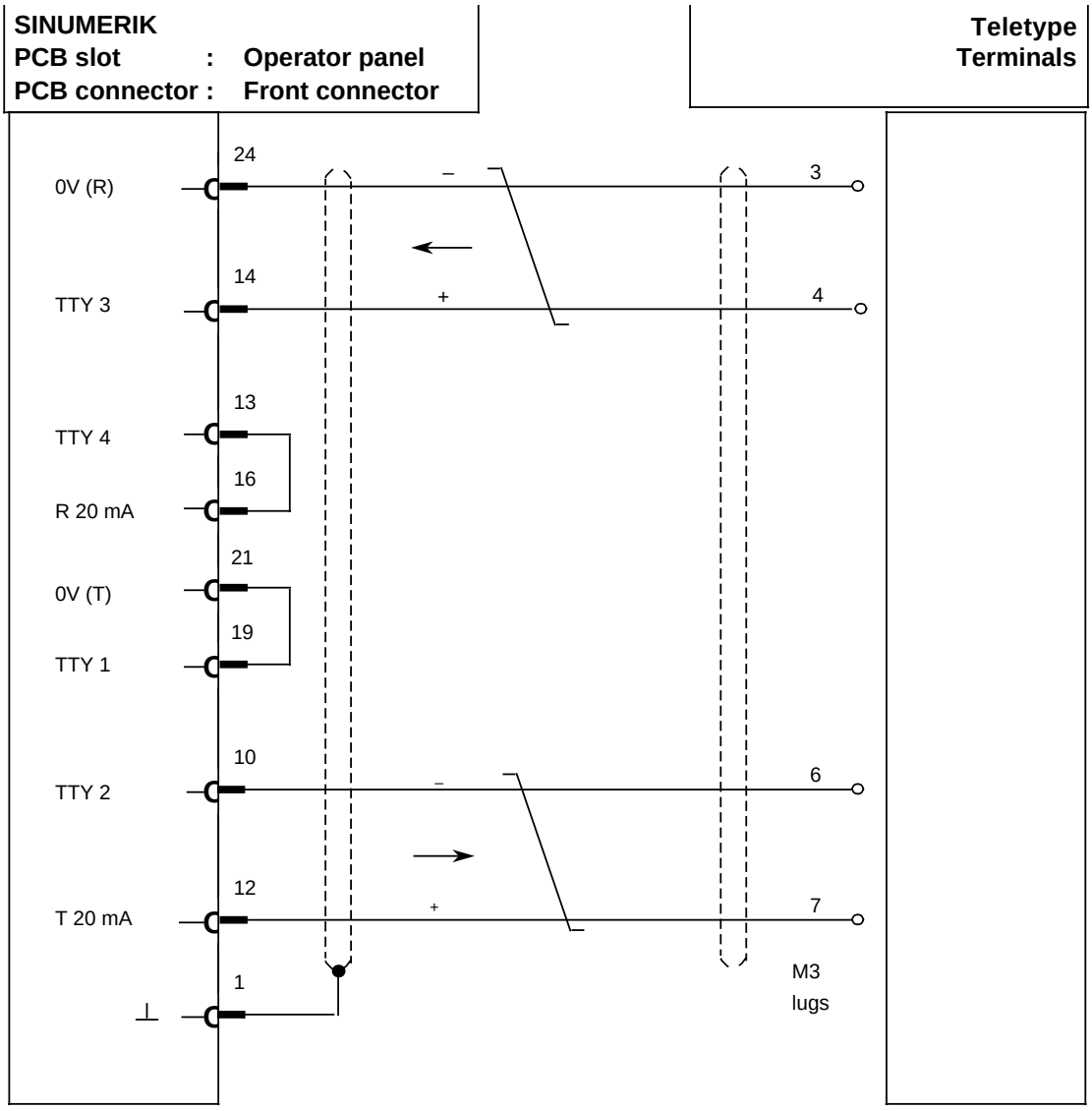
Connector
Position 1 below
D - sub
25-way plug
connection side

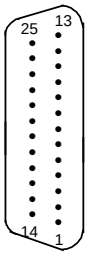
Connector

Diode connector
6-way plug
connection side



Cable name : ASR 33 / 3WE teletype
Order no. : -

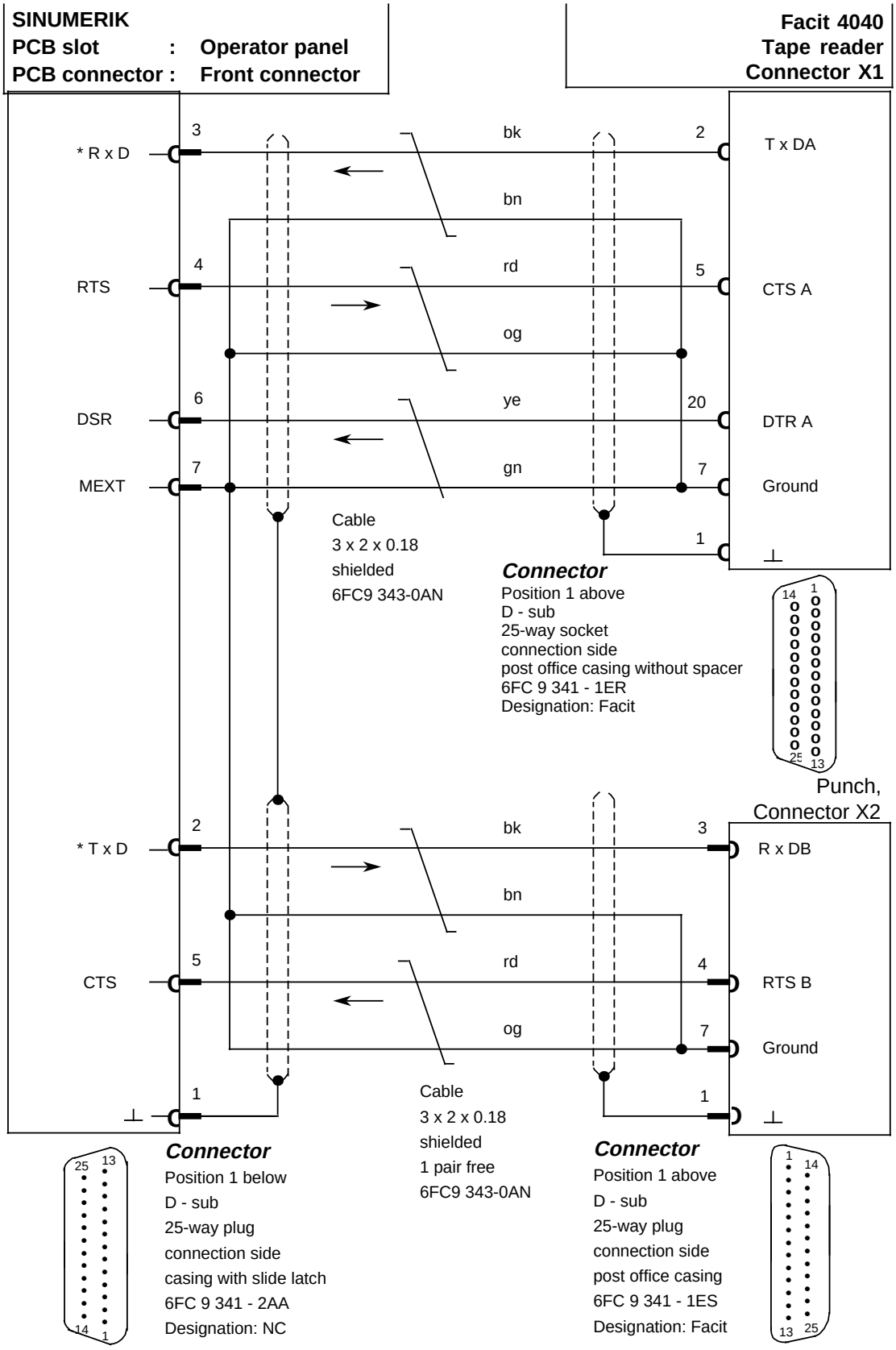




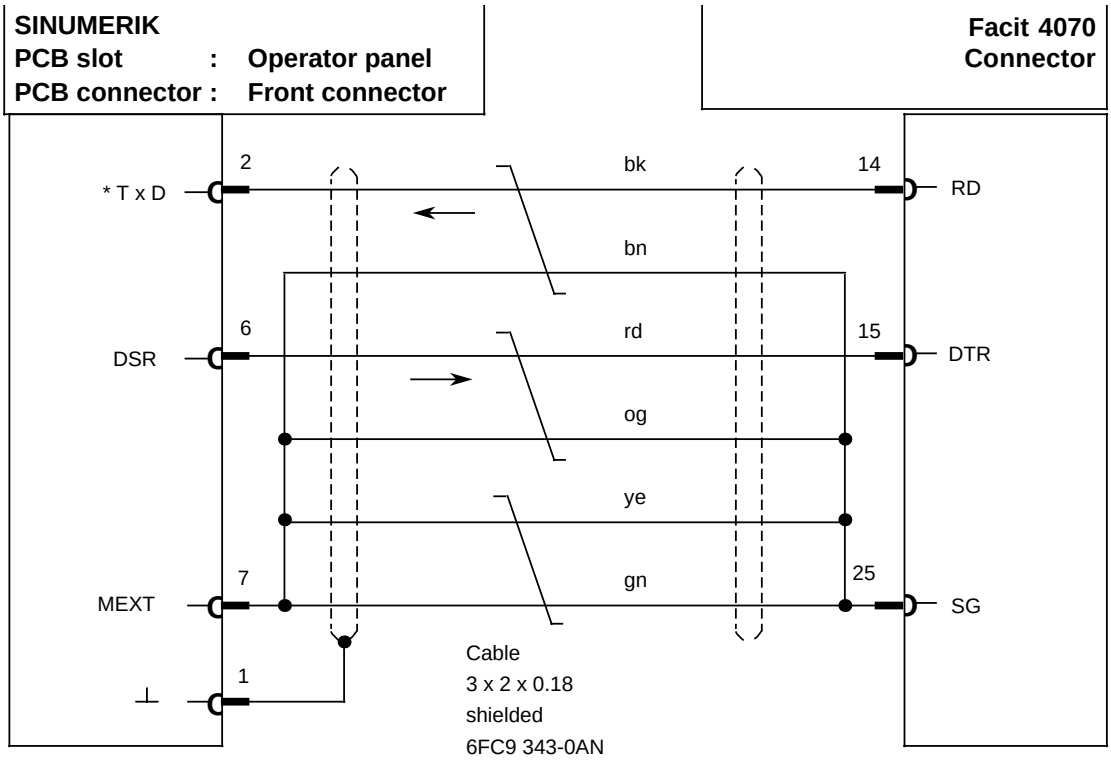
Connector
Position 1 below
D - sub
25-way plug
connection side
casing with slide
latch
6FC 9 341 - 2AA

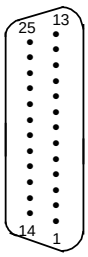
Made-up cable end
Bared line ends 50 mm
Core ends with M3 lug
+ terminal designation

Cable name : Facit 4040 and 4042/PI 81 punch/tape reader combination
Order no. : **6FC9 340-8V**



