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BAUMÜLLER

OPERATION SOFTWARE

Technical description and
operation manual

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Edition March 1995

5.94004.06

This operation manual is intended as a complement to the technical description and the operation manual of the apparatus.

<div style="border:1px solid black">

READ AND COMPLY WITH THE OPERATION MANUAL AND THE SAFETY NOTES BEFORE COMMISSIONING

</div>

This manual contains the necessary information for normal opteration of the products described therein. The drives may only be used, maintained and repaired by personnel familiar with the operation manual and the applicable regulations on working safety and accident prevention. The devices are manufactured to a high technical specification and are operationally safe. Provided that all safety instructions habe been adhered to, there will be no personal danger during the installation and commissioning stages.

The commisioning is prohibited until it has been positively determined that the machine, into which these components are to be incorporated, complies with EC machine regulations.

This technical description replaces and nullifies all previous description. In order to provide the best possible service, we reserve the right to alter information without notice.

TABLE OF CONTENTS

ABBREVIATIONS

AI	Function module analog inputs
OS	Function module operation system
SC	Function module synchronisation control
RFG	Function module ramp up generator
ID no.	Identification number
Inc	Unit of position
P	Function module position controller
M	Function module drive manager
N	Function module speed controller

1 OPERATION PROGRAM PCBASS (VERSION 4.01)

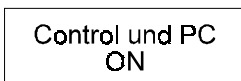With the help of the PC program offered the controller can be parameterised via a connected PC or Laptop.
Drive and PC communicate with the serial interface RS232.

NOTE
The serial connection calbe (see installation) connects the PC and the controller.

1.1 Operation of the program

● **Make connection between controller and PC**

```
┌─────────────────┐
│  Control und PC │
│       ON        │
└─────────────────┘
```

● **Copy all files on the diskette into an available subdirectory on the hard disk
   (e.g. C:\PCBASS)**

● **Starting the program**

   ❑   Change to the respective subdirectory and start the program.

        e.g.   C:\>**cd PBASS**   ↵
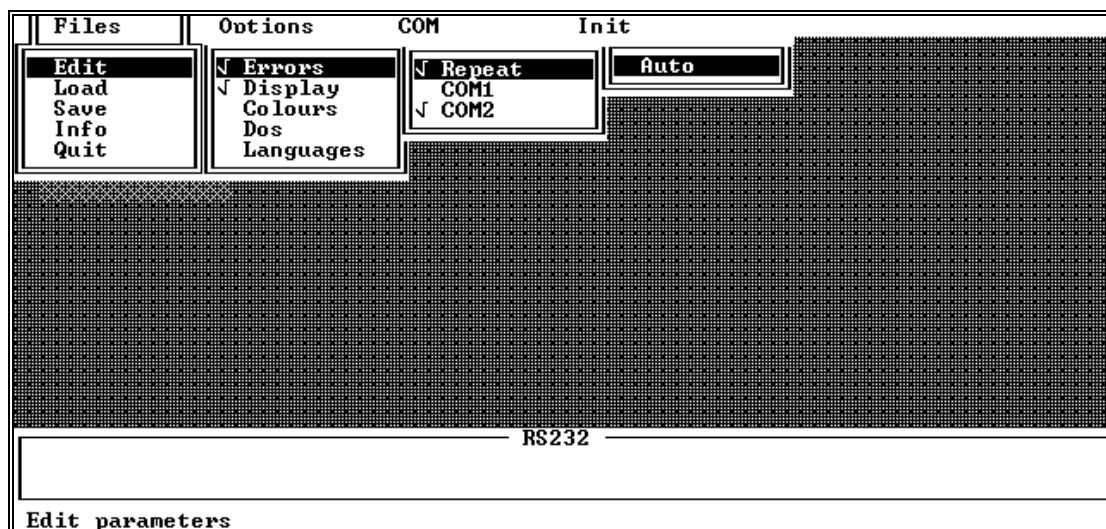
                C:\PCBASS\>**PCBASS**   ↵

