



KBOX-Program P100 V0115

Version of: 2008-01-28

Last update: 2008-11-05



KBOX_gesamt_000817.jpg





1. Application

KBOX is an Interface-box that connects a coffeemachine with CCI-Interfce with a cash register with RS232. The KBOX Program P100 was developed for the following cash register and applications:

- Schneider Beetle
- Beverage control systems with serial interface (software update on Beverage control system required). The beverage control systems of DIRMEIER is already equipped with this feature
- PC-Programs.

This document serves to the impementation of the software on the cash register. For the connection of the coffeemachine the document „KBOX hardwaredescription“ is required.

The software KBOX P100 runs on KBOX V0030 as target.

The programm P100 ist ideally suited, to register coffees without checks of the clark number. There is no measure to identify a clark with a clarkkey.





2. Spezifikation KBOX programm P100

2.1 Connection and interfaceparameters to the coffeemachine

To impement an easy to use interface the connection between the coffeemachine ↔ KBOX is an asynchonous RS232-Interface. Only three wires are needed: RxD, TxD and GND. No hardware-handshake-signals are supported. The RS232 Interface is galvanic isolated on the KBOX. With this feature no ground loops can build up even if the coffeemachine supplies the power.

The communicationsparameter are: 9600bps, 8 Datenbit, no parity 1 Stop-Bit

With DIP-Switch 4 ON the baudrate can be set to 4800bps.

2.2 Connection and interface parameters to the cash register

The KBOX communicates with the cash register over an RS232 interface. Only three wires are needed: RxD, TxD and GND. No hardware-handshake-signals are supported. The RS232 Interface is galvanic isolated from the cash register, so no ground loops can build up.

The communicationsparameter are: 9600bps, 8 Datenbit, keine Parität 1 Stop-Bit

The baudrate is fixed and can not be changed.

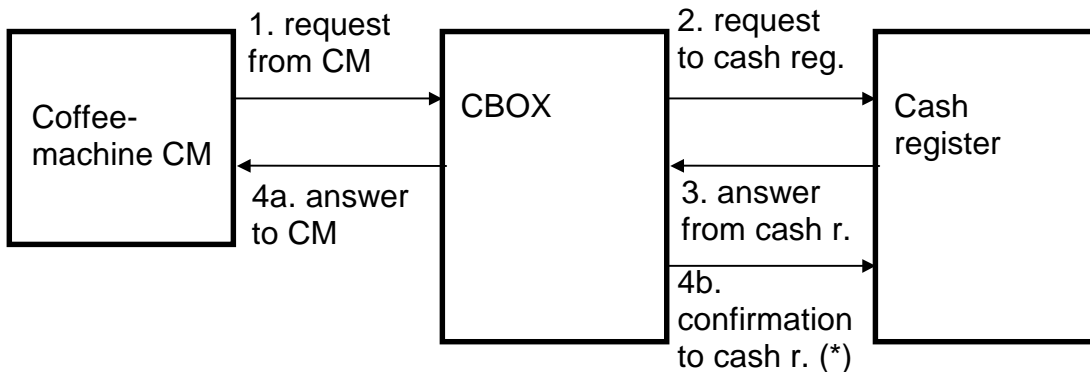
2.3 Basics of the communication, cash register protocol

The communication is based on the ASCII-character set. In this way the communication can be observed with a VT100-compatible terminal or on a PC with a terminal program (e. g. Hyperterm). The coffeemachine is master. The KBOX-Interface is slave against the coffeemachine, but master against the cash register. Communication is always started by the master. If the coffeemachine sends a request to the KBOX the KBOX translates the request to the cash register. The cash register checks if the product is registered and answers to the KBOX.





The KBOX translates the answer to the coffeemachine which produces the product if allowed to. Program P100 doesn't support clarknumber and table numbers.



The request is started from the Coffeemachine and goes thru the KBOX to the cash register.

