KS8000: BkCom ActiveX Control

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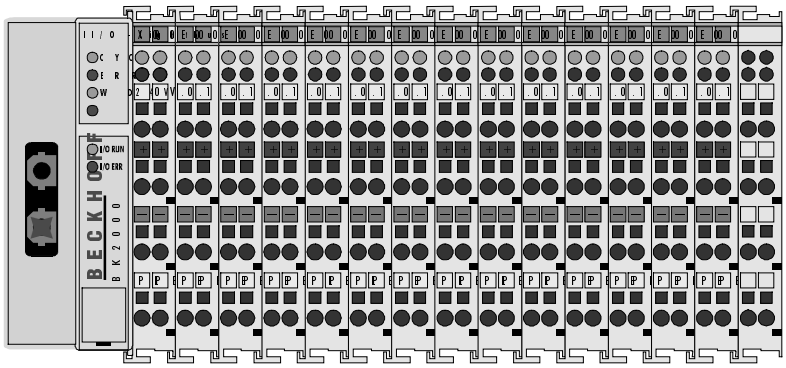
Introduction

General

„Beckhoff KS8000 BKcom-OCX„ provides functionalities with which communication with Beckhoff Bkcom-OCX bus couplers can be realized easily via a serial PC interface.
"Beckhoff Bkcom-OCX" can be used by all programming languages that operate with the specifications of Microsoft's Component Object Model (COM): VC++, Visual Basic (version 4.0), Delphi, Java ...

KS8000 BKcom structure



KS8000 BKcom Specification

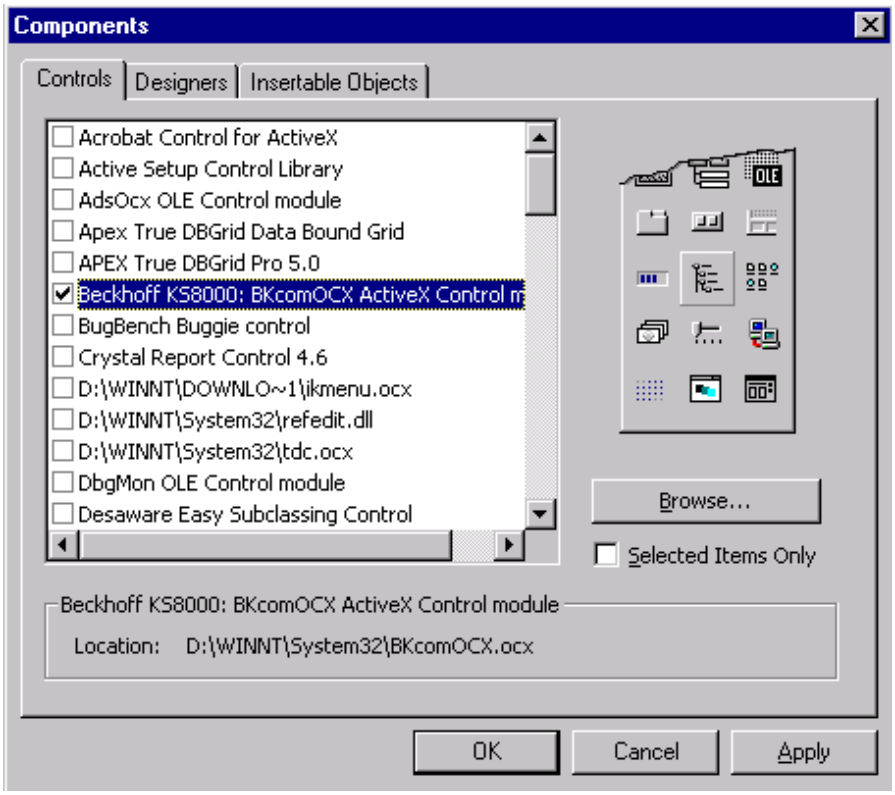
KS8000 Bkcom enables access to the input and output process image of BK8x00 bus couplers via the serial interface of a PC.
With every serial PC interface, communication can be established with one BK8100 coupler (RS232) or up to 99 BK8000 couplers (RS485). During a communication, the entire input and output image is transferred. Therefore, the duration of communication depends on the size of the process image. (Measurement: RS232 coupler 38400 baud, 1 word of the process image results in around 6 ms, or approximately 20 ms in the case of 15 words).
The coupler's watchdog time can also be modified.