   ❑   The info-window of the PC program then appears.
        Quit with ↵

   ❑   Followise pull-down-menu are possible in the menu of the PC program:

```
┌──────────┬──────────────┬───────────┬──────────────────────────┐
│‖ Files  ‖│  Options     │  COM      │      Init                │
├──────────┼──────────────┼───────────┼──────────────────────────┤
│‖ Edit  ‖│‖√ Errors    ‖│‖√ Repeat ‖│‖ Auto              ‖│
│  Load    │√ Display     │  COM1     │                          │
│  Save    │  Colours     │√ COM2     │                          │
│  Info    │  Dos         │           │                          │
│  Quit    │  Languages   │           │                          │
└──────────┴──────────────┴───────────┘                          │
│                                                                 │
│                                                                 │
│                                                                 │
│                                                                 │
│                                                                 │
│               ┌──────────────── RS232 ─────────────────┐        │
│               │                                        │        │
│               └────────────────────────────────────────┘        │
│ Edit parameters                                                 │
└─────────────────────────────────────────────────────────────────┘
```

- **Menu bar description**

You can change to the menu bar with the keys [Alt] or [F10].

❑ **Data**

Edit: Display and setting of the controller parameters

Load: Loading the parameter list from floppy disk or hard disk

Save: Saving the parameter list on floppy disk or hard disk

Info: Display of program version

Exit: Leaving the program

❑ **Options**

Error: Selecting whether error messages are to be repressed

Display: Selecting the RS 232 monitor

Colours: Selecting from various colour combinations of the user interface

Dos: Opening a DOS window
With EXIT you are returned to the operation program

Languages The parameter set is translated to the selected language. If English is selected any loaded file is translated automatically to English.

❑ **COM**

Repeat: Repeat on: message is repeated up to 12 times before error message is displayed
Repeat off: message is sent only once

COM 1 ⇔ COM 2: Selecting the PC interface used

❑ **Init**

Auto: Loading parameter list from drive

- **Parameter list management**

 The parameter list contains the individual characteristics for the description of a parameter such as

  e.g.   parameter name
                  min./max. value
                  set unit.

  ❏ Loading the parameter list from the drive
  If a parameter list for the operation program has not yet been created, it must be read in from the controller via the function *Init Auto.*
  It must be pointed out that although the parameter values are also transferred, they are not updated with respect to the current drive status.

  ## NOTE
  With German input data manipulation a translation of the input data previously loaded via *Init Auto* and altered is only possible after storage (with interrogation). With English input data manipulation the interrogation für storage is effected immediately after the storage and is translated automatically when stored.
  Without storage the input data is lost!

  ❏ Loading the parameter list from a file
  Since loading the parameter list from the drive is quite time-consuming, there is also the possibility of saving the parameter list on floppy disk or hard disk and loading it from there.
  On calling up the function *Load Data* the following selection window is displayed:
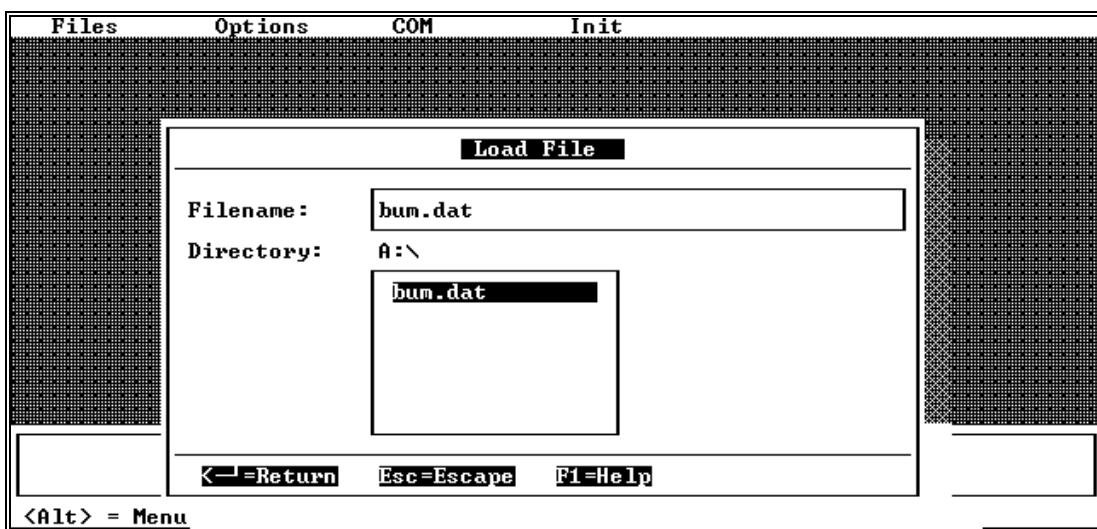
  The file name can either be entered into this window directly or selected from an existing list. It is selected via the <TAB> and arrow keys.
  The values which are displayed when saving the parameter list are the values which have previously been read. They do not necessarily correspond to the current values in the drive.
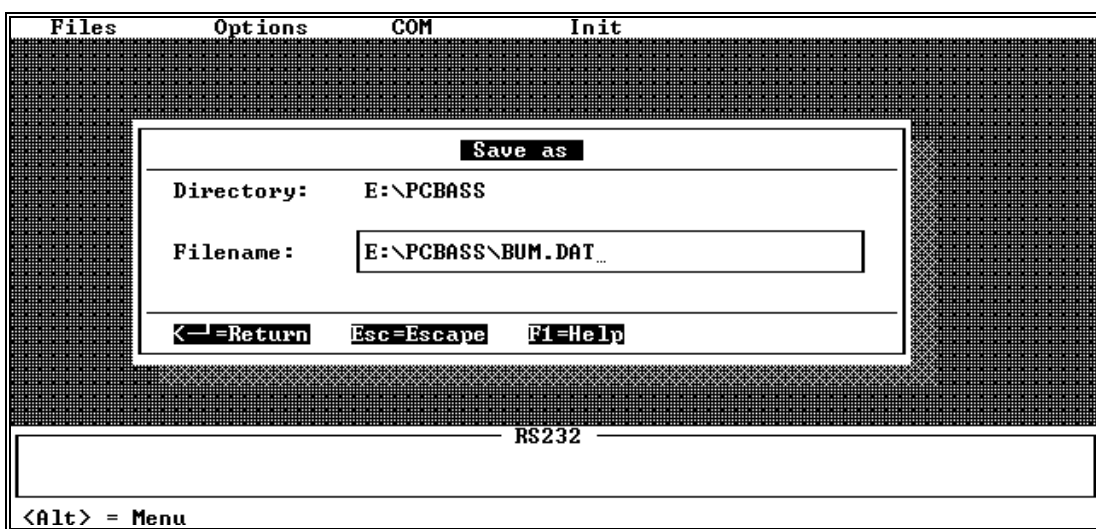
Autoload

