

# **Collamat® 3600/6600**

## Serial Communication RS232

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## Important Warnings



Before installing and operating the Collamat® 3600/6600 read following safety instructions:

- The labeler C3600/C6600 is exclusively determined for labelling goods.
- The installation of a Collamat® 3600/6600 has to be done by a trained specialist. For this you have to consider the national specific regulations of
  - prevention of accidents
  - mechanical stability
  - construction of electrical and mechanical systems
  - noise suppression
- Take notice to the technical data of the Collamat® 3600/6600. Especially the environment conditions must be observed.
- The operation of the Collamat® 3600/6600 must be done by trained personnel.
- In case of non-authorized modification guarantee will fall.
- Before connecting non-standard products ask your competent technical supporter.

## Danger Indications

- The safety symbols and danger advices on the Collamat® 3600/6600 and in this manual must strictly be observed.
- Before connecting or disconnecting the labeler to or from the mains, it must be switched off.
- The labeler C3600/C6600 may only be opened by authorized personnel.
- Before opening the labeler C3600/C6600, it must be separated from the mains power.
- It exists danger of pinching hairs, jewelry, ties, clothes etc. into the traction unit
- It exists danger of injury by cutting fingers in the area of the paper web.
- It exists danger of injury in the area of the dancer of the unwinder of the Collamat® 3600/6600.
- It exists danger of injury in the area of the paper stockcontroller of the Collamat® 3600/6600.
- For operation on the Collamat® 3600/6600 the operating personnel must keep to a safely place to prevent injury from the products being labeled.

## Symbol descriptions

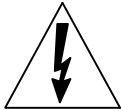


**ATTENTION**

Indicates danger of damaging the Collamat® 6600 or other system components, with a potential consequential danger of injuries.

**DANGER**

Indicates an immediate hazard for persons.



**DANGER**

Shock hazard due to high voltage at component.



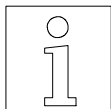
**DANGER**

Hazard due to high temperature component.



**ATTENTION**

ESD warning (Electro Static Discharge). The PC boards or component may only be touched in an electrostatically protected environment.



**NOTE**

Important or additional information to Collamat® 6600 or to the documentation.

## **Introduction**

### **General informations**

This documentation describes the serial communication with the Collamat<sup>®</sup> 3600/6600 on a PC or Laptop running under Windows 3.1, Windows 3.11 and Windows 95.

### **Prevention of accidents**

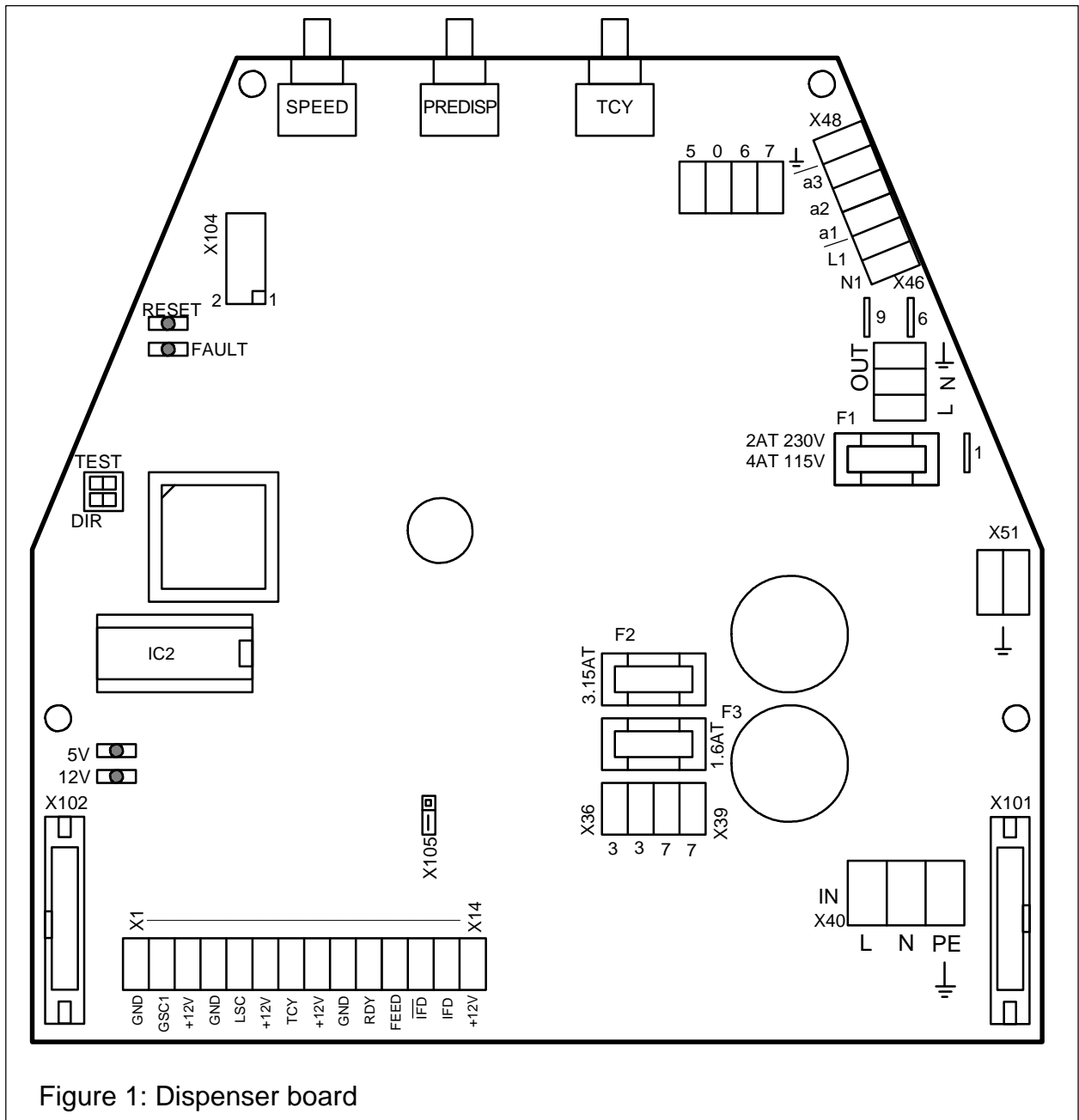
While installing and connecting the Collamat<sup>®</sup> 6600 take care that the signal cables and power cables can't become obstacles. The cables must be placed and installed according to the national safety requirements. Take care that the signal cables are not placed beneath power cables.

The mains switch and the control elements must be easily accessible.

### **Noise suppression**

The dispenser C6600 is shielded according to the CE directives. Only cables which are certificated by Collamat Stralfors AG may be used for connecting the dispenser to the peripheral units and the mains power. Additional peripheral units must be connected to the auxiliary mains terminal of the dispenser. These assemblies must be certificated by Collamat Stralfors AG.

# Technical description C3600



## DIL-switches

The dispenser board contains two DIL-switches. These switches are used to select different operating modes. The following table and figure 2 show the functions and the positions of the DIL-switches:

Switch	Function	Off	On
DIR	Turning direction of the motor	Right	Left
TEST	Labelingmode/ Testmode	Labelingmode	Testmode

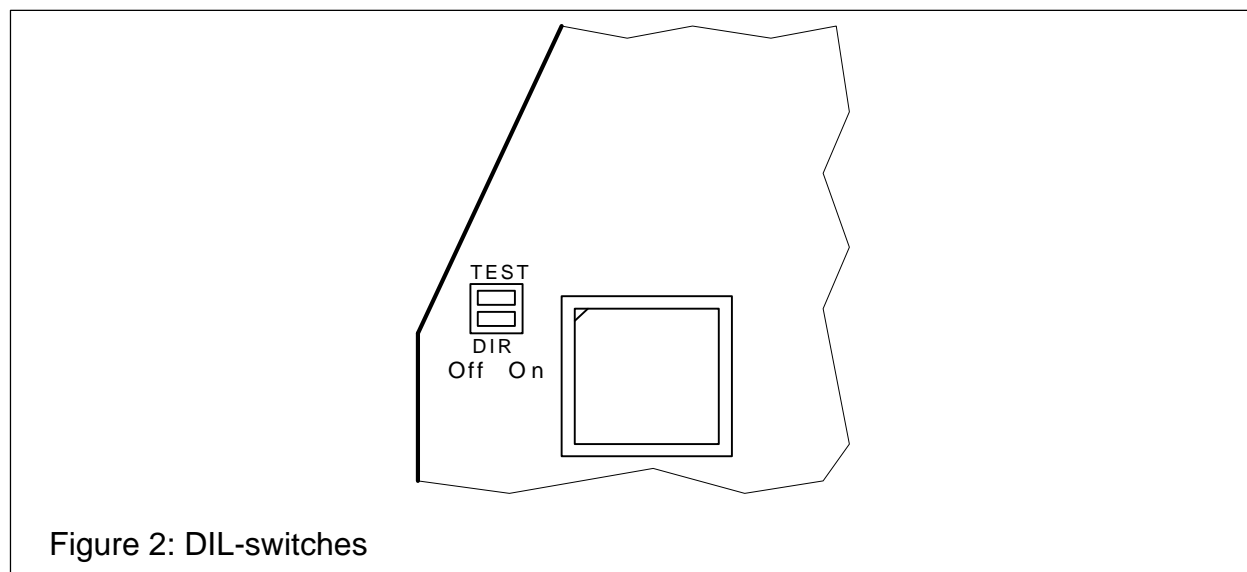


Figure 2: DIL-switches

### DIL-switch DIR

This DIL-switch selects the turning direction (right or left) of the traction motor.

### DIL-switch TEST

This DIL-switch selects the testmode. For further informations to the testmode, please read the chapter **Testmode**.