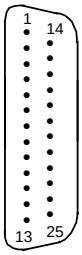
Cable name : Facit 4070/MI 77 punch
Order no. : **6FC9 340-8J**



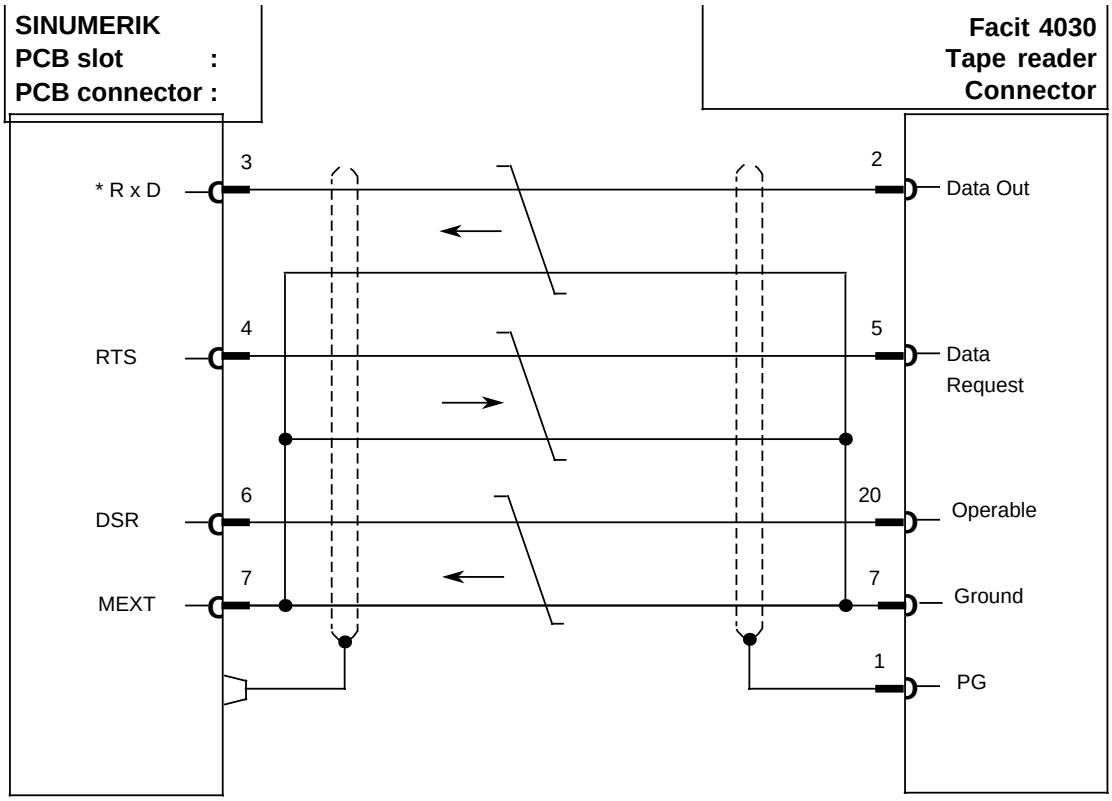


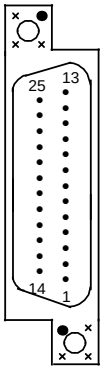
Connector
Position 1 below
D - sub
25-way plug
connection side
casing with slide
latch
6FC 9 341 - 2AA
Designation: NC

Connector
Position 1 above
D - sub
25-way plug
connection side
casing with slide
latch
6FC 9 341 - 2AA
Designation: Facit



Cable name : Facit 4030 tape reader
Order no. : -





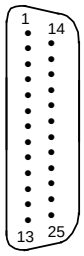
Connector
Position 1 below
D - sub
25-way plug
connection side
SINUMERIK casing
6FC9 341-2AB
Designation: NC

Connector code

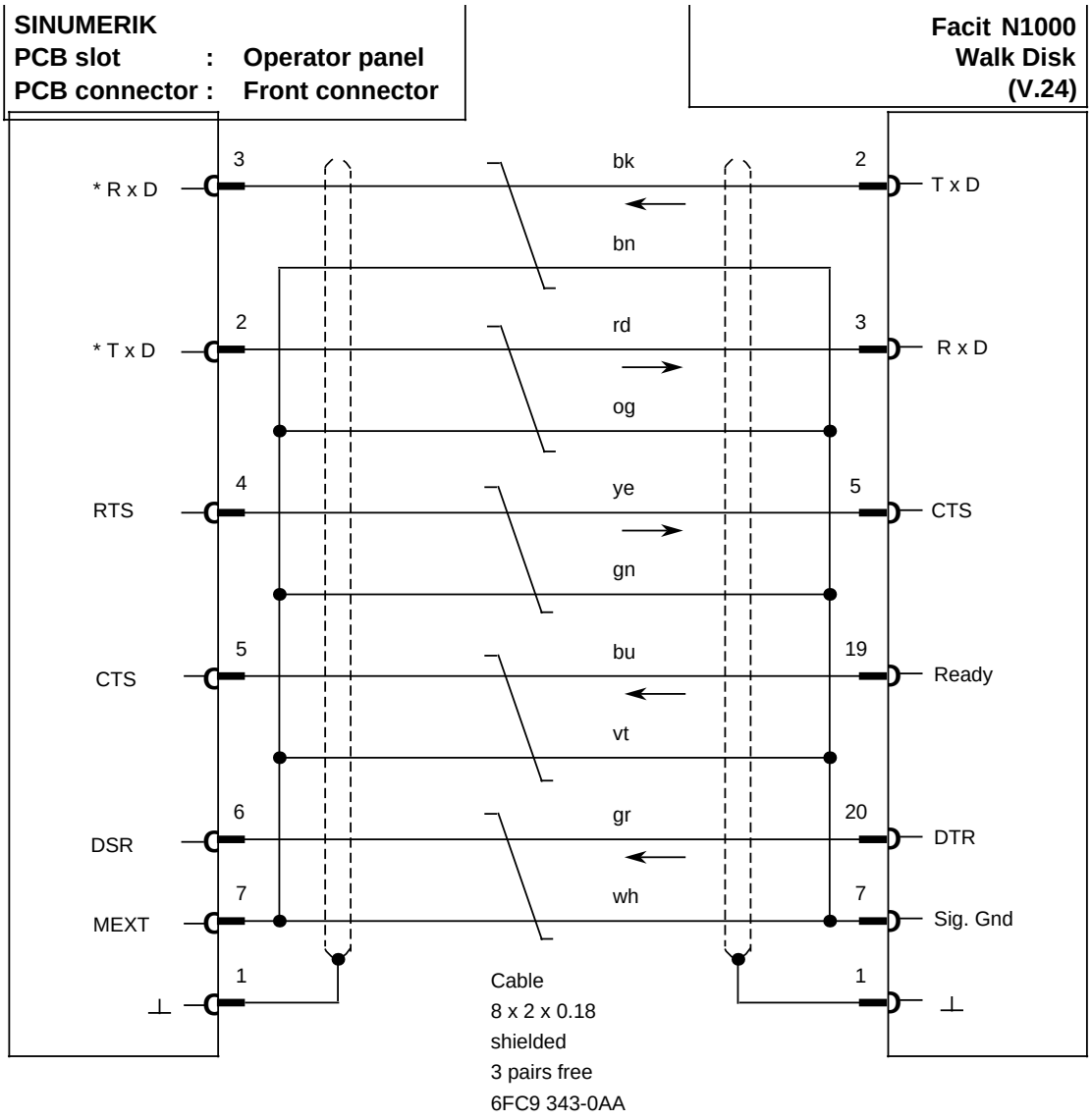
coding pin

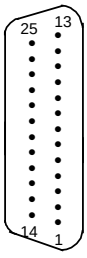
no coding pin

Connector
Position 1 above
D - sub
25-way plug
connection side
post office casing
6FC 9 341 - 1ES
Designation: Facit



Cable name : Facit NC Walk Disk N1000, N1100
Order No. : **6FC9344 - 2M**

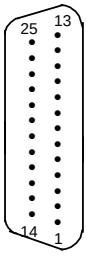




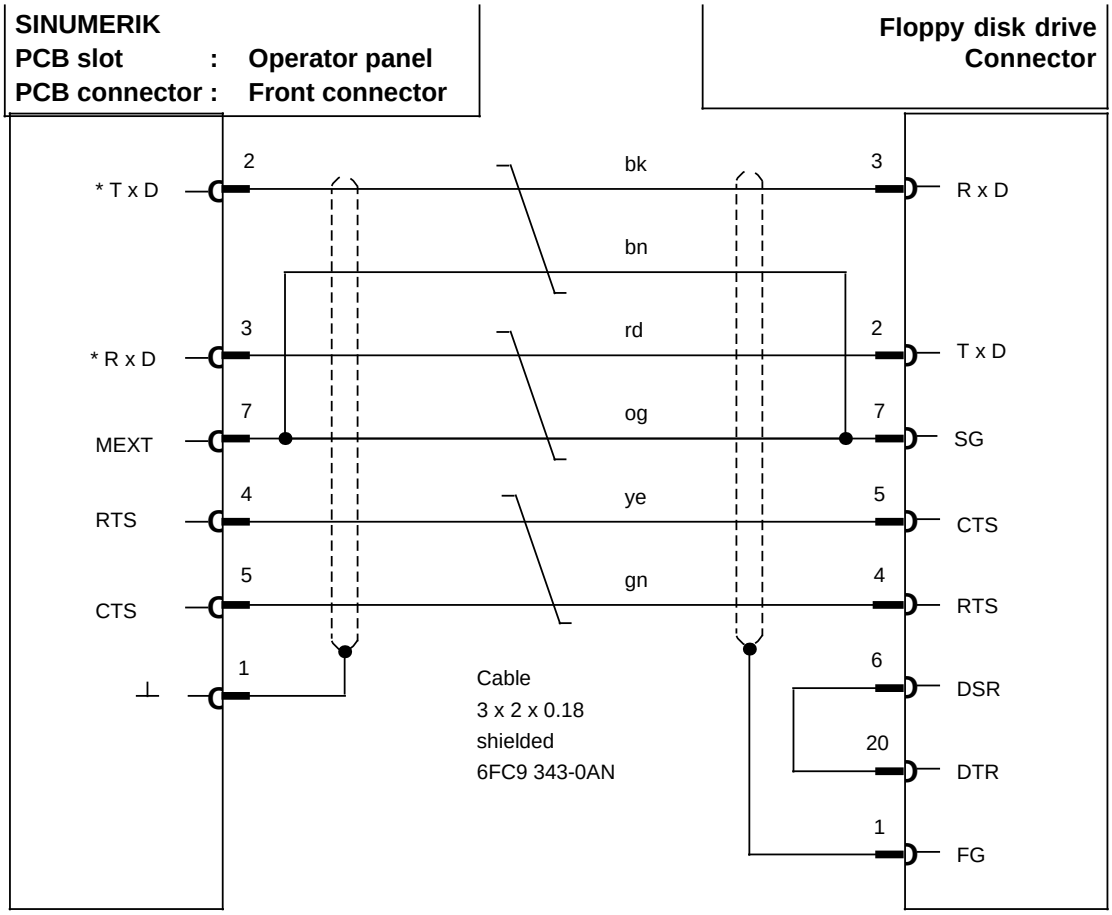
Connector
Position 1 below
D - sub
25-way plug
connection side
casing with slide latch
6FC 9 341 - 2AA
Designation: NC