The program PCBASS can edit various data sets. In many applications, however, only one data set is used.

Thus one data set can be selected and specified as the program parameter in order to facilitate the handling of the program. This data set is automatically loaded and displayed.

<div align="center">Call up: pcbass file name</div>

❑   Saving the parameter list in a file

In order to generate a parameter list on floppy disk or hard disk, first a parameter list must be read from the drive or from another file.

On calling up the function *Save Data* the following selection window is displayed:

```
 Files        Options       COM         Init
███████████████████████████████████████████████████████████
███████████████████████████████████████████████████████████
███                                                     ████
███                    ┌─────────────┐                  ████
███          ┌─────────│  Save as    │──────────────┐   ████
███          │         └─────────────┘              │   ████
███          │  Directory:    E:\PCBASS              │   ████
███          │                                       │   ████
███          │  Filename:    ┌──────────────────────┐│   ████
███          │               │E:\PCBASS\BUM.DAT     ││   ████
███          │               └──────────────────────┘│   ████
███          │  ─────────────────────────────────    │   ████
███          │  ◄─┘=Return   Esc=Escape   F1=Help    │   ████
███          └───────────────────────────────────────┘   ████
███                                                     ████
███████████████████████████████████████████████████████████
█─────────────────────────── RS232 ────────────────────────█
│                                                           │
│                                                           │
└───────────────────────────────────────────────────────────┘
 <Alt> = Menu
```

If the parameter list was read from a floppy disk or hard disk, first the existing file name is suggested for saving, but you can also create another data file by entering a different name. When saving a parameter list which was created via *Init Auto* a new file name must be given in every case.

- **Editing the parameters**

  In order to display the current parameter values, and possibly make alterations, the function *Edit Data* must be called up. The following user interface is displayed:

  # NOTE
  The individual parameter are **only** changeable if the parameter M comm. source (ID no. 126) is set 1 (BASS protocol is released).

```
    Files         Options      COM          Init
                                     ┌─────── Page 1 ───────
   │A ID-No Name                     Min        Max         Value Unit
   │0   110 FI status                  0          1 ████████████0 ─
   │0   116 PU pulse enabling          0          1             0 ─
   │0   115 Power unit status          0          1             0 ─
   │0   120 M control word          0000       FFFF          0000 ─
   │0   121 M status word           0000       FFFF          0040 ─
   │0     2 RFG Input 1           -100.00     100.00          7.43 %
   │0     4 RFG Input 2           -100.00     100.00         12.00 %
   │0     6 RFG Input 3           -100.00     100.00         12.00 %
   │0    50 N specified value     -100.00     100.00          0.00 %
   │0    51 N actual value        -200.00     200.00          0.00 %
                               ───────── Information ─────────
    Port       : BASS 9.6 kBaud COM2

                               ──────────── RS232 ────────────

    F1 Load     F2 Save      F4 Block     F9 Periodical  F10 Menu
```