## How to connect a goods scanner

The goods scanners and incremental encoders are connected to the GSC1 and GSC2 connectors. Figure 3 shows the connection of the standard Collamat Stralfors AG IR goods scanner:

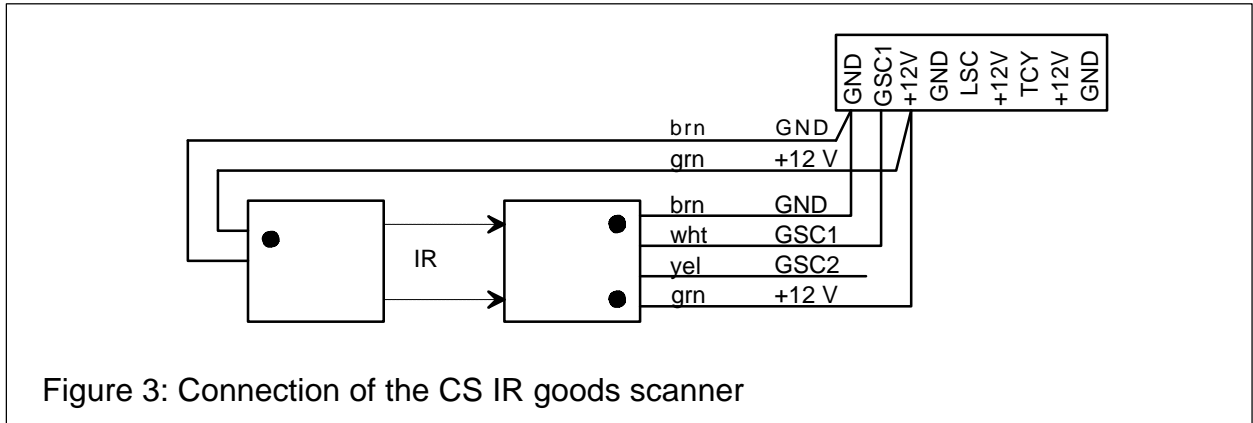
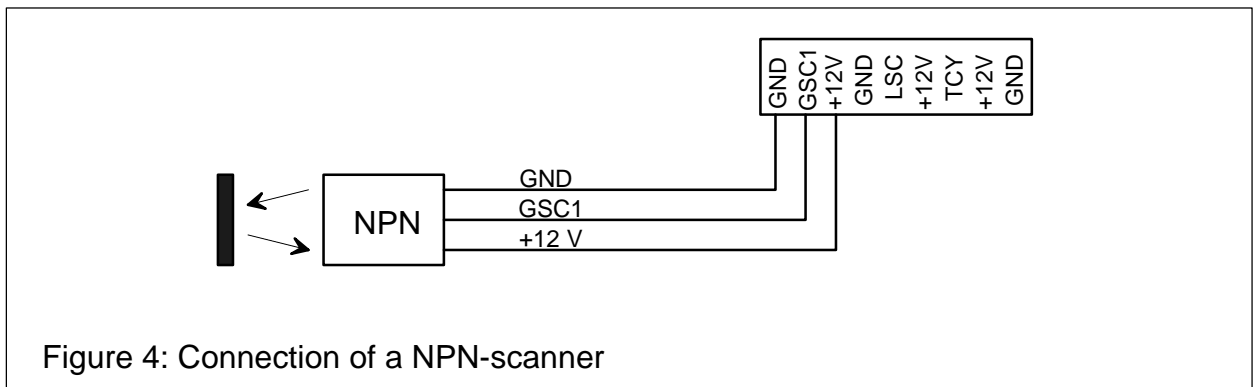


Figure 4 shows the connection of a NPN-scanner:





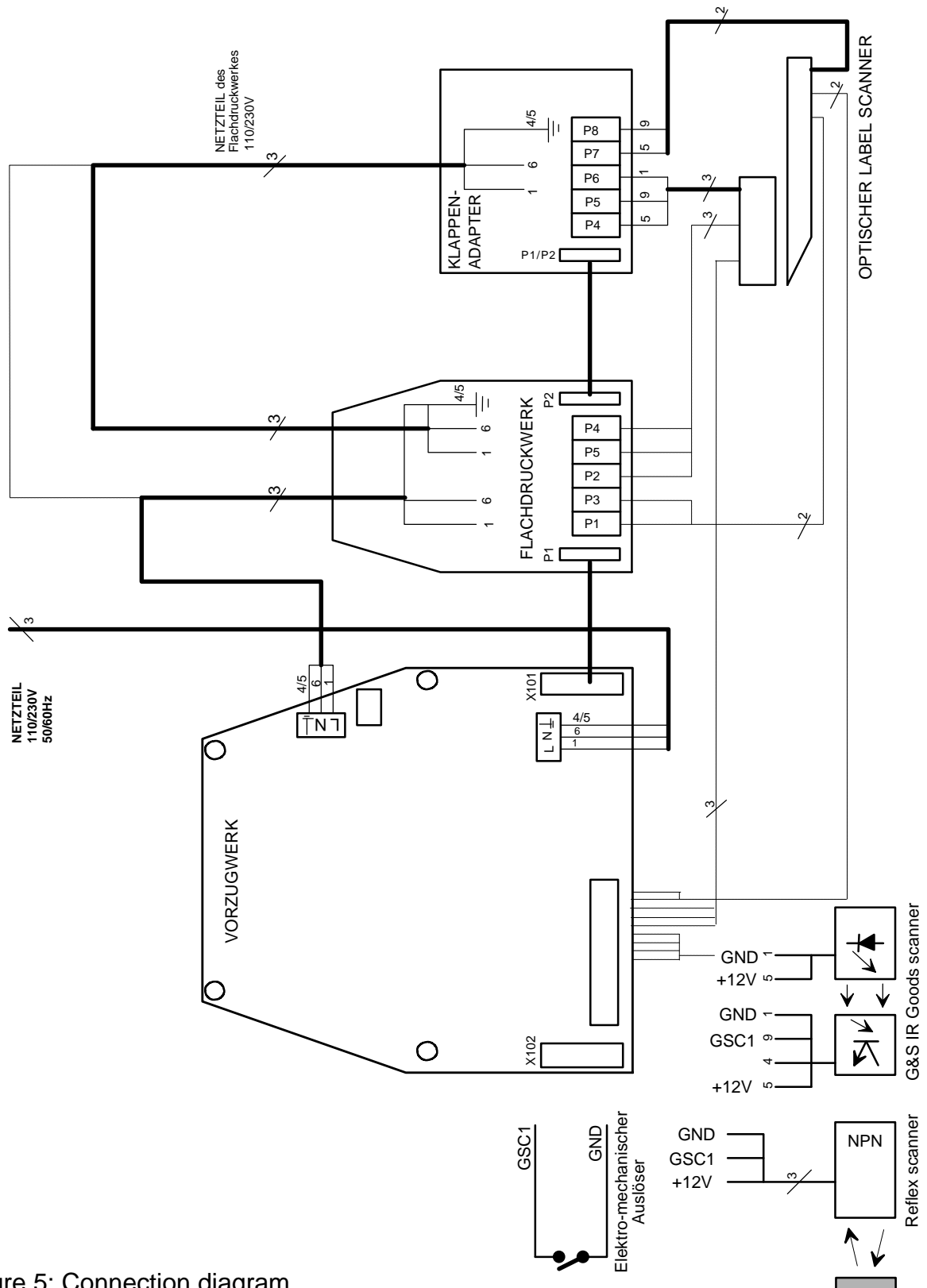


Figure 5: Connection diagram

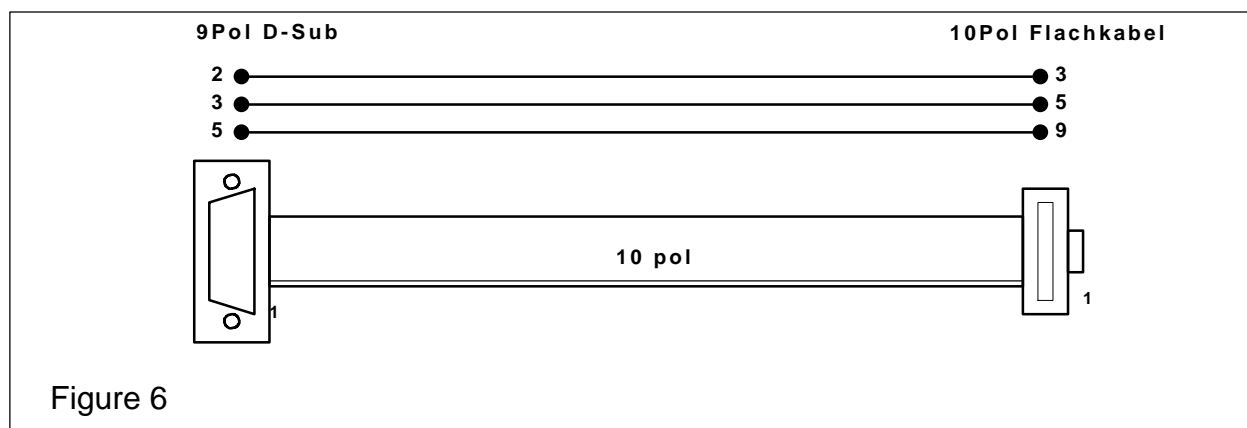
## Testmode

The firmware of the Collamat® 3600 has a standard test and diagnostic routine. If the DIL-switch TEST is switched on while turning the power on, the firmware starts the test and diagnostics routine. See also figure 2.

In the testmode, the motor is started and stopped periodically with the speed, set on the SPEED potentiometer. If there are any labels threaded through the Collamat® 3600, the labels will be dispensed periodically.