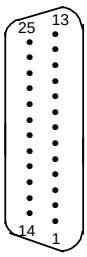
Connector
Position 1 below
D - sub
25-way plug
connection side
post office casing

6FC 9 341 - 1ES
Designation: Facit



Cable name : Siemens DSG 3.5 floppy disk drive
GNT 7101 NC data carrier
CAN NC recorder FD/FH
Order no. : **6FC9 344-2P**

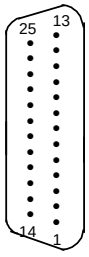




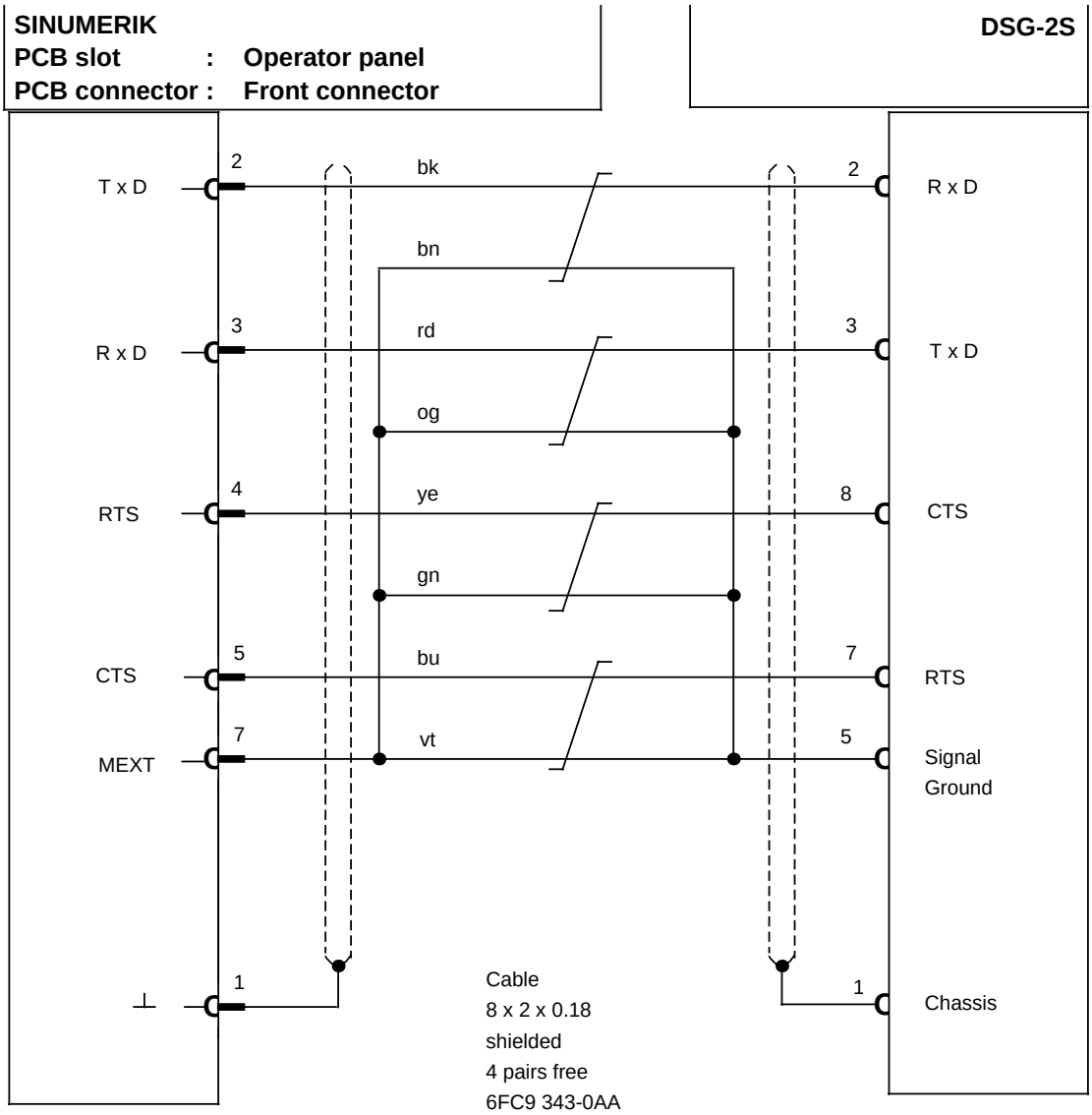
Connector
Position 1 below
D - sub
25-way plug
connection side
casing with slide latch
6FC 9 341 - 2AA
Designation: NC

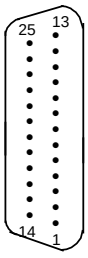
Connector
Position 1 below
D - sub
25-way plug
connection side
post office casing

6FC 9 341 - 1ES
Designation: CAN



Cable name: DSG-2S (V.24) floppy disk drive
Order no.: **6FM1 590-7B 00**

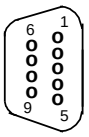




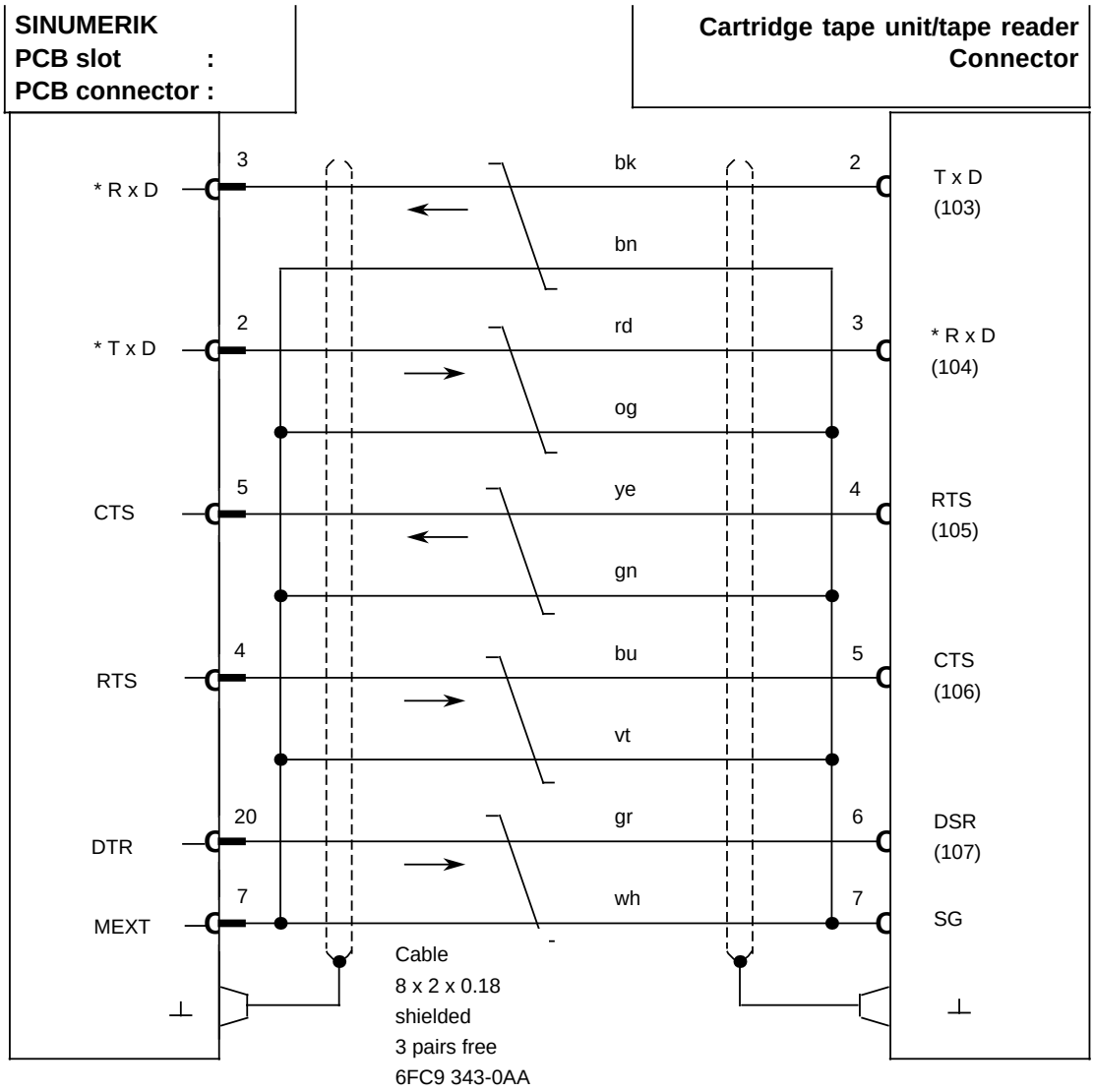
Connector
Position 1 below
D - sub
25-way plug
connection side
casing with
slide latch
6FC9 341-2AA
Designation: NC

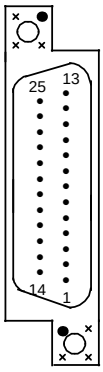
Connector
Position 1 above
D - sub
9-way plug
connection side
SBM 383 casing

6FC9 341-2AE
Designation:DSG-2S



Cable name: Sommer terminal MDC - 3 SNC (panel-mounting cartridge tape unit)
SINUMERIK - T10 and T20 tape reader
Order no.: **6FC9 344-1C**



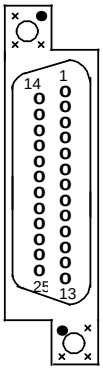


Connector
Position 1 below
D - sub
25-way plug
connection side
SINUMERIK casing
6FC9 341-2AB
Designation: NC