- Designation
- Min. value
- Max. value
- ID No. Parameter
- Current value
- Drive no. in the service ring
- Dimension

Functions in edit mode

↑	Page up
↓	Page down
Ctrl ↑	Scroll straight to last page
Ctrl ↓	Scroll to first page
Alt page nr.	Scroll to a spezific page number

Description of bottom bar:

The parameter editor is operated via function keys:

[F1]   On operation of F1 the parameter value at the current cursor position is updated once by the controller.

[F2]   On operation of F2 the selected parameter is transferred once to the drive.

[F4]   On operation of F4 all information about the parameter indicated by the cursor position is displayed.

```
┌──────────────────────── Data block ────────────────────────┐
│  Drive      :  0                                            │
│  ID.No.     :      50                                       │
│  Name       :  N specified value                            │
│  Attribute  :  01000010001000010000000000000001             │
│  Add. Info  :  01000000000000001000000000000001             │
│  Data length:  Value 2 Bytes long                           │
│  Function   :  Operating data or parameter                  │
│  Data type  :  integer number                               │
│  Length     :   2                                           │
│  Rating fac.:      1                                        │
│  Unit       :  %                                            │
│  Minimum    :     -100.00                                   │
│  Maximum    :      100.00                                   │
│  Value      :        0.00                                   │
└─────────────────────────────────────────────────────────────┘
```

[F9]   Cyclical communication with the drive is switched on and off via key F9.

If cyclical communication is switched on, the values of the parameters which are displayed in the window are constantly updated. In this case function keys F1 and F2 have no effect.

Recommendation:

In order to effect communication between controller und PC, and parameter values are accepted and displayed, cyclic communication should be activated

[F10]   On operation of F10 or ESC you leave the parameter editor.

Changing parameter values:

In order to change the value of a parameter, the cursor must be positioned on the date column of the relevant parameter. On entry via the keyboard, an input window appears. A new parameter value can be edited in this window until the input is terminated by Return, and thus the parameter value accepted.

NOTE

Inputs can only be effected in decimale format.
Hexadezimale or binary numbers must be translated!

1.2 Initialisation file

The program PCBASS has several options which can be set via the menu:

- error display
- colour range
- serial interface
- language
- etc.

An initialisation file is defined, in which the basic settings of the program can be specified, in order to avoid having to reset the options on every startup.

The name of the initialisation file is: PCBASS.INI

As a text file it can be edited with a standard editor. The program PCBASS.EXE searches for the initialisation file in the current directory and interprets the commands. If no file is available, the program runs in its default setting.
The settings can not be saved in PCBASS.

Commands

No line of the initialisation file contains more than one command. A command consists of the designation, the sign "=" and a number.
No differentiation is made between upper and lower case.
Comments start with a semi-colon ";" and are ignored.

         Example: error_message = 1   ;errors are displayed

- ERROR_MESSAGE
  With this command the menu item *Options/Errors* can be specified.

Value	Function
0	no error display
1	errors are displayed

- COLOUR
  With this command one out of five colour ranges can be selected.

Value	Range
0	blue
1	white
2	cobalt
3	black
4	monochrome

- DISPLAY_SERIAL

  With this command the transmission and reception message representation can be specified (menu item *Options/Display*)

Value	Range
0	no display
1	messages are displayed

- SERIAL_MODE

  With this command, one of the serial interfaces COM1/COM2 can be selected for communication (menu item *Options/COM1,COM2*)

Value	Range
1	COM1
2	COM2

- COMMUNICATION

  Cyclical communication is controlled with this command.

Value	Range
0	not active
1	active

- LANGUAGE

  With this command the menu language is set.

Value	Range
1	German
2	English

The English input data can be manipulated and stored. Changes to the name and unit can effected in the File English.tra.

The translation text English.tra corresponds to the follow format:

    ID no. ## name ## unit ++ comment

NOTE

Please ensure that the ID nos are arranged in numerial order.!