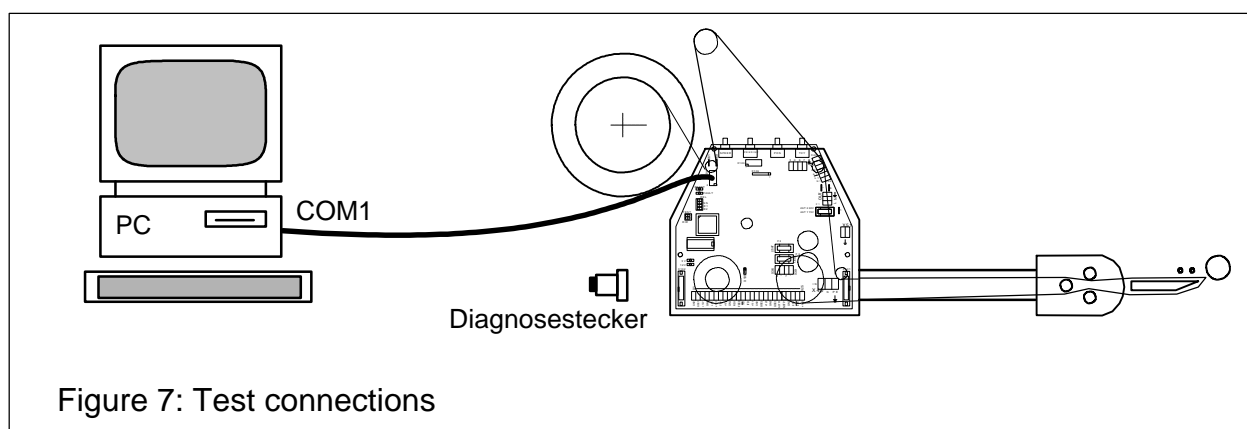
In the testmode, the Collamat® 3600 can be controlled by an ASCII-terminal or a PC with a terminal emulation software. The communication with the Collamat® will be done through the connector X104 using the RS232 protocol. The test software is menu driven and self explaining. The user language is English.

To communicate with a PC, a serial communication cable is used. The figure 6 shows the electrical connections of the serial cable:



Communication parameters	Terminal settings
9600 Baud, 8 Bit, 1 Stop Bit, No Parity	TTY, Text

Figure 7 shows how to connect the Collamat® 3600 to a PC:



## Test software

When the Collamat® 3600 is connected to the terminal, it must be switched on. At this moment the DIL-switch TEST must be set to on. The traction unit begins to turn with the speed set on the SPEED potentiometer. The terminal shows the following message:

```
COLLAMAT 3600  V1.01

Motor intervall test.  Use spacebar to leave
```

Pressing the spacebar stops the motor intervall test. Now the following help menu will be displayed:

```
Helpmenue for C3600 Testprogram
-----
H  :  Help
M  :  Motortest
N  :  Motor intervall test
B  :  BUS-signal selftest
S  :  Signals display
D  :  DIL-switch settings
P  :  Potentiometer settings
V  :  Firmware Version

Select Testfunctions with the Keys H,M,N,B,S,D,P,V
>
```

The testfunctions can be called with the appropriate keys. All testfunctions can be stopped with the spacebar.

### Motortest

The **Motortest** is used for measuring the phase currents of the motor. The motor turns with the speed set on the SPEED potentiometer.

```
>m
Motortest. Use spacebar to leave
```

### Motor intervall test

The **Motor intervall test** tests the labelling functions of the Collamat® 3600. If a label web is threaded through the dispenser, labels will be dispensed periodically with the speed set on the SPEED potentiometer.

```
>n
Motor intervall test.  Use spacebar to leave
```

## BUS-signal selftest

The BUS-signal selftest tests all in- and outputs of the Collamat® signalbus. For this test a diagnostic connector (see figure 8) must be plugged into the busconnector X102 (left side).



**Attention:**

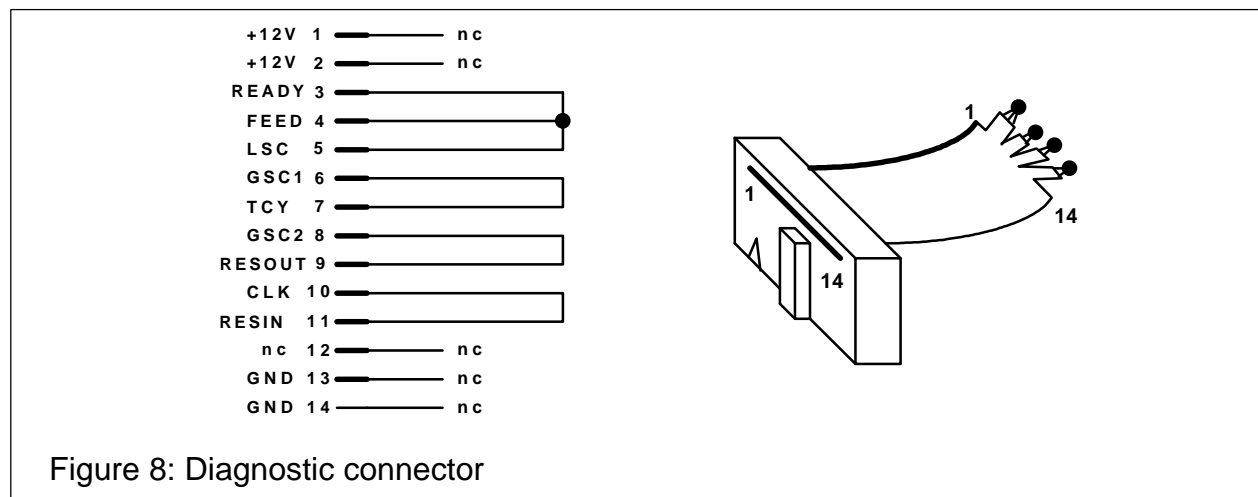
To avoid damage of peripheral units or sensors, all sensors and bus-cables must be removed from the connectors.

```
>b
BUS-signal selftest
Testing FEED+LSC.....OK
Testing FEED+READY....OK
Testing TCY+GSC1.....OK
```

This test will display faulty signalpairs on the terminal screen. If the test is started without the diagnostic connector the following message is displayed:

```
>b
BUS-signal selftest
Testing FEED+LSC.....not OK !
Testing FEED+READY....not OK !
Testing TCY+GSC1.....not OK !
```

Figure 8 shows the schematic diagram of the diagnostic connector:



## Signal display

This test displays the levels of the input signals. It is used to test the function of the sensors and input circuits.

```
>s  
Signals display. Use spacebar to leave  
GSC1  READY LSC  FAULT  
OFF   OFF   OFF   OFF
```

## DIL-switch settings

This test shows the position of the DIL-switches. It is used to test the function of the DIL-switches.

```
>d  
DIL-switch settings. Use spacebar to leave  
TEST  DIR  
ON    OFF
```

## Potentiometer settings

This test shows the position of the potentiometers. It is used to test the function of the potentiometers.

```
>p  
Potentiometer settings. Use spacebar to leave  
SPEED  PRE.  TCY  
0631   0057  0187
```

## Firmware Version

This test displays the firmware version number and its release date.

```
>v  
Firmware Version  
  
COLLAMAT 3600  
Version   : V1.01  
Date      : 28. Nov. 1996
```

# Technical description C6600

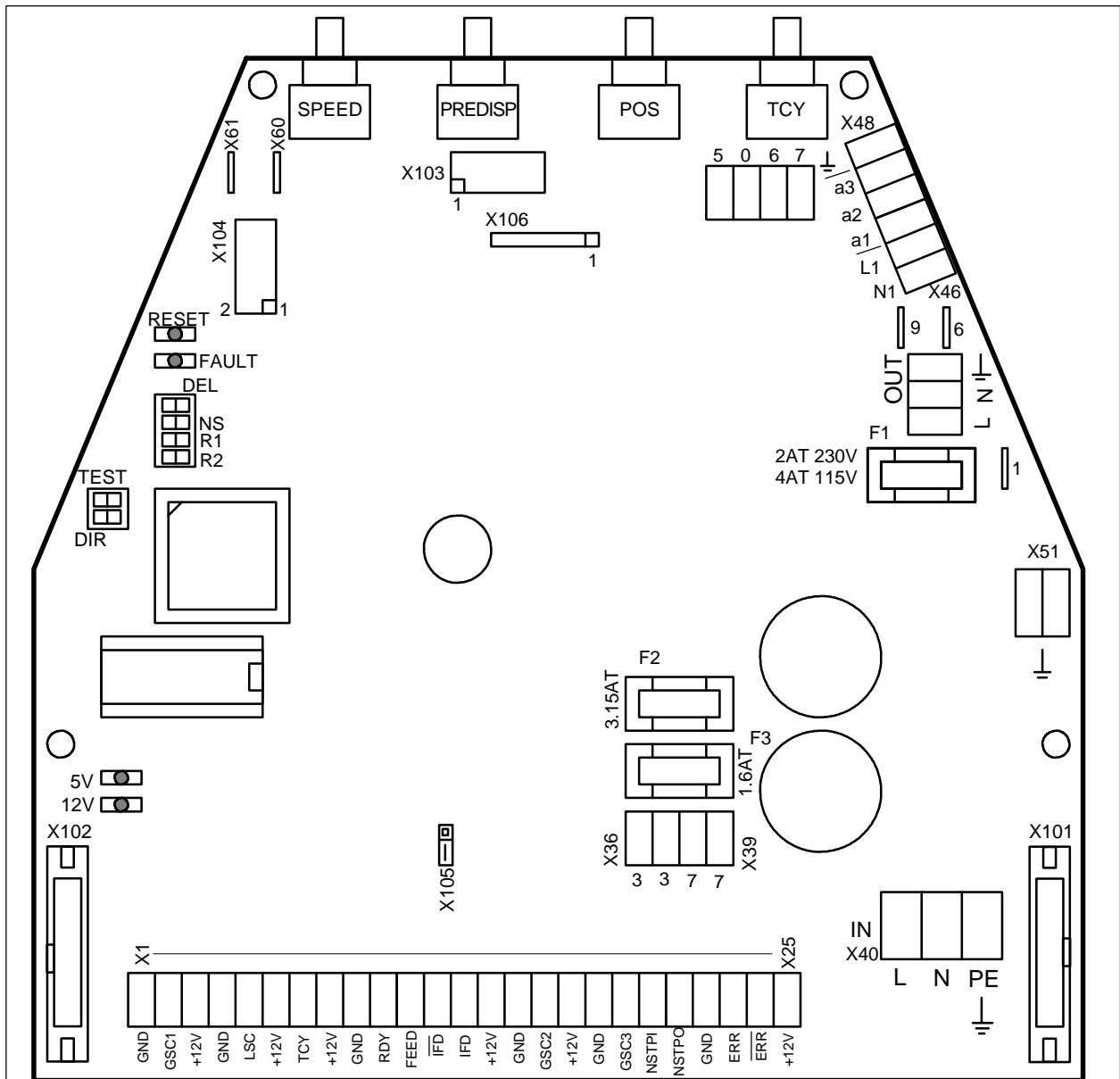
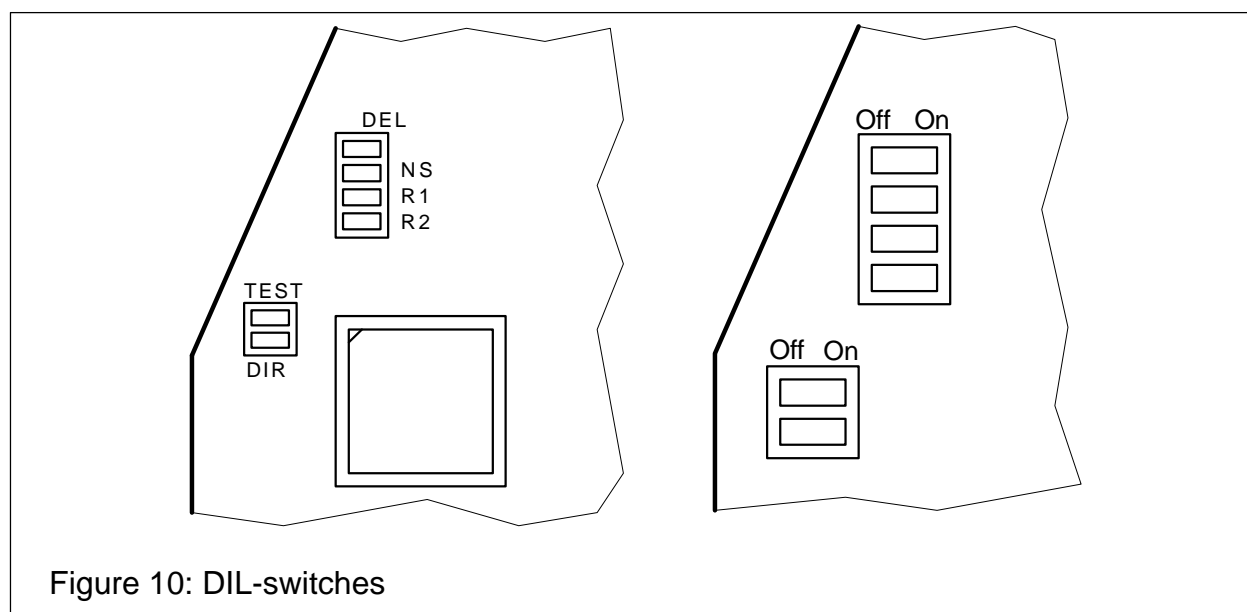