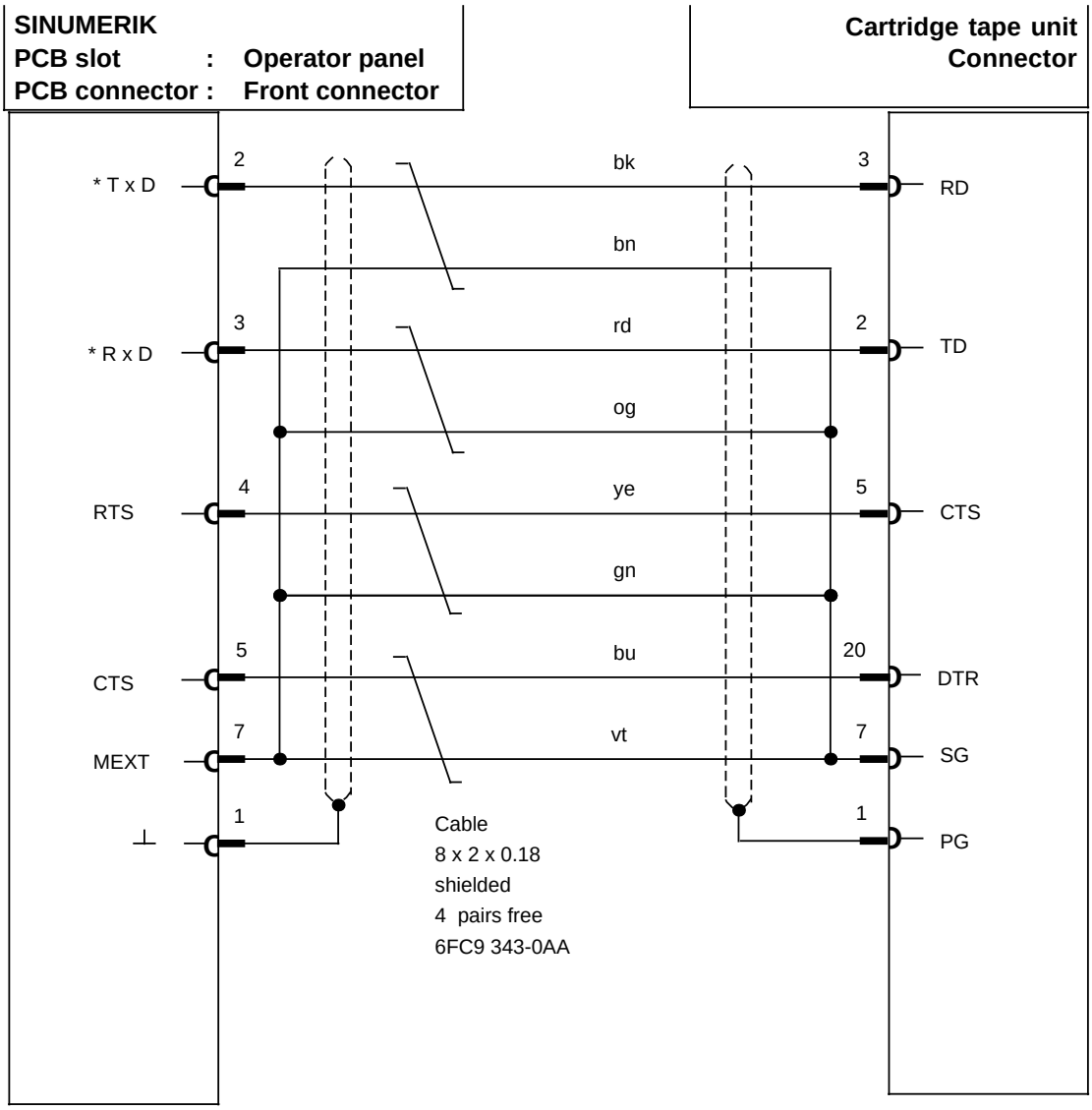
Connector code
● coding pin
× no coding pin

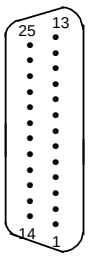
Connector
Position 1 above
D - sub
25-way plug
connection side
SINUMERIK casing
6FC 9 341 - 1ED
Designation: PTR

Connector code
● coding pin
× no coding pin



Cable name : Tekelec FDS 300, FDS 500 floppy disk drive
Tekelec CDS 1.58 magnetic tape cartridge drive
Order no. : **6FC9 344-2F**

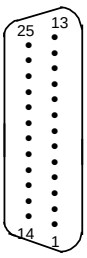




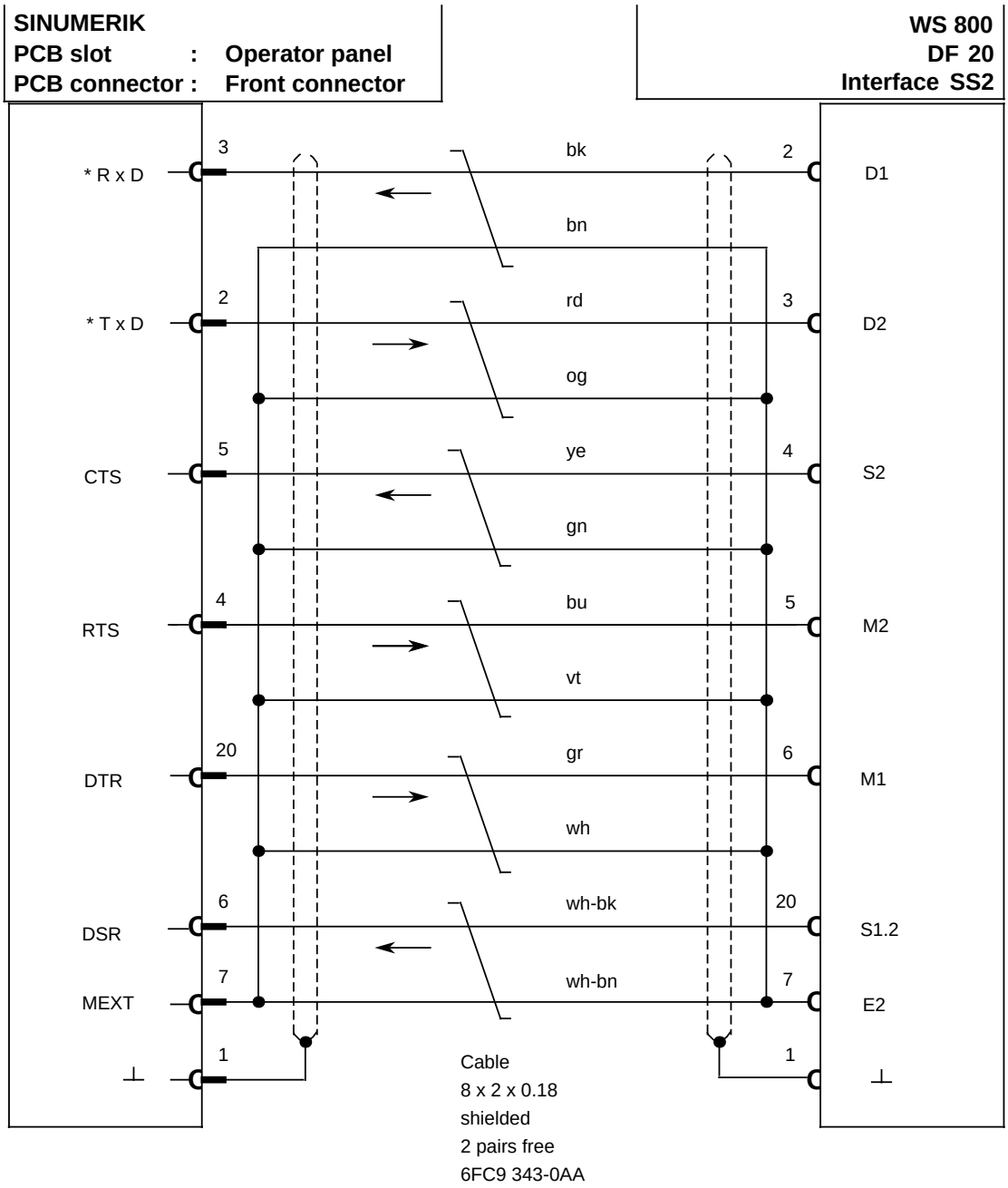
Connector
Position 1 below
D - sub
25-way plug
connection side
casing with slide latch
6FC 9 341 - 2AA
Designation: NC

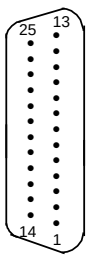
Connector
Position 1 below
D - sub
25-way plug
connection side
post office casing

6FC 9 341 - 1ES
Designation: CDS



Cable name : SINUMERIK WS 800 workstation (V.24)
GNT 4604 tape reader/punch station
Order no. : **6FC9 344-1B**

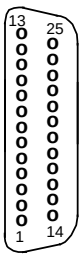




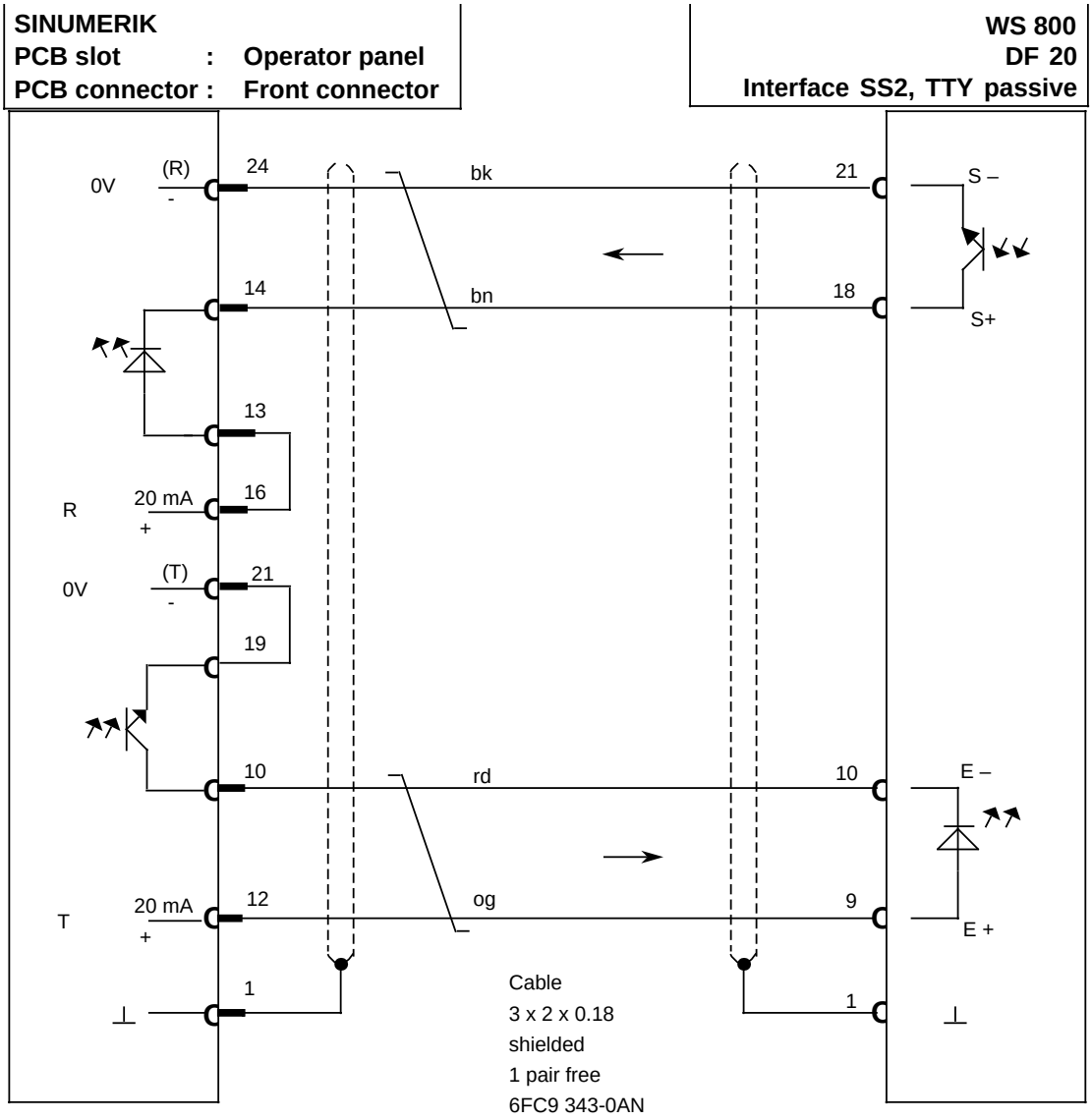
Connector
Position 1 below
D - sub
25-way plug
connection side
casing with slide
latch
6FC 9 341 - 2AA
Designation: NC