9

- Example

  The following example shows the initialisation file PCBASS.INI with its default setting and comments:

  ```
  ;File:      PCBASS.INI
  ;Date:      12.01.94
  ;
  error_message = 1        ;display of errors
  serial_mode = 1          ;COM1
  colour = 4               ;monochrome
  display_serial = 0       ;no message display
  communication = 1        ;cyclical communication
  language = 2             ;language English
  ```

1.3 Configuration file

The program PCBASS.EXE can edit various data sets.
A data set is organised in pages and contains all parameter elements: date, attribute, name, limits, unit. The program receives all the information about the parameters from the drives.

The configuration of a data set explains which parameter (ID no.) of which drive (address) is written on which page and in which line of the data set.

The configuration file makes it possible to edit this information independently of the program. If a new data set is to be created, the configuration file is used to specify the organisation of the pages.

The name of the configuration file is: PCBASS.CFG

As a text file it can be edited with a standard editor. The program PCBASS.EXE searches for the initialisation file in the current directory and interprets the commands. If no file is available, the program runs in its default setting.

Commands

No line of the Initialisation file contains more than one command. A command consists of the designation, the sign "=" and a number.
No differentiation is made between upper and lower case.
Comments start with a semi-colon ";" and are ignored.

> Example: set_page = 1   ;1st page
> This command selects the first page.

- ALL_ADDRESS
  In order to set the whole data set on one address the command

    all_address = <0 .. 254>

  is used. The address 0 has the meaning Broadcast, i.e. all drives irrespective of their address are addressed.

- SET_PAGE
  With the command

    set_page = <1 .. 50>

  one page of a data set is selected.
  The following commands (set_number, set_address, next_page) refer to this page number.

- NEXT_PAGE
  With the command

                    next_page

  the page number is increased by one. This makes configuration of successive pages easier.

- SET_NUMBER
  The 10 ID numbers n1 .. n10 of the parameters of one page are specified with the command

                    set_number = n1,n2,n3,n4,n5,n6,n7,n8,n9,n10.

  The numbers range between 0 and 65535. The value "0" means that no parameter is displayed in the respective line of the page (empty line).

- SET_ADDRESS
  The 10 addresses a1 .. a10 of the parameters of one page are specified with the command

                    set_address = a1,a2,a3,a4,a5,a6,a7,a8,a9,a10.

  The address values range between 0 and 254. The value "0" has the meaning Broadcast, i.e. all drives irrespective of their address are addressed.

- Example

  ```
  ;configuration BUM6
  ;25.01.94
  all_address = 0                                               ;Broadcast
  set_number = 110,111,112,113,114,115,116,117,118,119,120      ;1st page
  next page
  set_number = 200,201,202,0,0,0,0,300,301,302                  ;2nd page
  set_page = 5
  set_number = 10,10,10,10,10,0,0,0,0,0                         ;5th page
  set_address = 5,6,7,8,9,0,0,0,0,0                             ;Addresses
  ```

1.4 Error messages

Error messages if no communication takes place

If no communication takes place and a data exchange between the controller and the PC is to be carried out, the operation program displays the Timeout Error.

```
┌──────────────────────────────────────────────────────────────────┐
│                              Info                                  │
│                    ┌─────── Error ───────                          │
│  Error communication : 32768    Timeout error                      │
└──────────────────────────────────────────────────────────────────┘
```

After that the following should be checked:

- controller switched on

- connection between PC and controller

- serial interface at PC ⇔ selected interface in PCBASS

- reduce disturbance in the circuit

- compare drive address ⇔ PCBASS address

Error messages when altering parameter values

- In trying to change the value of a parameter only serving as display, the following error message will appear:

```
┌──────────────────────────────────────────────────────────────────┐
│                              Info                                  │
│                    ┌─────── Error ───────                          │
│  Error communication : 26676    Datum not alterable                │
└──────────────────────────────────────────────────────────────────┘
```

- If the input parameter value is greater than max. value or smaller than min. value following error message will appear:

```
┌──────────────────────────────────────────────────────────────────┐
│                              Info                                  │
│                    ┌─────── Error ───────                          │
│  Error communication : 26678    Datum smaller than  min. value     │
└──────────────────────────────────────────────────────────────────┘
```

```
┌──────────────────────────────────────────────────────────────────┐
│                              Info                                  │
│                    ┌─────── Error ───────                          │
│  Error communication : 26678    Datum greater than  max. value     │
└──────────────────────────────────────────────────────────────────┘
```

2 UP-/DOWNLOAD (VERSION 2.10)

The PC program UPDOWN.EXE is intended for the exchange of complete drive data sets between the drive and the PC.