Integrating OCX in Visual Basic

Adding KS8000 BKcom in Visual Basic

KS800 BKcom-OCX can be used in Visual Basic. To do this, you must select the "Components.." command under the 'Project' menu item in Visual Basic and you must mark the BKcomOCX active control module' entry.

Select BKcom OCX



KS8000 BKcom-OCX then appears in the Visual Basic toolbox (bottom right).

KS8000: BKcom characteristics

1.1 BkxBaudrate

Function Defines the baud rate of communication.

Type Long

Value range
(1) Baud_9600 = 9600 Baud
(2) Baud_19200 = 19200 Baud
(3) Baud_38400 = 38400 Baud (Default)

Remarks The other communication parameters are fixed to 8 data bits, 1 stop bit and even parity and cannot be modified.
The BK8x00 bus couplers adapt automatically to the specified baud rate.

Example

```
'--- Set baud rate
 BKcom.BkxBaudrate = Baud_19200
 '--- Query baud rate
 lBaud = BKcom.BKxBaudrate    'lBaud is now 19200
```

1.2 BkxTyp

Function Defines the type of the bus coupler.

Type Long

Value range
(1) BKxType_RS485 = 1 (Coupler with RS485 communication) (Default)
(2) BKxType_RS232 = 2 (Coupler with RS232 communication)

Remarks It is necessary to set this characteristic to guarantee a correct exchange of data. The BK8000 couplers operate via the RS485 interface, while all others operate with RS232.

Example

```
'--- Set type
 Bkcom.BkxTyp = BKxType_RS232
 '--- Query type
 lTyp = Bkcom.BkxTyp    'lType is now 2
```

1.3 BkxCommPort

Function Defines the serial PC interface through which communication with the couplers is handled. The default is 2.

Type Long

Value range 1..8

Examplel

```
'--- Set port
 Bkcom.BkxCommPort = 4
 '--- Query port
 lPort = BKcom.BKxCommPort    ' lPort is now 4
```

1.4 BkxPortOpen

Function

Opens/closes the serial interface.
Access to this property is only possible during the run time.

Type

Boolean (16Bit)

Remarks

OCX generates an exception if an interface is to be opened that does not physically exist or which is already occupied by another process.

Value range

True / False

Example

```
'--- Set port
 Bkcom.BkxCommPort = 3

 '--- Open port
BKcom.BkxPortOpen = True
'--- Close port
BKcom.BkxPortOpen = False
```

1.5 BkxTimeout

Function

Defines the duration of the waiting time for the response telegram from the coupler.

Type

Long

Remarks

Time in [ms]

Example

```
'--- Set timeout
 BKcom.BkxTimeout = 1000
 '--- Query timeout
 lTime = Bkcom.BKxTimeout    ' lTime is now 1000
```

KS8000: Bkcom Methods

Function

1.6 BK8xProcSyncReadReq

Syntax

```
BK8xProcSyncReadReq    (        long lMultiPoint,
                                long lStatus,
                                long cwRecLength,
                                long lpRecBuff
                        )
Returnwert: BKcomComErr
```

Parameters

Name	Direction	Meaning
LMultiPoint		(1..99) specifies the recipient
LStatus		Coupler status (see annex)
CwRecLength		Number of words read (one word in one long value) as from offset 0 in the process input image
lpRecBuff		Receive buffer (long) array
BKcomComErr		Return code (see annex)

Remarks

The BK8xProcSyncReadReq method consists of a synchronous communication call to read out the complete input process image of a BK8x00 bus coupler. The size of the process image depends on the number and type of terminals inserted at the coupler concerned.
The receive buffer is of LONG type (32 bit), but is only transferred into the low word by the coupler (see example below).

Example

```
Dim lRet as long, lMultiPoint as long, lStatus as Long, cwRecLength as long
Dim RecBuff(255) as long


LmultiPoint = 11     , ZielStation 11

LRet = Bkcom1.BK8xProcSyncReadReq( lMultiPoint, lStatus, cwRecLength, RecBuff(0))

, RecBuff(0) contains input word[0] from the coupler
, RecBuff(1) contains input word[1] from the coupler
, RecBuff(2) contains input word[2] from the coupler
```

Function

1.7 BK8xProcSyncReadWriteReq

Syntax

```
BK8xProcSyncReadWriteReq(    long lMultiPoint,
                             Long lStatus
                             Long cwSendLength,
                             long lpSendBuff,
                             long cwRecLength
                             Long lpRecBuff,
                         )
```