Figure 9: Dispenser board

## DIL-switches

The dispenser board contains six DIL-switches. These switches are used to select different operating modes. The following table and figure 10 show the functions and the positions of the DIL-switches:

Switch	Function	Off	On
DIR	Turning direction of the motor	Right	Left
TEST	Labelingmode/ Testmode Slave in Nonstopmode	Labelingmode	Testmode
DEL	Delayed predispensing	Normal mode	Delayed predispensing
NS	Nonstop	Normal mode	Nonstopmode Test <b>On</b> : <b>Master</b> Test <b>Off</b> : <b>Slave</b>
R1	Position/GSC-Suppression	Position	GSC-Suppression
R2	Potentiometer range Incremental encoder	Normal Off	Programmed Programmed



### DIL-switch DIR

This DIL-switch selects the turning direction (right or left) of the traction motor.

### DIL-switch TEST

This DIL-switch selects the testmode. For further informations to the testmode, please read the chapter **Testmode**.

### **DIL-switch DEL**

This DIL-switch selects the mode of delayed predisensing. In this mode, the predisensing is delayed, until the moment when the product has left the goods scanner's position.

### **DIL-switch NS**

This DIL-switch selects the Nonstopmode. In the Nonstopmode two Collamat® 6600 can be used to work in a zero downtimemode. For further information to the Nonstopmode, please read the chapter **Nonstopmode**.

### **DIL-switch R1**

This DIL-switch selects the function of the POSITION-potentiometer. Switched off the potentiometer has the normal POSITION-function. Switched on, the potentiometer is used to adjust a GSC1-suppression. The working range of the suppression then is the same as in the POSITION-mode.

### **DIL-switch R2**

This DIL-switch selects the working range of the potentiometers. For further informations, please read the chapter **Testmode**. The factory setting of the potentiometers is the normal working range.

The function of the SPEED potentiometer can be changed in the testmode. If the DIL-switch R2 is switched on, the potentiometer SPEED can be used to fineadjust the steprate of an incremental encoder in the range of  $\pm 10\%$ . The speed is then measured with an incremental encoder. See also chapter **Testmode** and **Incremental encoder**.



## How to connect a goods scanner

The goods scanners and incremental encoders are connected to the GSC1 and GSC2 connectors. Figure 11 shows the connection of the standard Collamat Stralfors AG IR goods scanner:

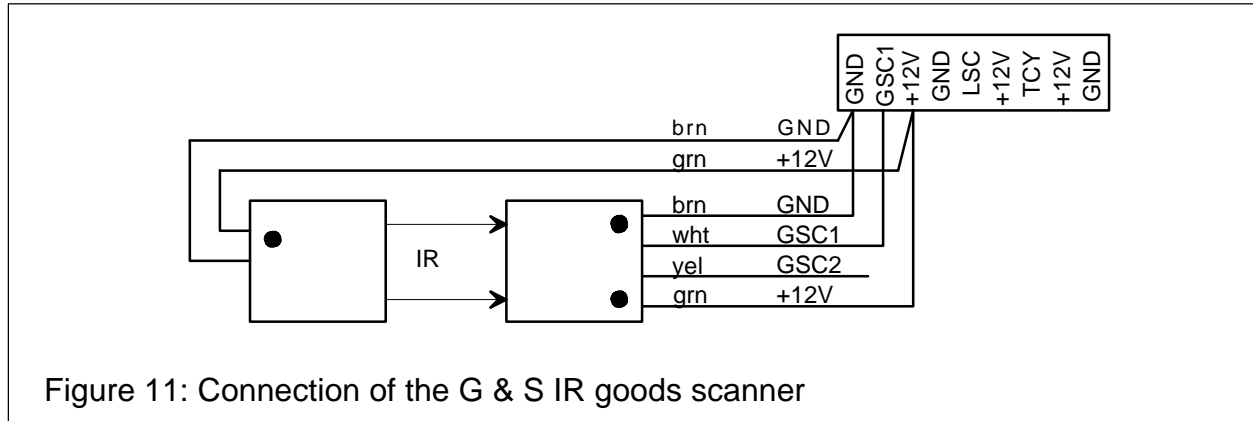


Figure 12 shows the connection of a NPN-scanner:

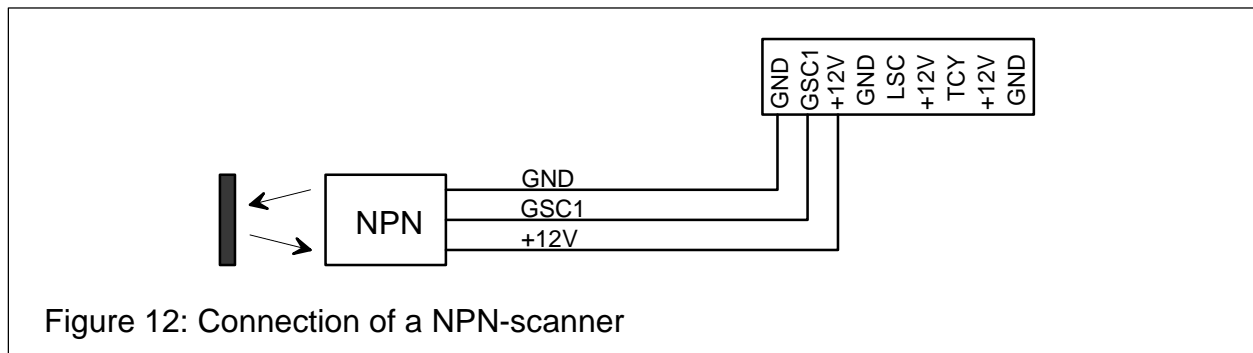
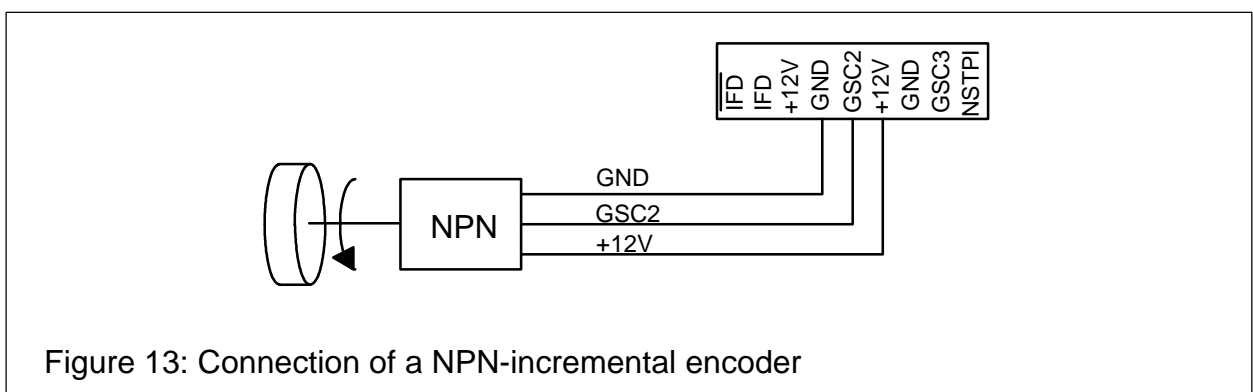


Figure 13 shows the connection of a NPN-incremental encoder:



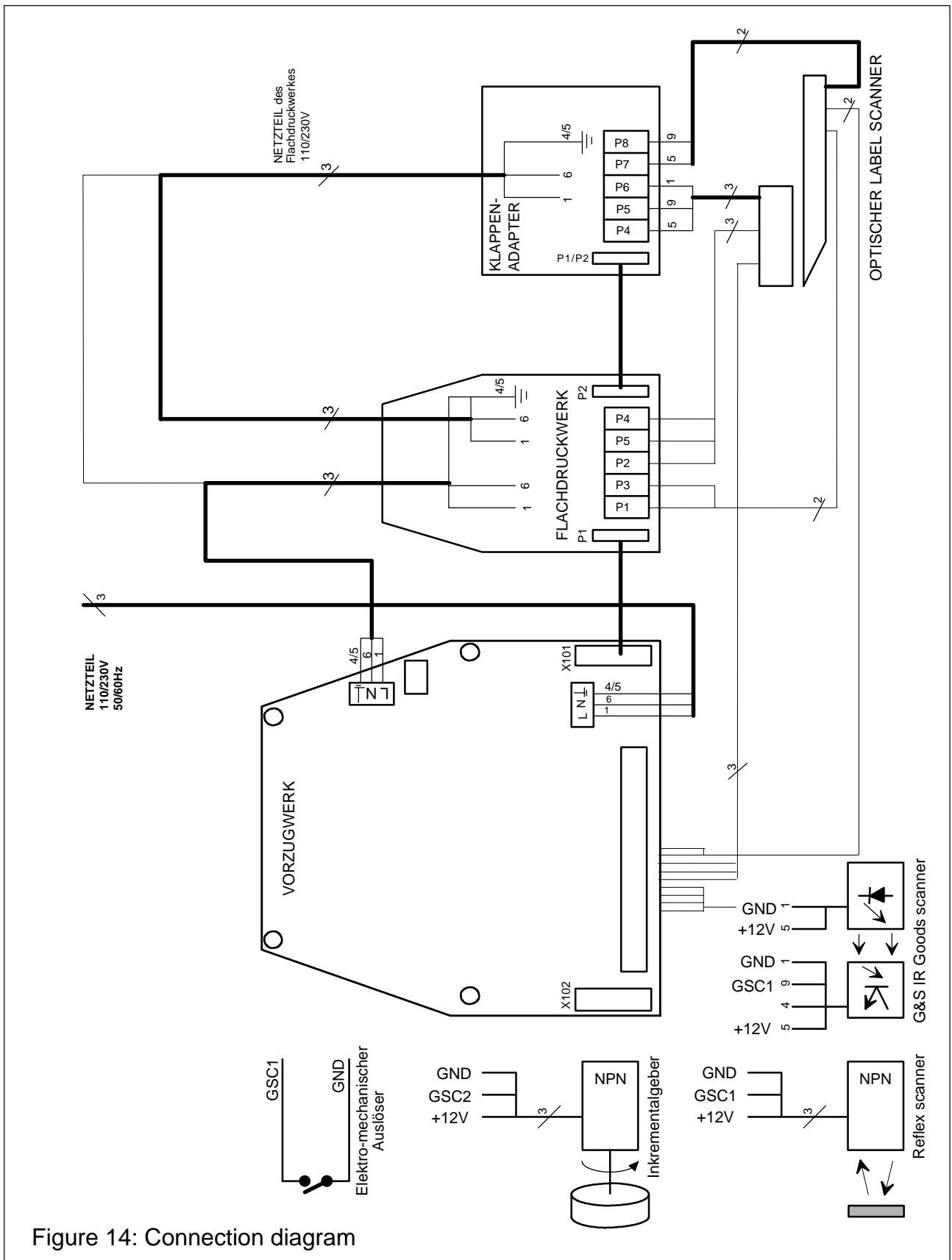


Figure 14: Connection diagram

## Testmode

The firmware of the Collamat® 6600 has a standard test-, diagnostic- and programming routine. This routines are called when the DIL-switch TEST is set to on at power on. In the testmode, the motor is started and stopped periodically with the speed, set on the SPEED potentiometer. If there are any labels threaded through the Collamat® 6600, the labels will be dispensed periodically. The DATA-HOLD switch is supervised. Dependent to its position, the potentiometer values are scanned or stored.

In the testmode, the Collamat® 6600 can be controlled by an ASCII-terminal or a PC with a terminal emulation software. The communication with the Collamat® will be done through the connector X104 using the RS232 protocol. The test software is menu driven an self explaining. The user language is English.

To communicate with a PC a serial communication cable is used. The figure 15 shows the electrical connections of the serial cable:

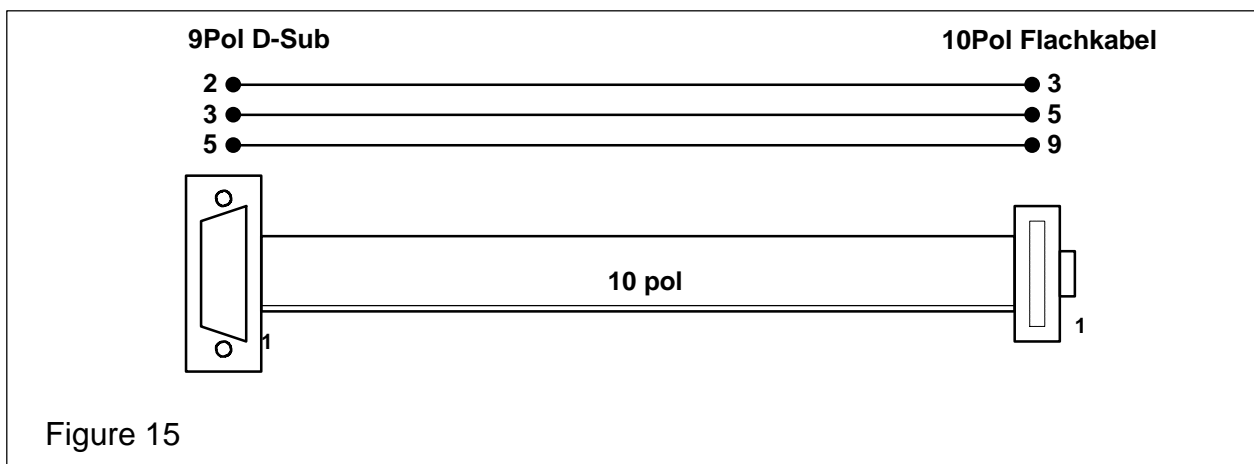


Figure 15

Communication parameters	Terminal settings
9600 Baud, 8 Bit, 1 Stop Bit, No Parity	TTY, Text

Figure 16 shows how to connect the Collamat® 6600 to a PC:

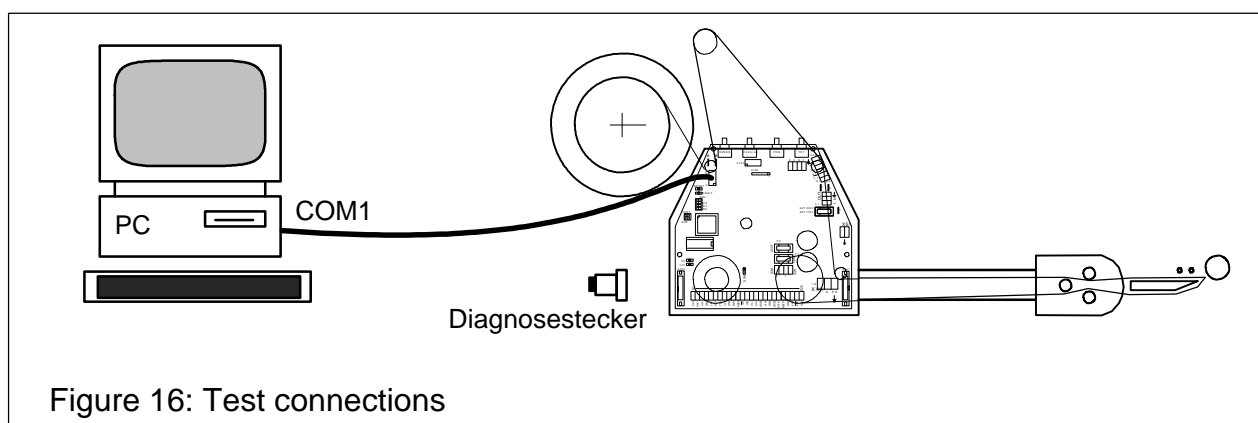


Figure 16: Test connections

When the Collamat® 6600 is connected to the terminal, it must be switched on. At this moment the DIL-switch TEST must be set to on. The traction unit begins to turn with the speed set on the SPEED potentiometer. The terminal shows the following message:

```
COLLAMAT 6600 V1.011

Motor intervall test. Use spacebar to leave
```

Pressing the spacebar stops the motor intervall test. Now the following help menu will be displayed:

```
Helpmenue for C6600 Testprogram
-----
H : Help
M : Motortest
N : Motor intervall test
B : BUS-signal selftest
S : Signals display
D : DIL-switch settings
O : Potentiometer parameters
P : Potentiometer settings
I : Incrementalencoder
E : EEPROM Data
V : Version and Serial-No

Select Testfunctions with the Keys H,M,N,B,S,D,O,P,I,E,V
>
```

The testfunctions can be called with the appropriate keys. All testfunctions can be stopped with the spacebar.

### **Motortest**

The **Motortest** is used for measuring the phase currents of the motor. The motor turns with the speed set on the SPEED potentiometer.

```
>m
Motortest. Use spacebar to leave
```

## Motor intervall test

The **Motor intervall test** tests the labelling functions of the Collamat® 6600. If a label web is threaded through the dispenser, labels will be dispensed periodically with the speed set on the SPEED potentiometer.

```
>n
Motor intervall test. Use spacebar to leave
```

## BUS-signal selftest

The BUS-signal selftest tests all in- and outputs of the Collamat® signalbus. For this test a diagnostic connector (see figure 17) must be plugged into the busconnector X102 (left side).