NOTE
The program has not been implemented in the BUS 6 T Controller.

The communication is via the serial interface RS232 of the PC.
For the communication between the PC and the drive the same cable as for the operation program can be used.
All files created by the program are text files which can be printed and edited by the user.

2.1 Operation of the program

WARNING
The download must only be carried out when the drive is locked.

- Starting the program

  If the program UPDOWN.EXE is called up without a parameter, the following short instruction appears on the screen:

```
                 Û   BAUMÜLLER NÜRNBERG GmbH   Û

    Parameter-Upload und -Download für digitale Drehstrom-Antriebe   V02.01

UPDOWN [/fDatei] [/u] [/d] [/c] [/a] [/v] [/b] [/e] ["/i"]

    /fDatei  Datei mit Pfad- und Laufwerksangabe
    /u       Parameter-Upload:   PC (Datei) <-- Antrieb
    /d       Parameter-Download: PC (Datei) --> Antrieb
    /c       COM-Port:       /c1 ... /c4      Default-Port    = COM1
    /a       Antriebsadresse: /a0 ... /a254   Default-Adresse = 0
    /v       Komm.-Versuche:  /v1 ... /v20    Default-Anzahl  = 5
    /b       ID-Nr.-Beginn:   /b1 ... /b65534 Default-Beginn  = 1
    /e       ID-Nr.-Ende:     /e1 ... /e65534 Default-Ende    = 500
    "/i"     Info für die Dokumentation der erzeugten Dateien
             z.B.  "/iFirma: X, Anlage: Y, Antrieb: Z"
```

2.2 Parameters

The input sequence of the parameters is not specified. In the case of multiple input only the last parameter is considered.

NOTE
In order to avoid errors during download, parameter M, Source of communication (ID no. 126) = 1, must be set before carrying out an upload.

Parameter /f

(required for upload and download)

Parameter /f gives the program the name of a file which is to be used for carrying out the upload or download.

If no drive or path is indicated, the file is created or searched in the directory which contains the program UPDOWN.EXE.

The extension is not specified and can be freely selected.

NOTE
Existing files are overwritten during the upload.

Parameter /u

Parameter /u selects the parameter upload. The parameters are read from the drive and written into the selected file.

The following files are created during the upload:

- The file indicated in /f, together with the extension specified by the user.

  This text file contains the complete data set of the drive with detailed documentation of the parameter definition.

- A file named as indicated in /f together with the extension .LST

  This text file, which can also be printed and faxed, contains a more compact representation of the drive parameters.

NOTE
This file is not suitable for the download.

- A file named as indicated in /f together with the extension .ERR

  This text file documents all errors which occur during the upload.

Parameter /d

Parameter /d selects the parameter download. The parameters are read from the specified file and written into the drive.

The following files are created during the download:

- A file named as indicated in /f together with the extension .ERR

  This text file documents all errors which occur during the download.

Parameter /c

The serial interface of the PC can be selected with parameter /c. The possibilities are COM1 to COM4.

NOTE
Make sure that the serial interface selected is available on the PC since the program does not carry out any further checks to that effect.

If the parameter is not explicitly stated, the program carries out the communication via COM1.

Parameter /a

The message address can be set with parameter /a.

NOTE
Make sure that the drive has the same address. Otherwise no communication is possible.

If the parameter is not explicitly stated, the program carries out the communication with the message address 0. With this address all drives can be contacted, even if a different address is set for them.

Parameter /v

The number of communication attempts can be set with parameter /v. In an area of heavy disturbance it may become necessary to increase this value. Usually, however, the five communication attempts preset should be sufficient to guarantee a correct data exchange.

Parameter /b

(required for upload only)

The number of the first parameter to be read can be set with parameter /b. This number must always be below the number of the last parameter [/e] to be read.

Parameter /e

(required for upload only)

The number of the last parameter to be read can be set with parameter /e. This number must always be above the number of the first parameter [/b] to be read.

Parameter "/i"

(required for upload only)

Parameter /i serves to deposit additional information in the file headers of all newly created files. This function is intended for the additional documentation of data sets which were received from the drive.

This parameter, including its comments, must be limited by inverted commas.

2.3 Compatibility with version 1.x

The upload files of version 1.x can not be not be uploaded to the drive by version 2.1.