2.4a Request to cash register

Byte Nr. character comment

1	P	P=50h (Product)
2	0	Productnumber hunderts [30h..39h]
3	0	Productnumber tenths [30h..39h]
4	1	Productnumber ones [30h..39h]
5	CR	Carriage return (Enter) CR=0Dh
6	LF	Line Feed LF=0Ah (ctrl-J)

999 different products can be requested. The KBOX takes the same product-code (product-nuber) as is sent by the coffeemachine. The cash register converts the product-code into a valid PLU-number.

e.g. Product 1 is P001 and converted to PLU 4001
Product 32 is P032 and converted to PLU 4032





2.4b Confirmation to cash register

Byte Nr.	character	comment
1	D	D=44h (Done, Confirmation)
2	0	Productnumber hundrets [30h..39h]
3	0	Productnumber tenths [30h..39h]
4	1	Productnumber ones [30h..39h]
5	CR	Carriage return (Enter) CR=0Dh
6	LF	Line Feed LF=0Ah

999 different products can be requested. The KBOX takes the same product-code (product-number) as is sent by the coffeemachine in the D-Confirmation. The cash register converts the product-code into a valid PLU-number.

DIP-Switch 3 selects, wheter KBOX sends the confirmation (ON) or not (OFF).

2.5 positive answer from cash register

With a positive answer from the cash register, the coffeemachine produces the requested product. The positive answer from the cash register has to occur within 5s.

Byte Nr.	character	comment
1	o	o=6Fh
2	k	k=6Bh
3	CR	Carriage return (Enter) CR=0Dh
4	LF	Line Feed LF=0Ah

A positive answer is ok. The major characters OK are also accepted.





2.6 negative answer from cash register

With a negative answer from the cash register the coffeemachine must not produce the requested product. The negative answer has to occur within 5s. If no answer occurs within 5s, KBOX informs the coffeemachine, that no product is produced.

Byte Nr.	character	comment
1	n	n=6Eh
2	a	a=61h
3	CR	Carriage return (Enter) CR=0Dh
4	LF	Line Feed LF=0Ah

A negative answer ist na. The major characters NA are also accepted.
na means: not available.





2.7 Identification (optional)

The identification can be used from the cash register to get the program on the KBOX. It is not necessary to implement the Identification. Identification should only be requested, when the cash register is powered up, because the principle, that communication starts from the KBOX is corrupted!

Byte Nr.	character	comment
1	i	i=69h
2	d	d=64h
3	CR	Carriage return (Enter) CR=0Dh
4	LF	Line Feed LF=0Ah

The major characters ID are also accepted.

Answer from the KBOX to the identification request:

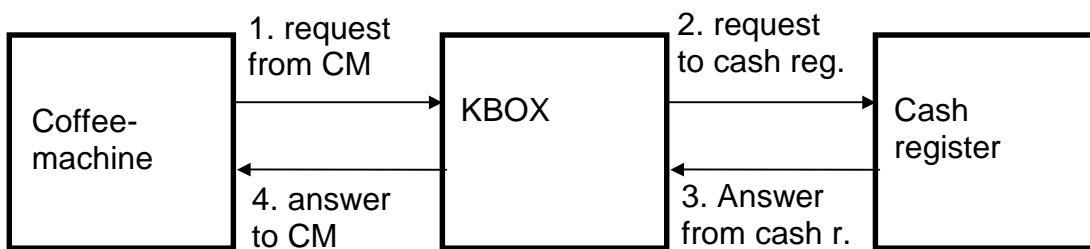
1	K	K=69h	
2	B	B=64h	
3	O	O=4Fh	
4	X	X=58h	
5	-	Underscore=5Fh	
6	P	P=50h	
7	1	1=31h	
8	0	0=30h	
9	0	0=30h	
10	-	Underscroce=5Fh	
11	1	1=31h	Date days
12	1	7=31h	
13	.	.=2Eh Dot	
14	0	0=30h	Date month
15	4	8=34h	
16	.	.=2Eh Dot	
17	0	0=30h	Date year
18	1	0=31h	
19	CR	Carriage return (Enter) CR=0Dh	
20	LF	Line Feed LF=0Ah	





2.9 Timing of the communication

In order to keep the communication working, the following timing is implemented: The timing is very important, when the cash register is busy (printing out a report or so). The cash register must time-stamp the characters from KBOX and start a timeout-timer.