### Attention:

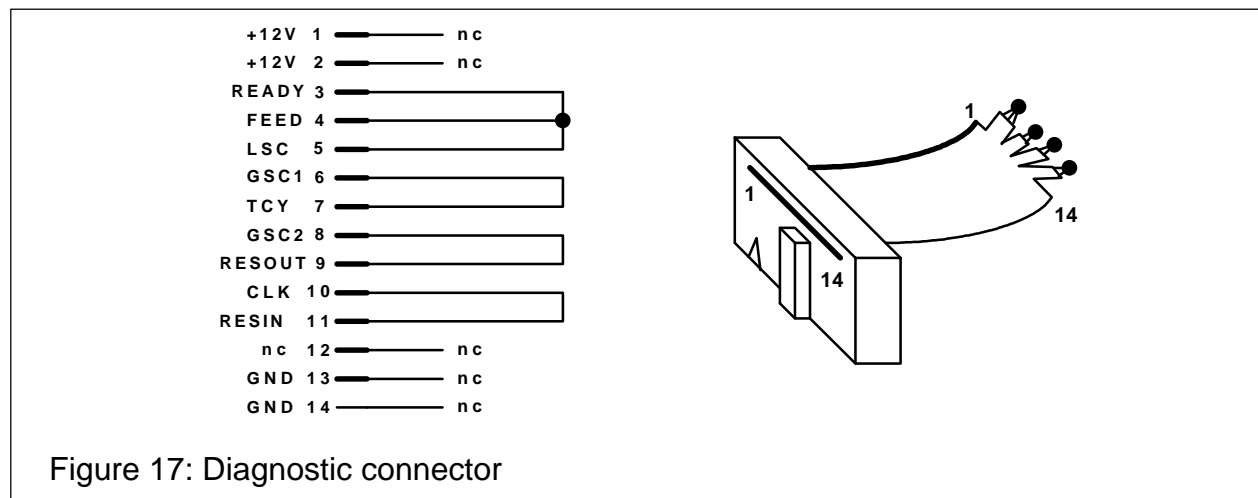
To avoid damage of peripheral units or sensors, all sensors and bus-cables must be removed from the connectors.

```
>b
BUS-signal selftest
Testing FEED+LSC.....OK
Testing FEED+READY....OK
Testing TCY+GSC1.....OK
Testing NSTPO+GSC2....OK
Testing CLK+NSTPI.....OK
ERROR and IFEED signals blink until spacebar is pressed
```

This test will display faulty signalpairs on the terminal screen. If the test is started without the diagnostic connector the following message is displayed:

```
>b
BUS-signal selftest
Testing FEED+LSC.....not OK !
Testing FEED+READY....not OK !
Testing TCY+GSC1.....not OK !
Testing NSTPO+GSC2....not OK !
Testing CLK+NSTPI.....not OK !
ERROR and IFEED signals blink until spacebar is pressed
```

Figure 17 shows the schematic diagram of the diagnostic connector:



## Signal display

This test displays the levels of the input signals. It is used to test the function of the sensors and input circuits.

```
>s
Signals display. Use spacebar to leave
GSC1  GSC2  GSC3  READY  LSC  NSTPI  FAULT
OFF   OFF   OFF   OFF   OFF  OFF   OFF
```

## DIL-switch settings

This test shows the position of the DIL-switches. It is used to test the function of the DIL-switches.

```
>d
DIL-switch settings. Use spacebar to leave
TEST  DIR  DEL  NS  R1  R2  HOLD
ON    OFF OFF OFF OFF OFF OFF
```

## Potentiometer settings

This test shows the position of the potentiometers. It is used to test the function of the potentiometers.

```
>p
Potentiometer settings. Use spacebar to leave
SPEED PRE.  POS.  TCY
1023  0255  0071  0641
```

## EEPROM Data

This test checks the EEPROM and displays its data. (The data are volatile !)

```
>e
EEPROM Data
Test EEPROM : Ok !
Addr:  0000  0001  0002  0003  0004  0005  0006  0007
Data:  0631  0057  0287  0119  1E03  6501  6400  0078

Addr:  0008  0009  000A  000B  000C  000D  000E  000F
Data:  FFFF  FFFF  FFFF  FFFF  FFFF  FFFF  0007  AAAA
```

## Version and Serial-No

This test shows the firmware version, the release date and the serial number of the controller print.

```
>v
Version and Serial-No.

COLLAMAT 6600
Version   : V1.011
Date      : 25. Juni 1996
Serial No.: 0007
```

## Potentiometer parameters

On the Collamat® 6600 the potentiometers can be programmed. With this function the working range of the potentiometers can be matched to a special labelling condition. To enable the potentiometer programmability, the DIL-switch TEST must be set to ON. The following table shows the standard potentiometer range with its upper and lower values.

Potentiometer	Standardvalue			Parameter		Range	
	min.	max.	Range	min.	max.	min.	max.
<b>SPEED</b>	3 m/min	30 m/min	27 m/min	3 m/min	30 m/min	3 m/min	27 m/min
<b>PREDISP.</b>	0 mm	100 mm	100 mm	0 mm	250 mm	25 mm	250 mm
<b>POSITION</b>	0 mm	100 mm	100 mm	0 mm	250 mm	25 mm	250 mm

The function is called by pressing the **O** key. Then the Collamat® 6600 gives the following message:

```
>o
Potentiometer parameters.
S      : Speed          03   30 m/min
P      : Predispensing 000 100 mm
O      : Position       000 100 mm
R      : Reset to factory settings
SPACE : Exit
Select function with the Keys S,P,O,R,SPACE
```

The potentiometers can be selected with the **S**, **P** and **O** keys respectively. The **R** key resets all values back to the factory settings.

For example the SPEED potentiometer will be programmed to a lower speed of 10 m/min and an upper speed of 20 m/min.

```
>s
SPEED (m/min)

U      : Upper limit
L      : Lower limit
ENTER : Keep
SPACE : Exit
Select limit with the keys U,L,ENTER, SPACE
```

With the **U** key the upper value is selected. **L** selects the lower value.

```
>u
Alter value: + or -, Keep: ENTER, SPACE: Exit
SPEED Upper limit : 20
```

Using the **+** and **-** keys the value may be increased or decreased. When the desired value is displayed, the dataentry may be finished with the ENTER key.

```
U      : Upper limit
L      : Lower limit
ENTER : Keep
SPACE : Exit
Select limit with the keys U,L,ENTER, SPACE
>
```

The lower value will be selected with the **L** key and adjusted with the **+** or **-** keys. When both values match the desired range the dataentry will be finished with the ENTER key.



Now the entered values are displayed and a request to store it in the EEPROM is asked.

```
SPEED limits
Upper limit : 20
Lower limit : 10
Store data ? Y/N
```

Pressing the **Y** key stores the data. This function will be skipped with the **N** key. If the data are stored the following message will be displayed:

```
Updating EEPROM.....OK
>
```

After this message the parameter menu will be displayed again. Now choose an other potentiometer with its appropriate key or quit the function with the SPACE key.

### Incremental encoder programming

The function **Incremental encoder** helps programming the speed measuring with an incremental encoder. The first invocation of this function displays the following screen:

```
>i
Incremental-Encoder setting is OFF
Distance between two pulses is: 100/100 mm
+      : ON
-      : OFF
M      : Modify
R      : Reset to factory settings
ENTER : Keep
SPACE : Exit
Select function with the keys +,-,M,R,ENTER,SPACE
```

The **+** or **-** keys are used to switch the speed measuring with an incremental encoder on or off. After pressing the **M** key the step width of the encoder can be entered. The **R** key resets all values to the factory settings. The **ENTER** key stores all data into the EEPROM.

In the following example (see also page 40) the incremental encoder is programmed to a step width of 1.57 mm:

```
>m
Enter new distance (1/100 mm) : 157
```

The value is entered in 1/100 mm without period and terminated with the **ENTER** key.

After pressing the ENTER key the following message will be displayed:

```
New distance is : 157/100 mm
+       : On
-       : Off
M       : Modify
R       : Reset to factory settings
ENTER  : Keep
SPACE  : Exit
Select function with the keys +,-,M,R,ENTER,SPACE
```

Now the incremental encoder can be turned on by pressing the + key.

```
Incremental-Encoder ON
```

The ENTER key now stores all datas into the EEPROM. This procedure must be confirmed with the Y key:

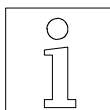
```
Incremental-Encoder setting is ON
Distance between two pulses is: 157/100 mm
Store Data ? Y/N
```

After pressing the Y key the programming of the incremental encoder is finished.

```
Updating EEPROM.....OK
```

To reset the programming of the incremental encoder to the factory settings the R key must be pressed. The following message then is displayed:

```
>r
Incremental-Encoder setting is OFF
Distance between two pulses is: 100/100 mm
Store Data ? Y/N
Updating EEPROM.....OK
```



**Remark:**

To use the speed measuring with an incremental encoder, the DIL-switch R must be switched to ON, the encoder also must be programmed to ON, and the programmed width must match the mechanical step width.

## Incremental encoder

The electrical connection of an incremental encoder is described in the chapter **Connection of the goods scanners**. The programming is described in the chapter **Testmode**. Now the mechanical attachment of the conveyor to the encoder will be described.