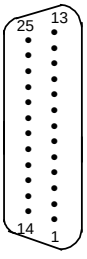
Connector
Position 1 below
D - sub
25-way socket
connection side
post office casing

6FC 9 341 - 1ER
Designation: PJP



Cable name : SINUMERIK WS 800 workstation (20 mA)
Order no. : **6FC9 344-1Q**

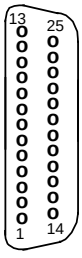




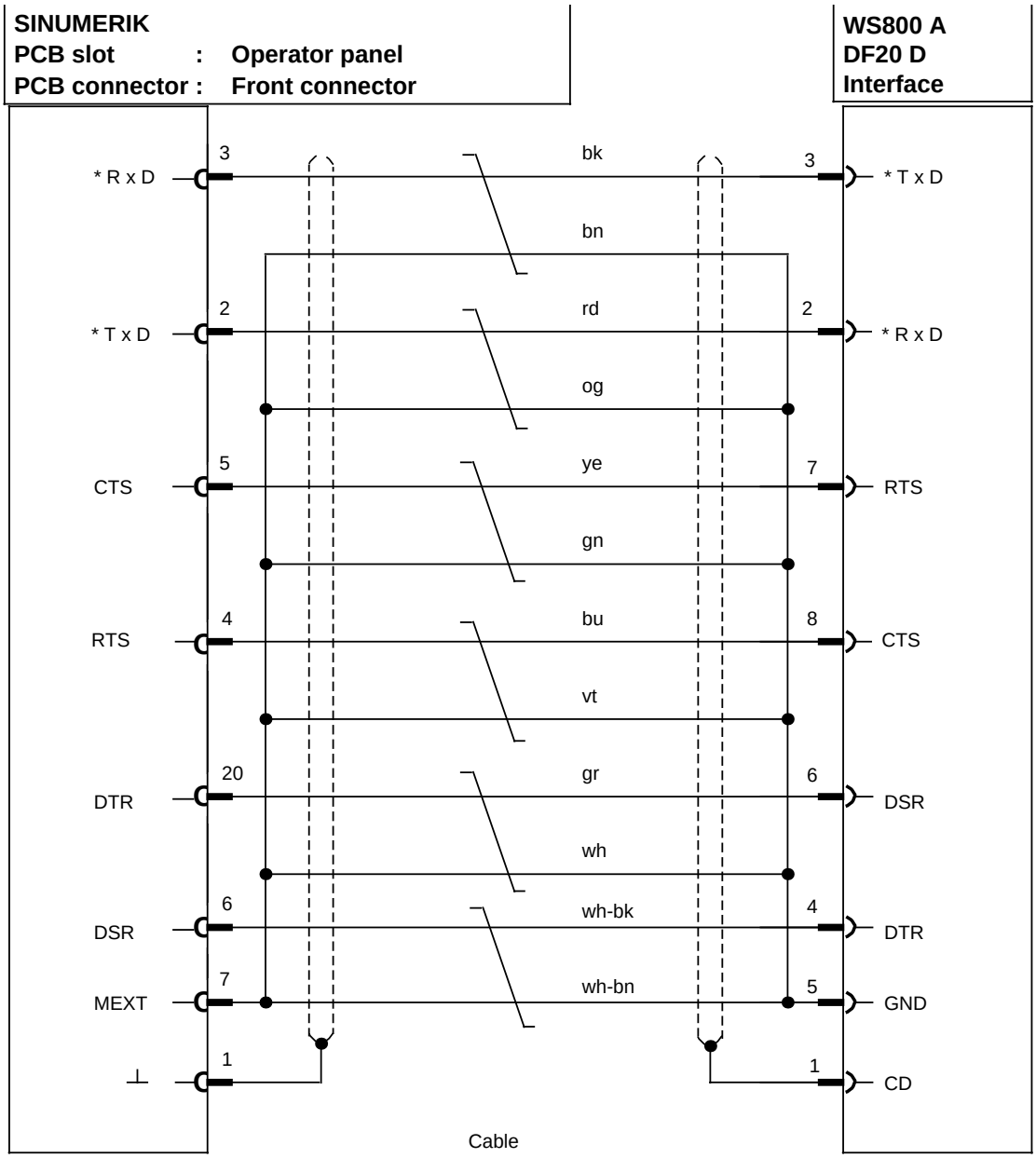
Connector
Position 1 below
D - sub
25-way plug
connection side
casing with slide latch
6FC 9 341 - 2AA
Designation: NC

Connector
Position 1 below
D - sub
25-way socket
connection side
post office casing

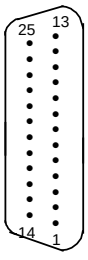
6FC 9 341 - 1ER
Designation: PJP - TTY



Cable name : SINUMERIK WS800 A workstation (V.24)
Order no. : **6FC9 344-4H**



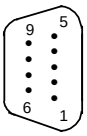
Cable
8 x 2 x 0,18
shielded
2 pairs free
6FC9 343-0AA



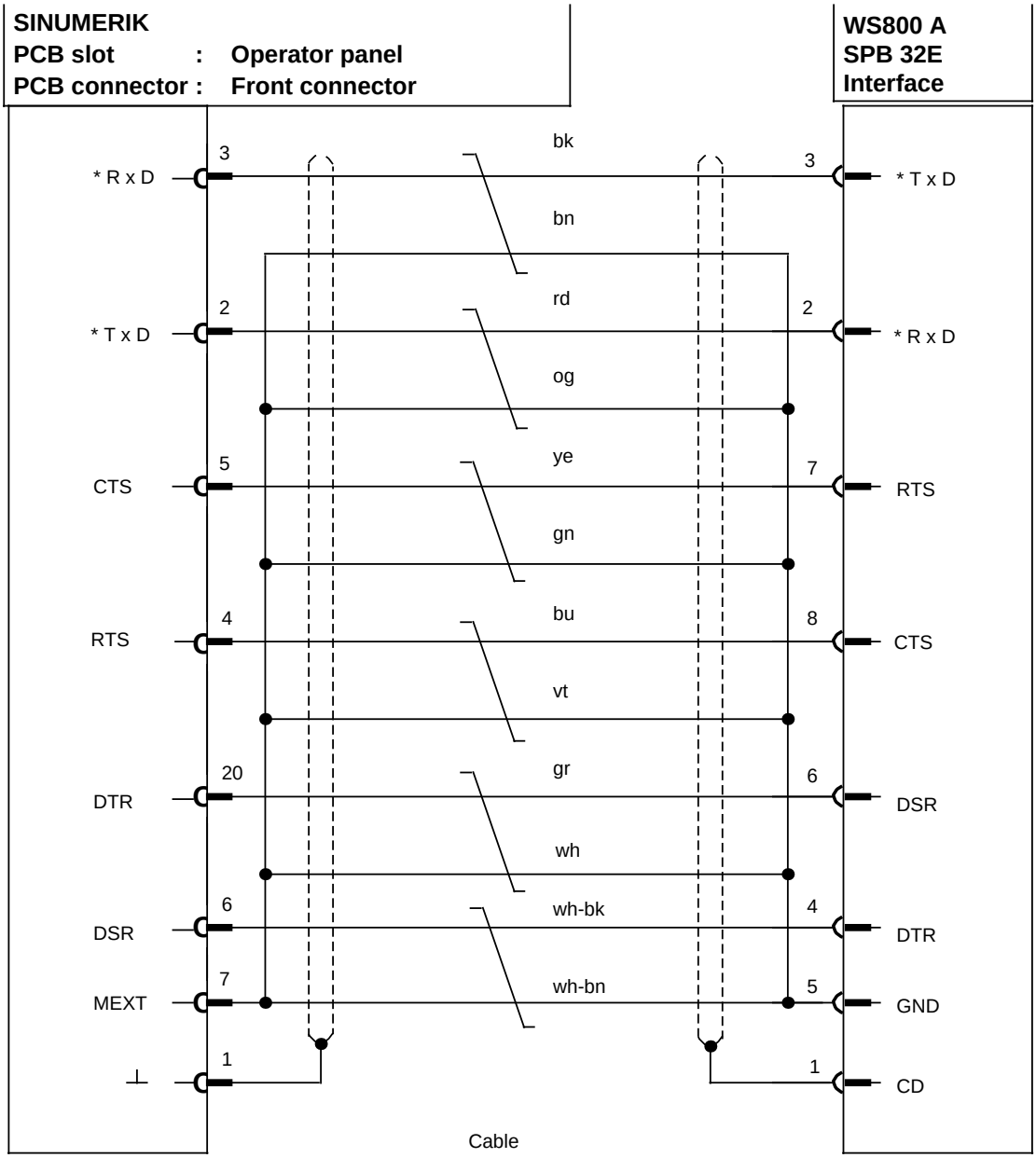
Connector
Position 1 below
D - sub
25-way plug
connection side
casing with
slide latch
6FC9 341-2AA
Designation: NC

Connector
Position 1 below
D - sub
9-way plug
connection side
SBM 383 casing
6FC9 341-2AF

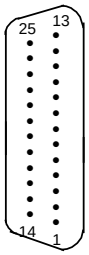
Designation: PC



Cable name : SINUMERIK WS800 A programming workstation (V.24)
SIMATIC PG 750 (COM 2)
PC (AT compatible)
Order no. : **6FC9 344-4T**