time₁₋₄ max. transactiontime Coffeemachine↔KBOX: 5.0s

time₂₋₃ max. transaktionszeit KBOX↔Cash register 4.5s

The cash register must respond within the time₂₋₃. The answer can be positive or negative. After this time the cash register must not respond anymore, otherwise it can happen, that the cash register sends a positive answer and thus billing the product, but the timeout occurred and the product is not produced. No answer from the cash register is interpreted as negative answer. The user has to request the product again. There is no repetition of the productrequest implemented because this won't work on the coffeemachine.





3. LED's

The LED's have the following functions:



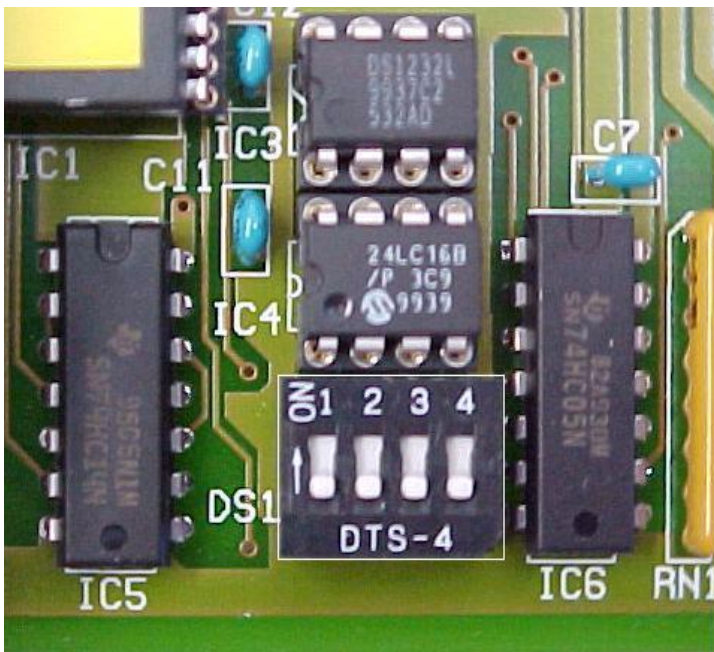
- | | | |
|-----|--------|---|
| LD1 | green | Shows state of the KBOX. The green LED blinks in the 1s-cycle. The power supply is on and the microcontroller-system runs. |
| LD2 | yellow | During a request from the coffeemachine the yellow LED is on until, the transaction is finished. When the transaction is fast, this means that the cash register responds immediately, LD2 flashed only for a short time. |
| LD3 | red | The red LED indicates an error. After a failed transaction without answer from the cash register this LED is on for 2s. |





4. DIP-Switches

The KBOX is equipped with a 4-position DIP-switch. For the programm P100 the DIP-switch has the following functions:



KBOX_DIPswitch_000817.jpg

- DIP1: OFF (*)
- DIP2 OFF (*)
- DIP3 OFF no confirmation(*)
- DIP3 ON confirmation
- DIP4 OFF CM: 9600bps (*)
- DIP4 ON CM: 4800bps

(*) factory preset

With DIP-switch 3 the confirmation to the cash register is selected (see 2.4b and 2.9).

With DIP-switch 4 the baudrate of the CCI-Interface to the coffeemachine can be selected. Normally (DIP4=OFF) the baudrate is 9600bps. For DIP4=ON the baudrate is 4800bps. All other communicationsparameters are equal.

Attention: After changes of the DIP-switch-settings, the KBOX must be initialized.





5. Settings on the coffeemachine

On the coffeemachine the CSI-protocol has to be selected. This protocol is also needed for the parallelinterface. Instead of parallel wires the interface communicates with the cash register over a serial communication line.

6. Technical support

We support you with the application of the KBOX-Interface. Please visit our homepage or email us (s-tec@bluewin.ch REF KBOX) or call us. For questions regarding the settings of the coffeemachine the technical support or local dealer of the coffeemachine manufacturer is at your service.