If the speed measuring is done by an incremental encoder, the measured speed can be fine adjusted by  $\pm 10\%$  with the SPEED potentiometer. The DATA HOLD switch only stores the potentiometer setting. The dispensing speed will follow the product speed. Figure 18 shows an example how to calculate the step width:

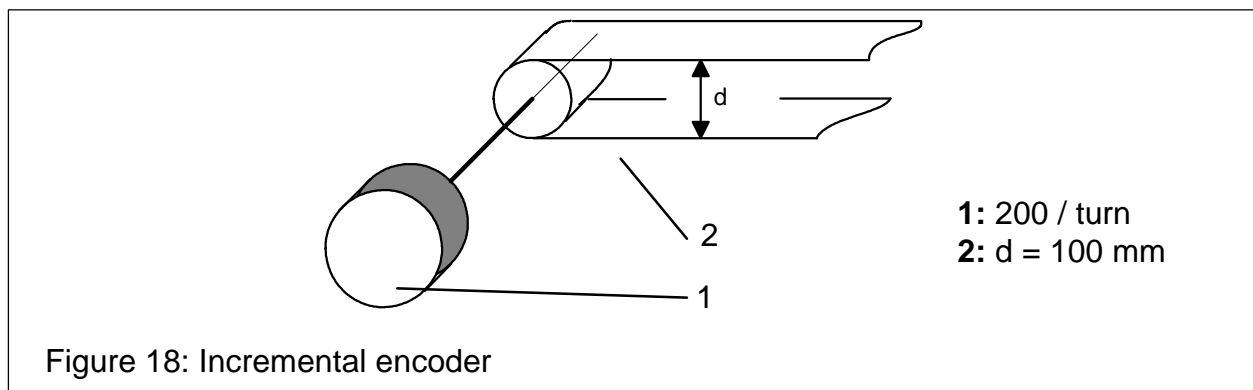


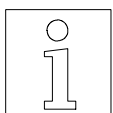
Figure 18: Incremental encoder

### Example:

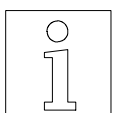
$$\text{Step} = \frac{d \cdot \text{Pi}}{\text{Pulse}} = \frac{314\text{mm}}{200} = 1.57\text{mm}$$

The step width must be in between 1.00 mm and 9.99 mm. For small distances between the products, the stepping rate must be as small as possible. 2 mm are a good practice value.

The minimum dispensing speed is 3 m/min, the maximum speed is 30 m/min. If no incremental encoder is attached to the dispenser or if the conveyor is stopped, the dispensing speed will be 3 m/min.



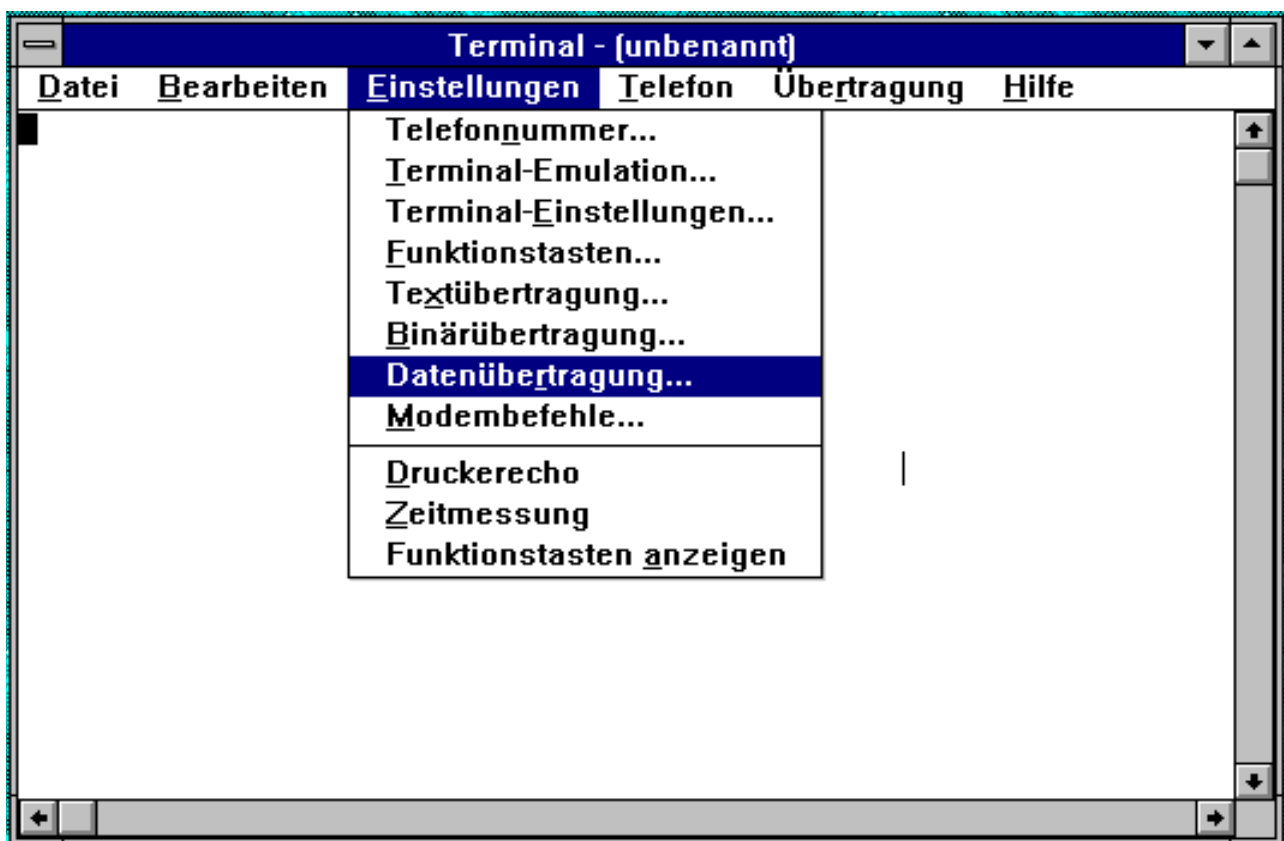
**Remark:**  
The minimum distance between two products is equal to 6 times the step width.

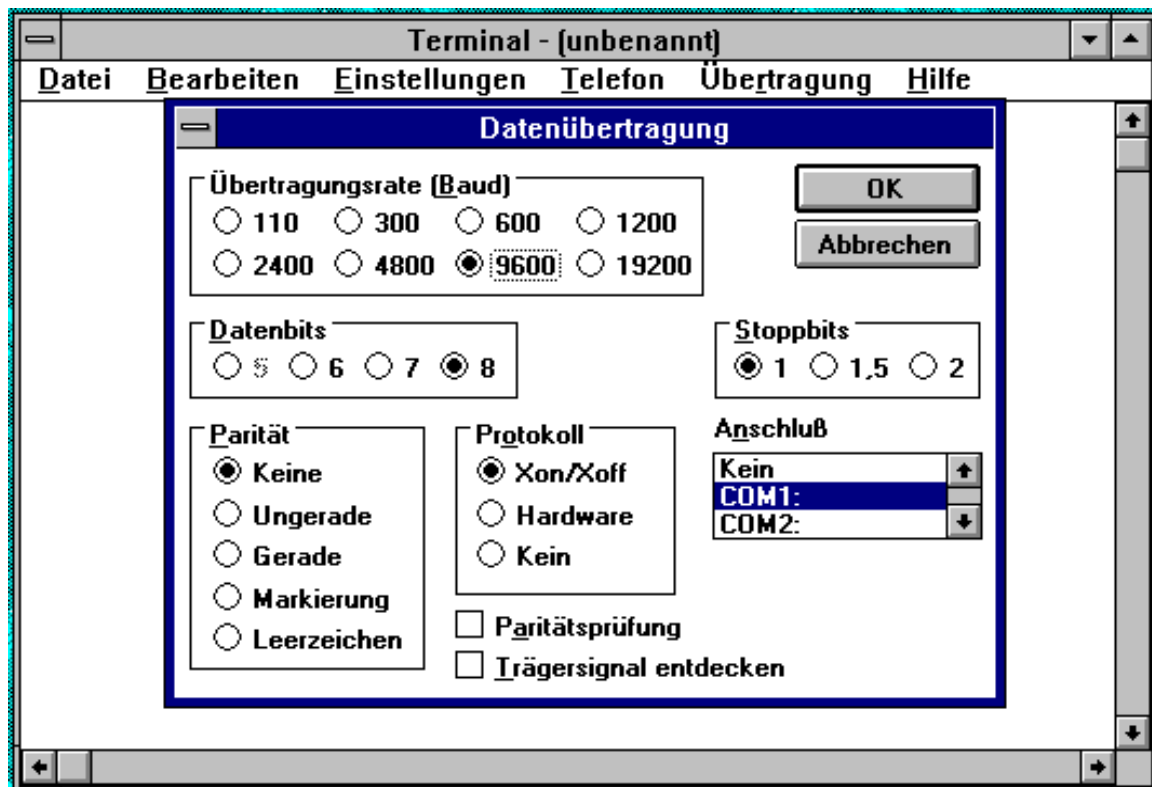


**Remark:**  
The dispensing speed is captured at the moment of the detection of the product. At this moment the dispensing speed will not change until the label is completely dispensed !