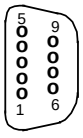


Cable
8 x 2 x 0.18
shielded
6FC9 343-0AA

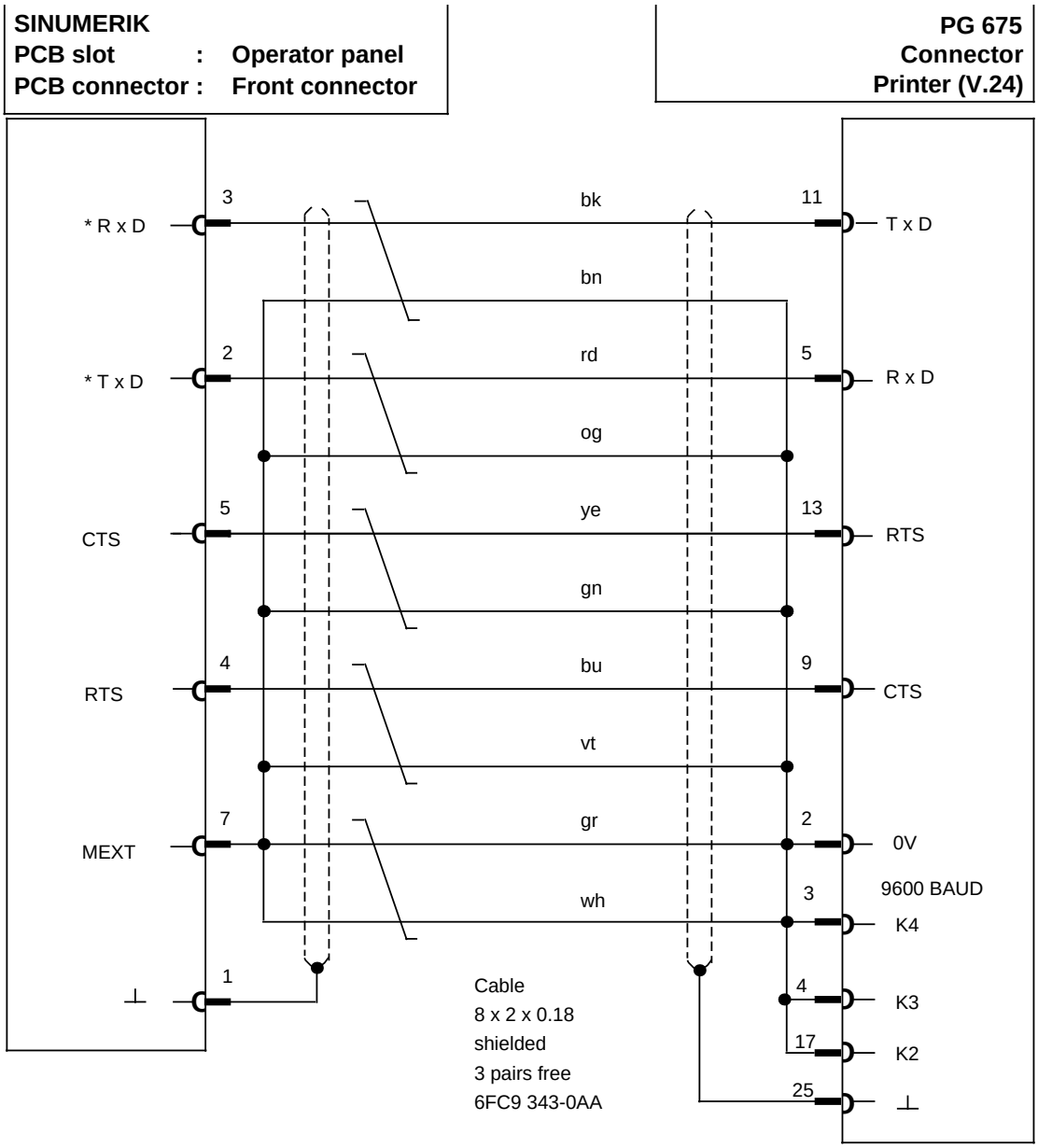


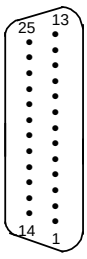
Connector
Position 1 below
D - sub
25-way plug
connection side
casing with slide latch
6FC9 341-2AA
Designation: NC

Connector
Position 1 below
D - sub
9-way socket
connection side
SBM 383 casing
6FC9 341-2AE
Designation: PC



Cable name : SIMATIC PG 675/PG 685/PG 635 (TRANS-PG IN)
Order no. : **6FC9 344-1A**

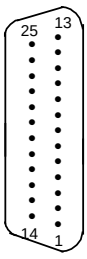




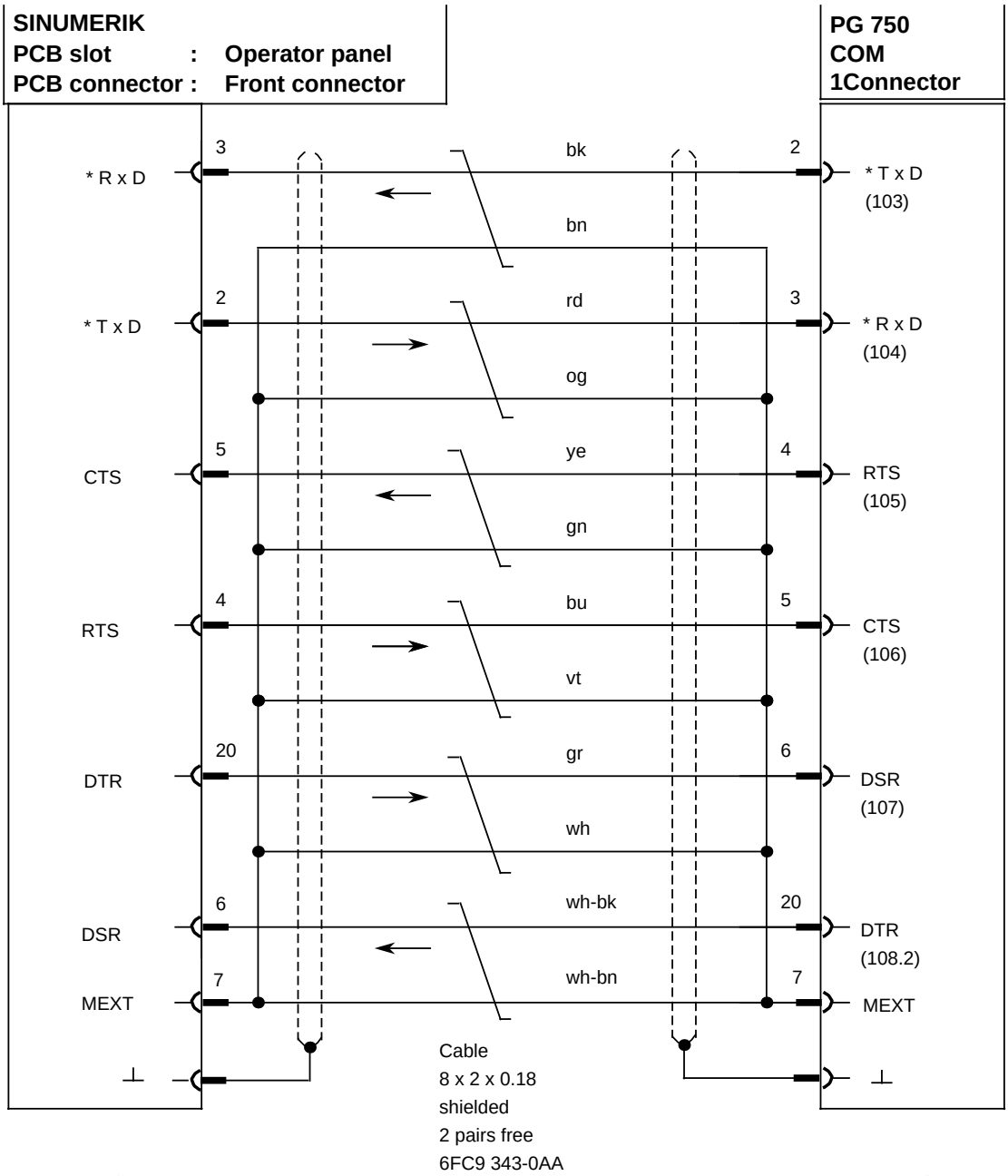
Connector
Position 1 below
D - sub
25-way plug
connection side
casing with slide latch
6FC 9 341 - 2AA
Designation: NC

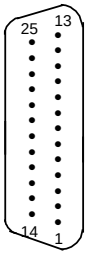
Connector
Position 1 below
D - sub
25-way plug
connection side
post office casing

6FC 9 341 - 1ES
Designation: PG D



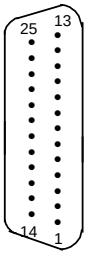
Cable name: SIMATIC PG 750 (TRANS PC IN and PLC programming)
PC (AT compatible)
Order no.: **6FC9 344-4R**



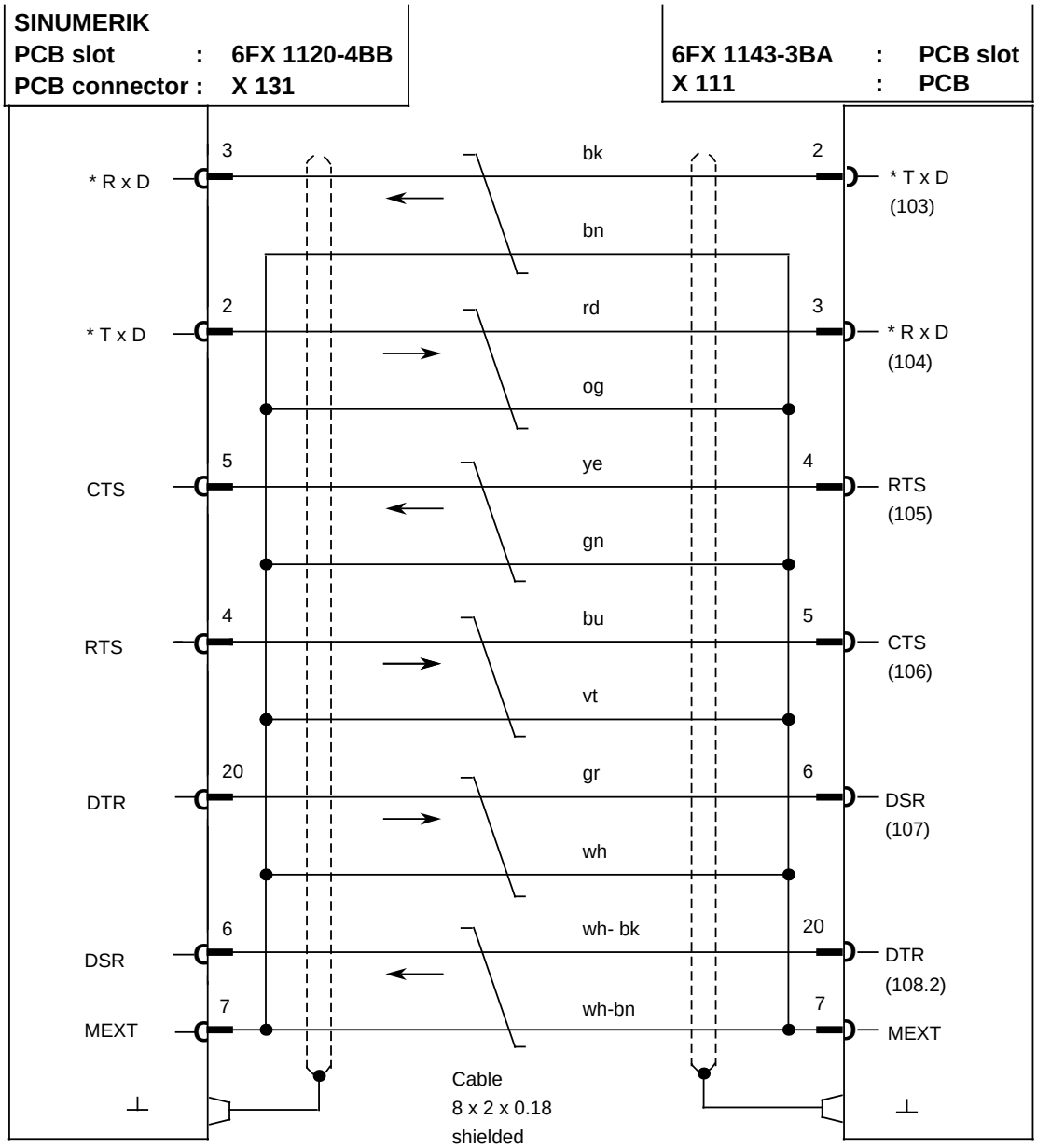


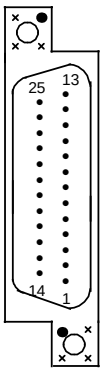
Connector
position 1 below,
D - sub,
25-way plug
connection side
casing with slide latch
6FC9 341-2AA
Designation: NC