Procedure for using upload files created with version 1.x:

- download the files to the drive with version 1.x

- upload the data from the drive with version 2.1

By using the route over the drive, the upload files of version 1.x can be converted.

2.4 Error messages

The errors occuring during the upload and the download are saved in the Error file (*.ERR).

Only error-free uploads or downloads can be used.

The following should be checked if errors occur:

- controller switched on

- connection between PC and controller

- serial interface at the PC ⇔ interface set for up/download

- reduce disturbance in the circuit

- parameter M source of communication (ID no. 126) = 1

- compare drive address ⇔ up/download address
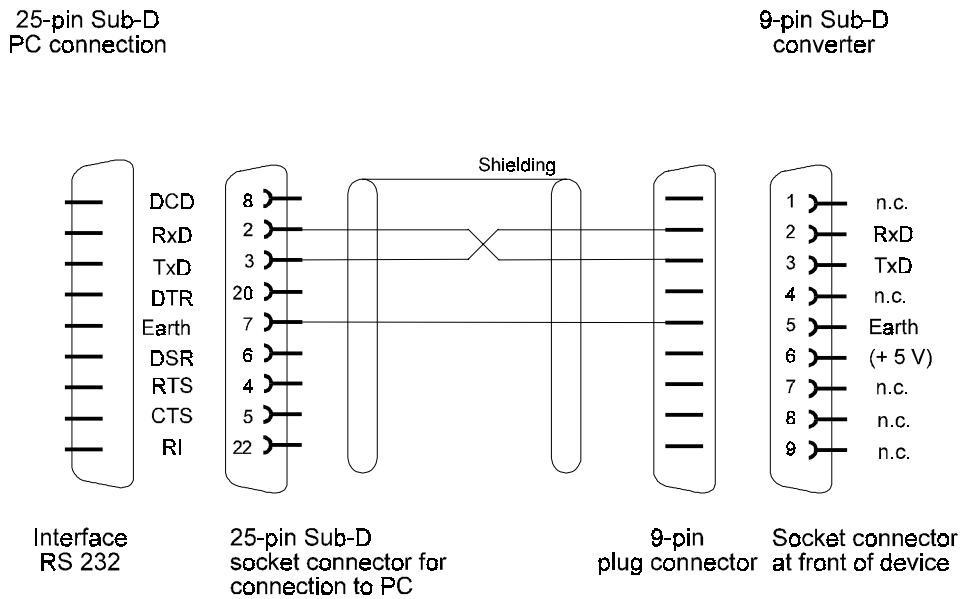
3 INSTALLATION