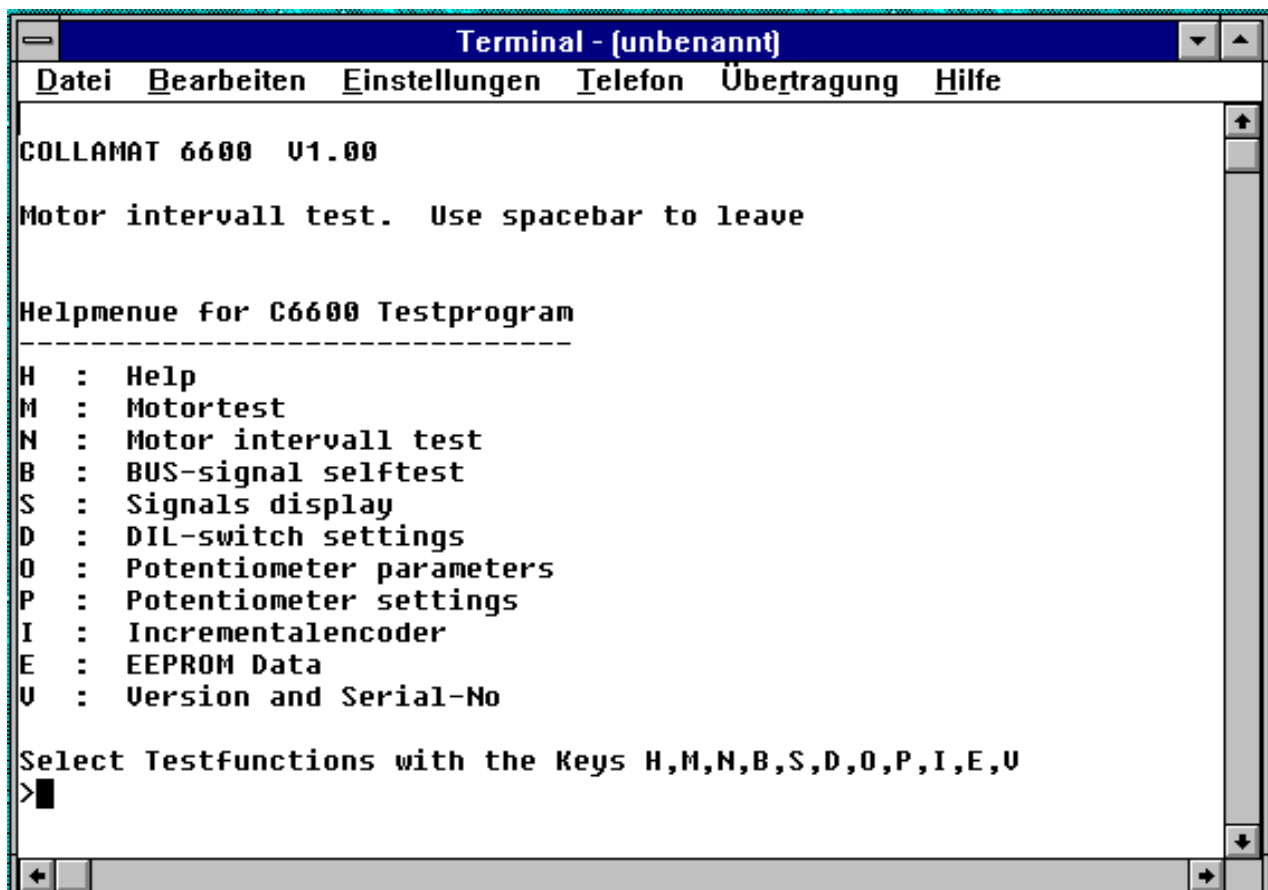
## Serial Communication under Windows 3.1 und 3.11

### Setup of the Windows Terminal programm



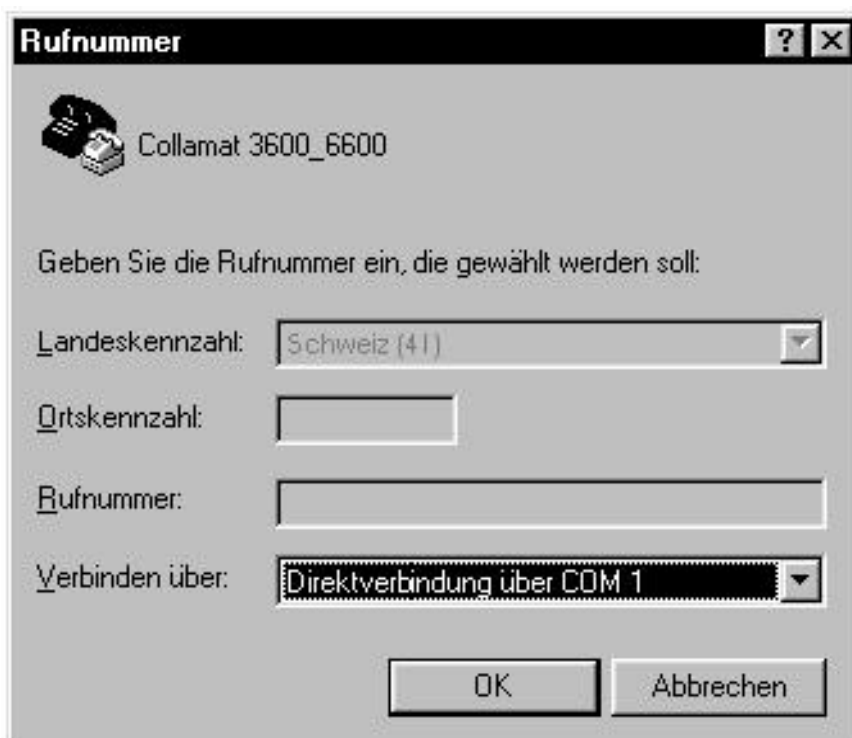


After power on of the Collamat in testmode the following message will be shown:



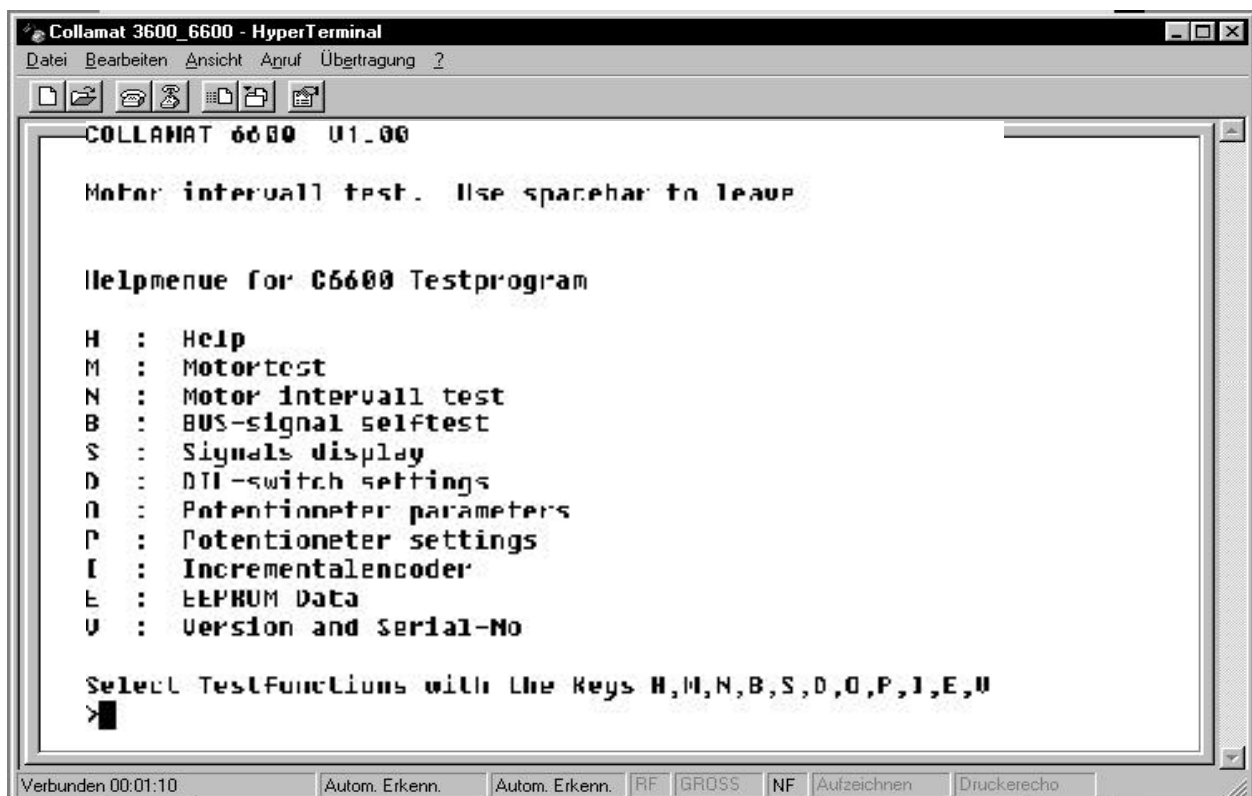
## Serial Communication under Windows 95/98

### Setup of Windows Terminal programms Hyperterm





After power on of the Collamat in testmode the following message will be shown:



## Glossary and terms

### Short cuts

<b>ESD</b>	<b>E</b> lectro <b>S</b> tatic <b>D</b> ischarge
<b>RMI</b>	<b>R</b> adio <b>M</b> agnetic <b>I</b> nterference
<b>GND</b>	<b>G</b> rou <b>N</b> D
<b>IR</b>	<b>I</b> nfra <b>R</b> ed
<b>LED</b>	<b>L</b> ight <b>E</b> mitting <b>D</b> iode
<b>nc</b>	<b>n</b> ot <b>c</b> onnected
<b>RS232</b>	Standard serial data exchange protocol

### Signals

<b>ERROR</b>	Errorsignal caused by any error of the Collamat®
<b>FEED</b>	Signal indicating the labelling process
<b>GND</b>	<b>G</b> rou <b>N</b> D
<b>GSC</b>	<b>G</b> oods <b>S</b> Canner
<b>IFEED</b>	<b>I</b> solated <b>FEED</b> signal
<b>LSC</b>	<b>L</b> abel <b>S</b> Canner
<b>nc</b>	<b>n</b> ot <b>c</b> onnected
<b>NSTPI</b>	<b>N</b> on <b>ST</b> o <b>P</b> <b>I</b> N-put
<b>NSTPO</b>	<b>N</b> on <b>ST</b> o <b>P</b> <b>O</b> U <b>T</b> -put
<b>READY</b>	<b>READY</b> signal from peripheral units
<b>TCY</b>	<b>T</b> ransparen <b>CY</b> , control current for the label scanner IR-diodes



## Terms

**Stopping accuracy:** Accuracy of the paper transportation

**Unwinder:** Device that carries the full paperweb rolls and unwinds it

**Adapter:** Part of the labeler by which the label is peeled off from the paperweb and applied onto the products

**Rewinder:** Device that takes the empty paperweb from the traction unit and rewinds it

**CE-Mark:** Certification for the European market, means: **C**onformité **E**uropéenne

**Collamat®:** Brand name for a labeler built by Collamat Stralfors AG

**GSC:** Goods **SC**anner

**Flap adapter with magnet:** Adapter which moves down to the product during the labelling

**LSC:** Label **SC**anner

**Position:** Sticking position of a label on the good

**Predispensing:** Predispensing of a label on the peeling plate

**Motorstep:** Travelling way of the label for one motorstep

**Dispensing speed:** The speed of the goods to which the labels are stucked

**Startfrequency:** Highest possible frequency for a steppermotor to start moving without loss of steps

**Traction Unit:** Part of the dispenser with drive unit and electronic control

**The informations in this handbook reflect the state  
of the publication date.**

**We reserve the right to make design modifications.**