Connector
position 1 below,
D - sub,
25-way plug
connection side
post office casing
6FC9 341-1ES
Designation: PC



Cable name : SINUMERIK System 800, RS 232C, NC-NC link
2nd/3rd operator panel, RS 232 C keyboard interface
Order no. : **6FC9 340-8W**

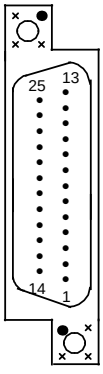




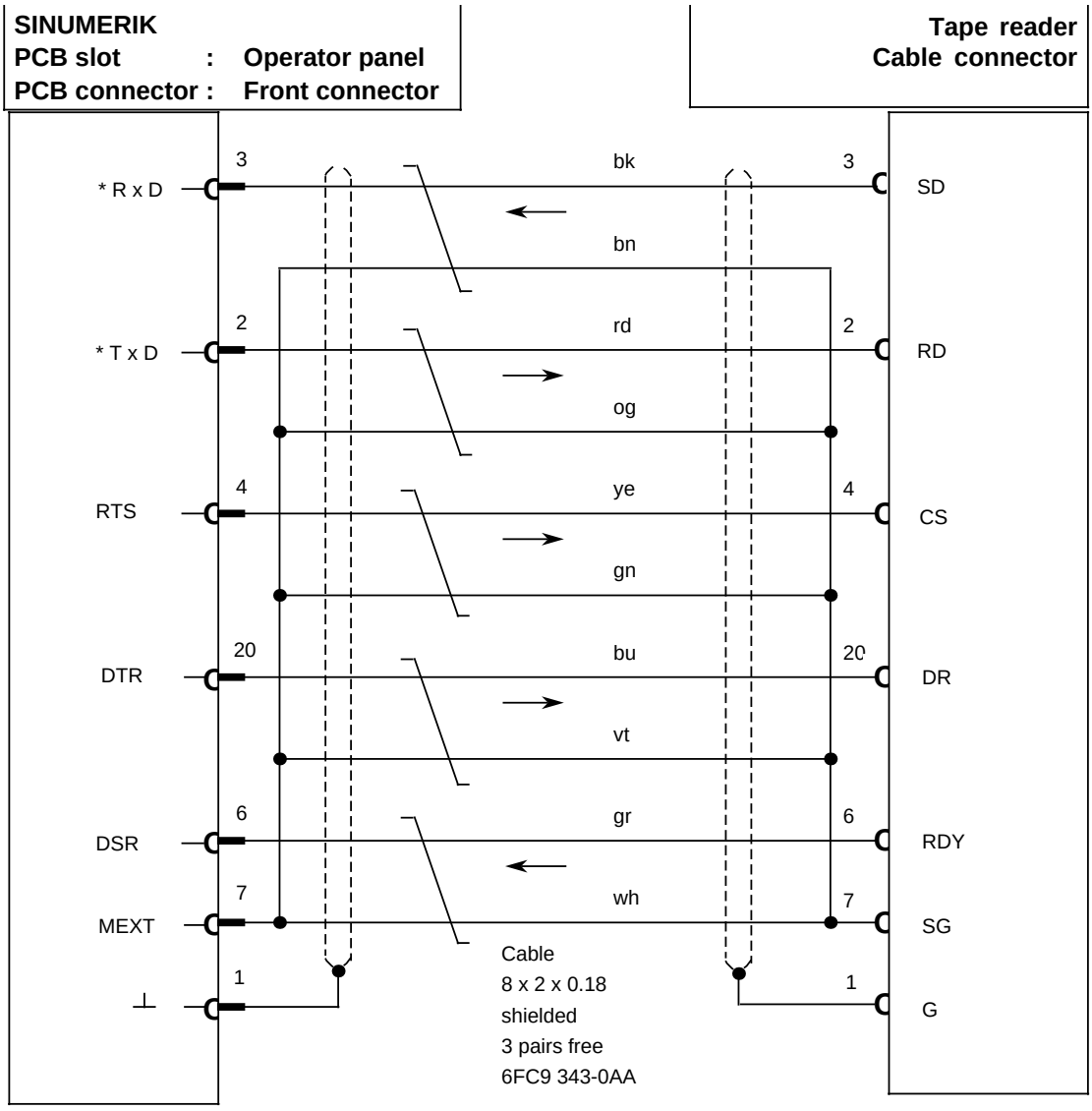
Connector
Position 1 below
D - sub
25-way plug
connection side
SINUMERIK casing
6FC9 341-2AB
Designation: NC 1

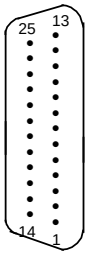
Connector code
● coding pin
× no coding pin

Connector
Position 1 below
D - sub
25-way plug
connection side
SINUMERIK casing
6FC9 341-2AB
Designation: NC 2



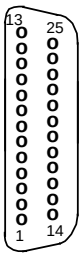
Cable name : SINUMERIK - T30 tape reader (portable)
Order no. : **6FC9 340-8F**



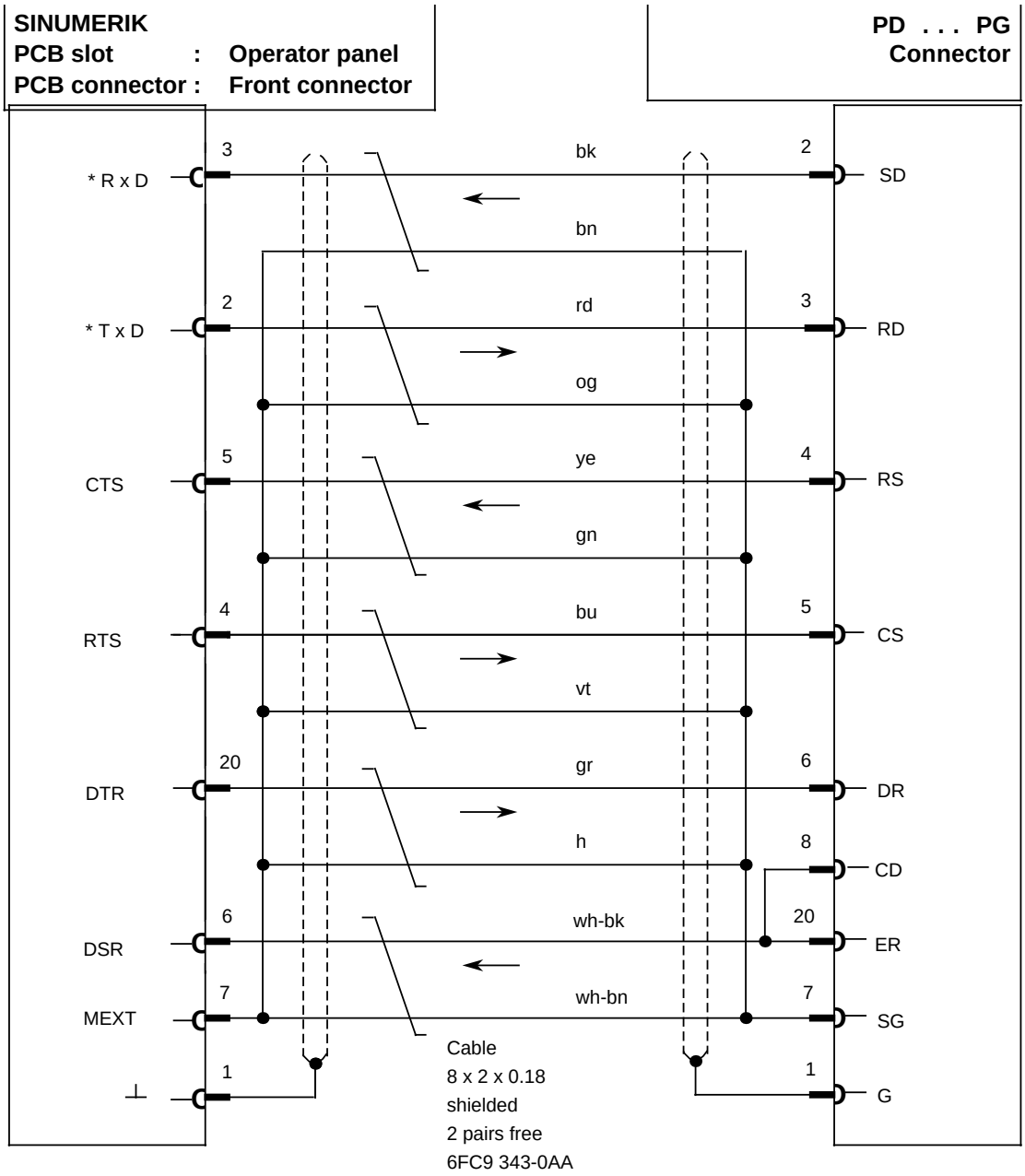


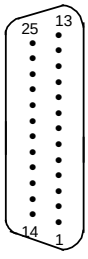
Connector
Position 1 below
D - sub
25-way plug
connection side
casing with slide
latch
6FC 9 341 - 2AA
Designation: NC

Connector
Position 1 below
D - sub
25-way socket
connection side
post office casing
with spacer
6FC 9 341 - 1ER
Designation: PTR