3.1 Serial connection cable for PC

The operation software PCBASS and UP-/DOWNLOAD needs an identical connection cable:
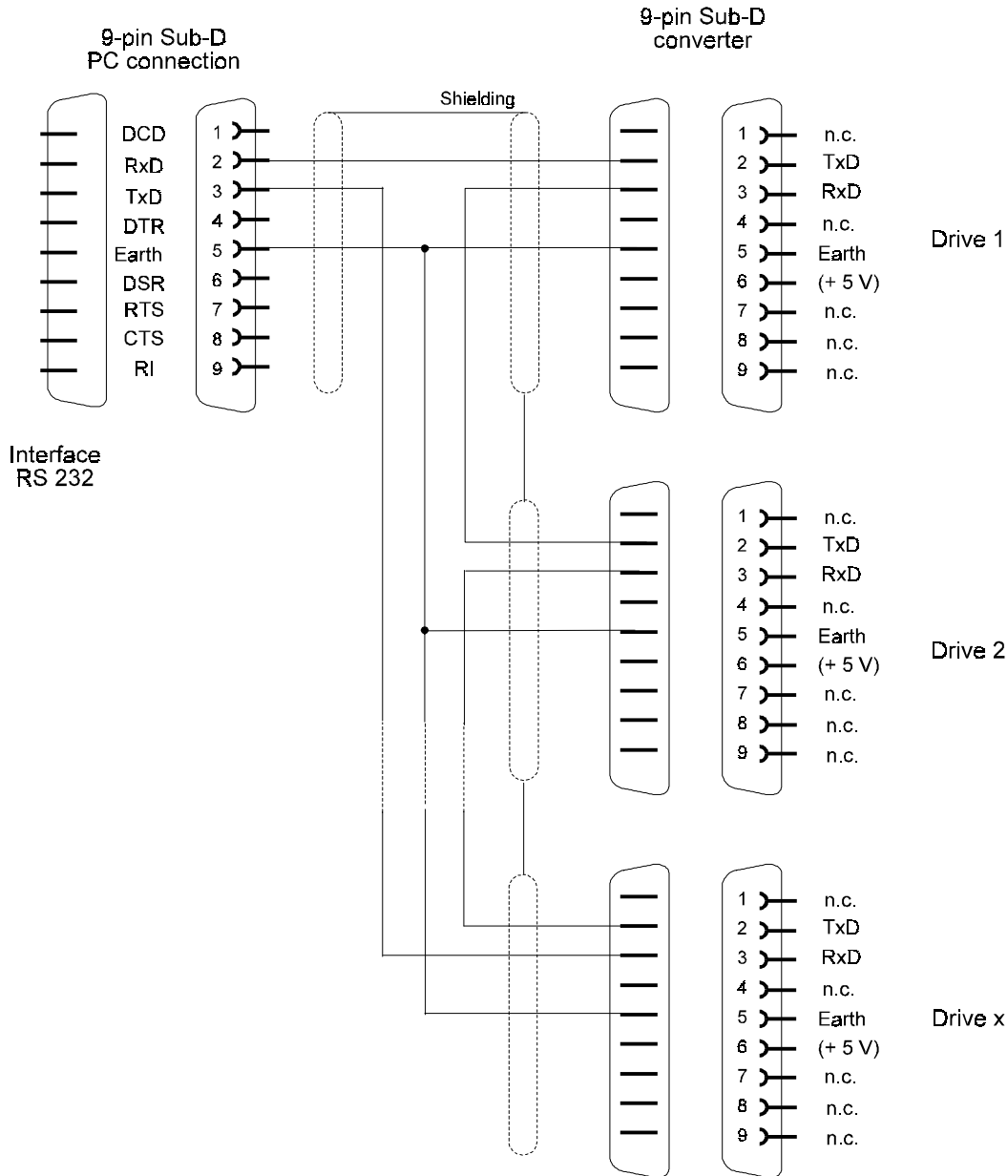
- 9-pin PC connection (Part no. 1901 8006)
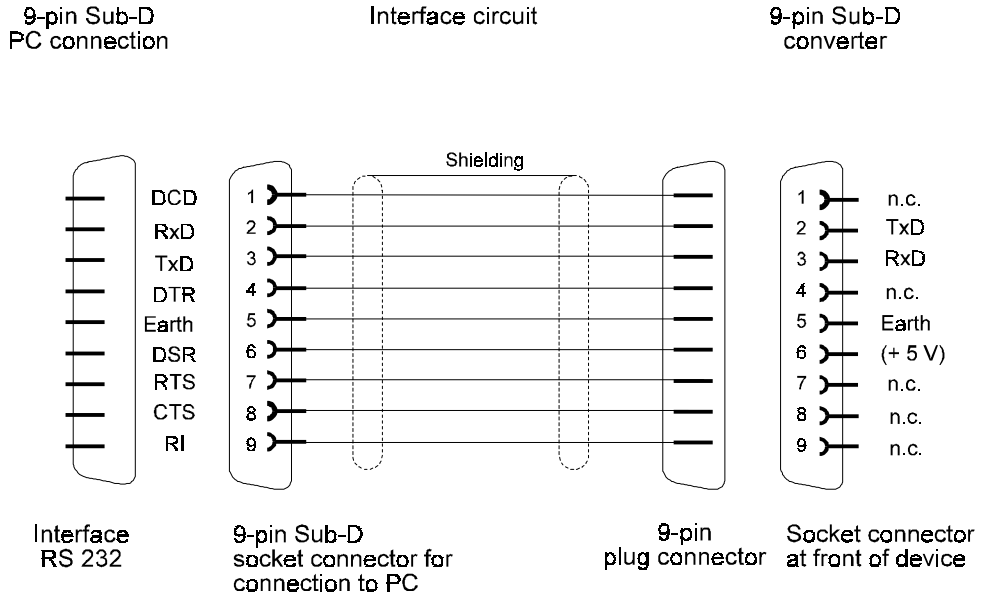
- 25-pin PC connection (not available)

3.2 Wiring diagram of ring circuit RS 232

If several converters (up to 16) are included in one ring, the drives must be connected as follows:

If several converters are included in one ring, a code number must be assigned to the various drives. The code number or address of the drive is set in binary code via a DIP switch.

3.3 Accessories

Part no.

- PC cable
  RS 232   1901 8006