Returnwert: BkcomComErr

Parameters

Name	Direction	Meaning
LMultiPoint		(1..99) specifies the recipient
LStatus		Coupler status (see annex)
CwSendLength		Number of words to be written (one word in one long value) as from offset 0 in the process output image
LpSenfBuff		Send buffer as long (array)
CwRecLength		Number of words read (one word in a long value) as from offset 0 in the process input image
LpRecBuff		Receive buffer as long (array)
BKcomComErr		Return code (see annex)

Remarks

The BK8xProcSyncReadWriteReq method is a synchronous communication call for writing the complete output process and for reading out the complete input process image of a BK8x00 bus coupler. The size of the process image read depends on the number and type of terminals fitted at the coupler.
The entire output image MUST be written. It is not possible to write only a part or an excerpt. .

The send and receive buffers are of the LONG type (32 bit), but only the low word is transferred to/from the coupler (see example below).

Example

```
Dim lRet as long, lMultiPoint as long, lStatus as Long,
Dim cwRecLength as long
Dim RecBuff(255) as long
Dim cwSendLength as long
Dim SendBuff(255) as long


LmultiPoint = 11     , ZielStation 11
SendBuff(0) = 1                , Output word[0] on coupler becomes 1
SendBuff(1) = &H55             , Output word[1] on coupler becomes &H55
SendBuff(2) = &HAAEE           , Output word[2] on coupler becomes &HAAEE

LRet = Bkcom1.BK8xProcSyncReadWriteReq( lMultiPoint, lStatus, cwSendLength,
SendBuff(0),cwRecLength, RecBuff(0))

, RecBuff(0) contains input word[0] on coupler
, RecBuff(1) contains input word[1] on coupler
, RecBuff(2) contains input word[2] on coupler
```

Function

1.8 BK8xWatchDogReadReq

Syntax

BK8xWatchDogReadReq(long lMultiPoint,
long WatchDog
)
Returnwert: BkcomComErr

Parameters

Name	Direction	Meaning
LMultiPoint		(1..99) specifies the recipient
WatchDog		WatchDog time in ms
BKcomComErr		Return code (see annex)

Remarks

The BK8xWatchDogReadReq method is a synchronous communication call for reading the set Watchdog time on the destination coupler selected <lMultiPoint>.

Example

```
Dim lRet as long
Dim lValue as long

LRet = BkcomOCX1.BK8xWatchDogReadReq(11,lValue)
```

,The <lValue> variable contains the watchdog time of station 11

Function

1.9 BK8xWatchDogWriteReq

Syntax

BK8xWatchDogWriteReq(long MultiPoint,
long WatchDog
)
Returnwert: BkcomComErr

Parameters

Name	Direction	Meaning
LmultiPoint		(1..9) specifies the recipient
LwatchDog		New WatchDog time in ms
BKcomComErr		Return code (see annex)

Remarks

The BK8xWatchDogWriteReq method is a synchronous call for setting a new Watchdog time on the destination coupler selected via <MultiPoint>. This method leads to a restart of the coupler (reboot). Only then has the coupler accepted the new Watchdog time.

Example

```
Dim lRet as long

LRet = BkcomOCX1.BK8xWatchDogWriteReq(11, 2000)
```

, The Watchdog time of station 11 is set to 2000 ms. The coupler boots.

Annex

Return code

1.10 BkcomComErr

Meaning	
Dec.	
-1	ComErrNotImplemented Function is not implemented
0	ComErrNo No error
1	ComErrTimeout1 Timeout: no reaction from the coupler
2	ComErrTimeout2 Timeout: no complete communication with coupler
3	ComErrCRC Invalid checksum in communication
4	ComErrTargetNr
5	ComErrTableNr
6	ComErrOffset
7	ComErrDataLength
8	ComErrMultipoint
9	ComErrDataBuff
10	ComErrStartPattern Invalid telegram header in the coupler response telegram
11	ComErrSendTel Error writing to the serial PC interface
12	ComErrIdent
13	ComErrRegResponse The error flag is set in the coupler's response telegram

Coupler status

1.11 Status

Meaning	
Bit	
0	Terminal bus error
1	Configuration bus error
2	
3	
4	Process data output: error in length to right
5	
6	
7	

Installation files and target directory

1.12 Installed files

WINDOWS/SYSTEM or SYSTEM32 directory
BkcomOCX.ocx Mfc42.dll RegSvr32.exe