Cable name : Siemens programming workstation PD...PG
Order no. : **6FC9 340-8E**

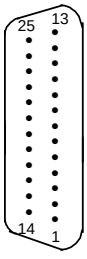




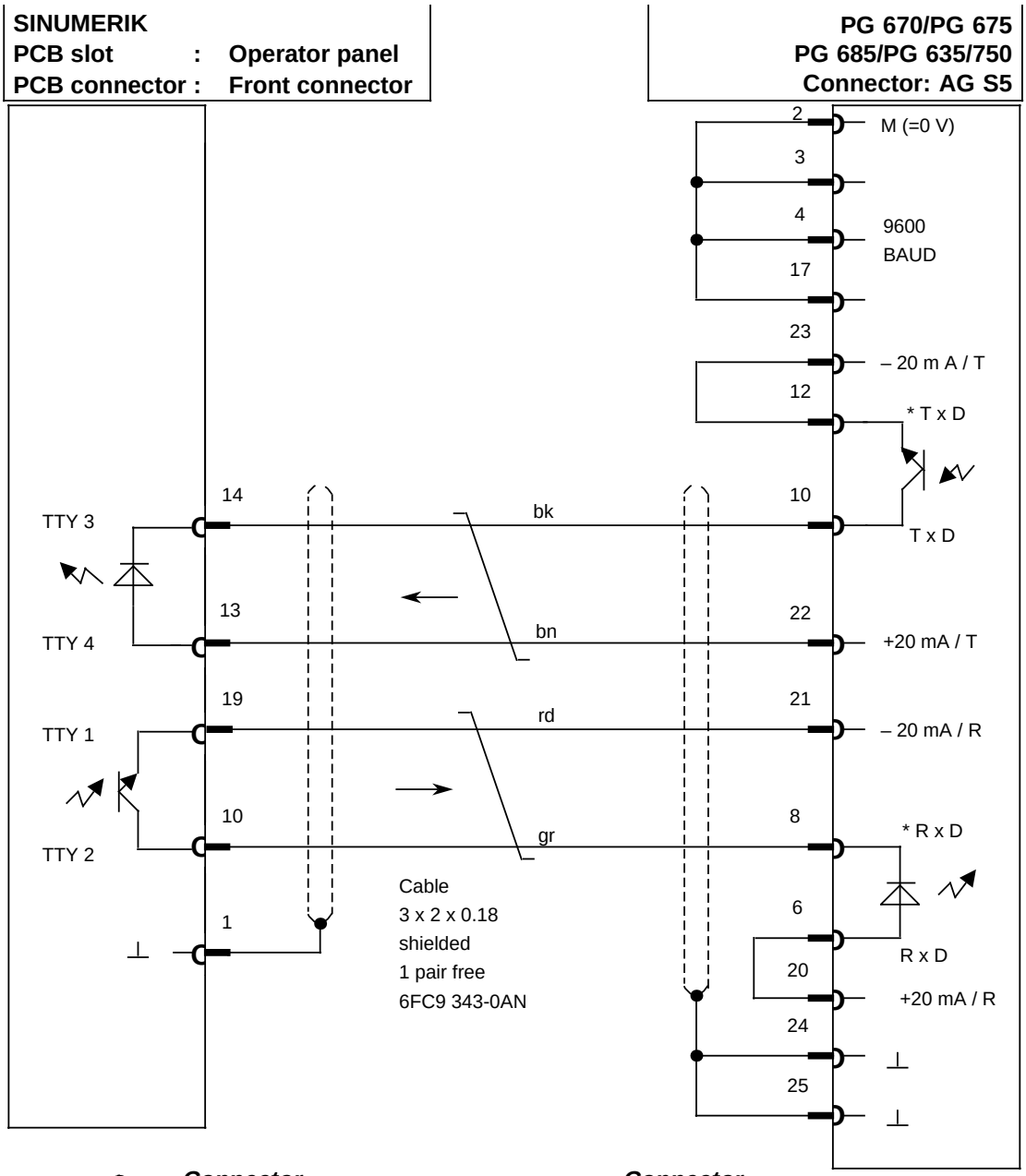
Connector
Position 1 below
D - sub
25-way plug
connection side
casing with slide latch
6FC 9 341 - 2AA
Designation: NC

Connector
Position 1 below
D - sub
25-way plug
connection side
post office casing

6FC 9 341 - 1ES
Designation: PD



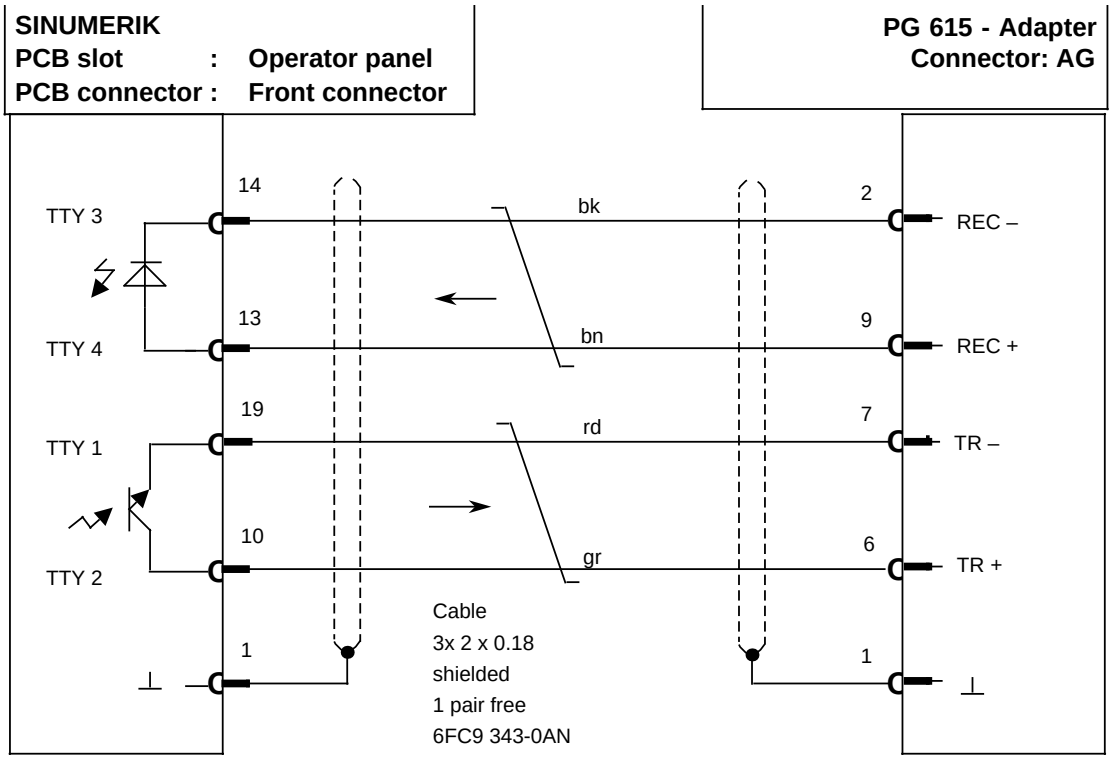
Cable name : SIMATIC PG 670/PG 675/PG 685/PG 635 (PLC programming)
Order no. : **6FC9 340-8G**

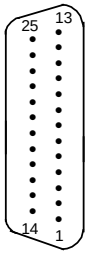


Connector
Position 1 below
D - sub
25-way plug
connection side
casing with slide latch
6FC 9 341 - 2AA
Designation: NC

Connector
Position 1 below
D - sub
25-way plug
connection side
casing with slide latch
6FC 9 341 - 2AA
Designation: PG AG

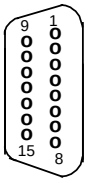
Cable name : SIMATIC PG 615 (PLC programming)
Order no. : **6FC9 340-8H**



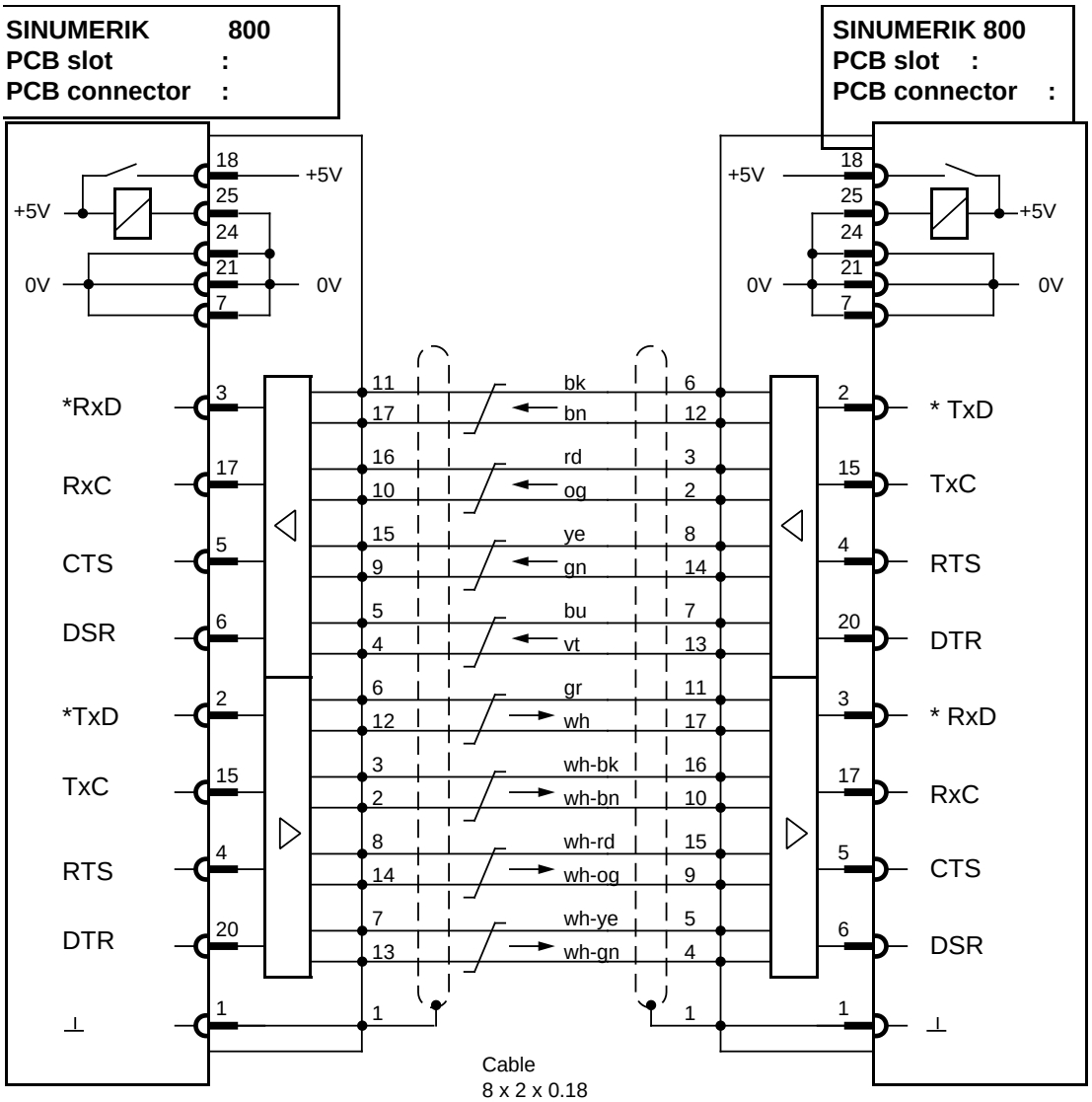


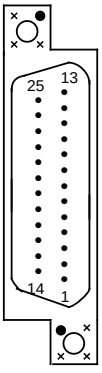
Connector
Position 1 below
D - sub
25-way plug
connection side
casing with slide latch
6FC 9 341 - 2AA
Designation: NC

Connector
Position 1 above
D - sub
25-way socket
connection side
casing with slide latch
6FC 9 341 - 1FK
Designation: PG



Cable name : SINUMERIK System 800, RS 232 C / RS 422 converter
Order no. : **6FC9 344-2V**

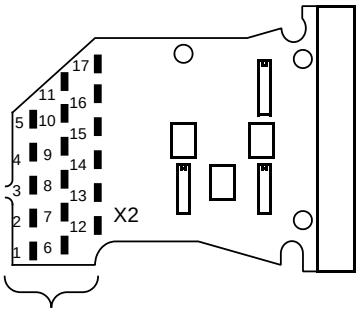




Connector
with Adapter
Position 1 below
D - sub
25-way plug
connection side
SINUMERIK casing
6FC9 341-1HB
Designation: NC 1

Connector code

● Coding pin
× no coding pin

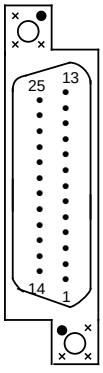


Solder tag connection
in adapter

Connector
with Adapter
Position 1 below
D - sub
25-way plug
connection side
SINUMERIK casing
6FC9 341-1HB
Designation: NC 2

Connector code

● Coding pin
× no coding pin



END OF SECTION