

**Product:** IC-KP2-1HBx; IQH1-...-V1; IQC21-...  
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## Description

This document describes the commissioning of the function block FB3221 inside the Siemens Step-7 environment. With the FB3221 it is possible to read or write large data volumes from the IQC21 RFID tag without complicated command parameterisations.

The function block is able to read and write the whole memory of the IQC21 (112 Byte) with 2 command cycles. The start address is always W#16#0. Otherwise the internally address and length calculation need to be changed by the user.

### Requirements:

Evaluation unit: IC-KP2-1HBx  
RFID head: IQH1-...-V1  
RFID tag: IQC21-  
Software: Function block FB32 (IDENTControl) for commissioning the IC-KP2-1HBx

Inside the function block FB3221 the FB32 is used for the command configuration and execution. In the first step you have to configure the FB32 with the correct values and variables before starting an operation with the FB3221.

### Configuration of the FB 32 "IDENTControl"

☐ Netzwerk 5 : Titel:

```
CALL "IDENTControl" , "InstDB"           FB32 / DB32
  IC_INPUT_Address   :=W#16#200
  IC_OUTPUT_Address :=W#16#200
  Length_IN         :=64
  Length_OUT        :=64
  Timeout           :=T#3S
  Head1DataFixcode  :=FALSE
  Head1SingleEnhanced:=FALSE
  Head1SpecialCommand:=FALSE
  Head1Read         :=#Head1Read         #Head1Read
  Head1Write        :=#Head1Write        #Head1Write
  Head1Quit         :=FALSE
  QuitErrorHead1   :=FALSE
  IC_Command_on_Head1:=FALSE
  Head1WordNum      :=#HeadWordNum       #HeadWordNum
  Head1WordAddress  :=#HeadWordAddress   #HeadWordAddress
  Head1TagType      :=W#16#3231
  Head1Done         :=#Head1Done         #Head1Done
  Head1NoDataCarrier :=#Head1NoDataCarrier #Head1NoDataCarrier
  Head1Error        :=#Head1Error        #Head1Error
  Head1Busy         :=#Head1Busy         #Head1Busy
  Head1Status       :=#Head1Status       #Head1Status
  Head1ReplyCounter :=#Head1RepyCounter  #Head1RepyCounter
  InitFinish        :="InitFinish"      M0.0
  SetRestart        :="SetRestart"      M0.1
```

Parameter for the I/O configuration (input parameter):

IC_INPUT_Address:	Start address of the input area of the IDENTControl in hexadecimal format (e.g. W#16#200 if the input area starts at 512 in the hardware configuration)
IC_OUTPUT_Address:	Start address of the output area of the IDENTControl in hexadecimal format (e.g. W#16#200 if the output area starts at 512 in the hardware configuration)
Length_IN:	Length of the input telegram (fix at 64; Length_IN:=64)
Length_OUT:	Length of the output telegram (fix at 64; Length_OUT:=64)

Parameter for command configuration (input parameter):

Head1DataFixcode:	Access to data or fixcode area; permanently parameterized with false (e.g.:= FALSE)
Head1SingleEnhanced:	Execution of a one time or a continuous command; permanently parameterized with false (e.g.:= FALSE)
Head1SpecialCom:	Execution of a special command; permanently parameterized with false (e.g.:= FALSE)
Head1Quit:	Execution of a quit command to abort a continuous command; permanently parameterized with false (e.g.:= FALSE)
Head1QuitError:	Execution of an error routine to clear an error status; permanently parameterized with false (e.g.:= FALSE)
IC_Command_on_He..:	Execution of a special command which is send to the unit and not to one of the channels; permanently parameterized with false (e.g.:= FALSE)

Head1Read: Start of the reading command execution; connect with variable #HeadXRead of the local Instanz DB ("DB\_Command") of the FB3221.  
Head1Read := DB3221.DBX 52.0 (#Head1Read)

Head1Write: Start of the writing command execution; connect with variable #HeadXWrite of the local Instanz DB ("DB\_Command") of the FB3221.  
Head1Write := DB3221.DBX 52.1 (#Head1Write)

Head1WordNum: Number of read or write data blocks each command cycle; connect with variable #HeadWordNum of the local Instanz DB ("DB\_Command") of the FB3221.  
Head1WordNum := DB3221.DBW 50 (#HeadWordNum)

Head1WordAddress: Memory address of the data carrier from which the reading or writing begins; connect with variable #HeadWordAddress of the local Instanz DB ("DB\_Command") of the FB3221.  
Head1WordAddress := DB3221.DBW 48 (#HeadWordAddress)

Head1TagType: Type of the used data carrier coded in hexadecimal format; permanently parameterized with W#16#3231 (e.g. IQC21-..)  
Head1TagType := W#16#3231

Parameter for command execution information (output parameter):

Head1Done: signalize the end of a command execution (positive edge); connect with variable #HeadXDone of the local Instanz DB ("DB\_Command") of the FB3221.  
Head1Done := DB3221.DBX 52.2 (#Head1Done)

Head1NoDataCarr: signalize that no data carrier was in the detection range of the head while command execution; connect with variable #HeadXNoDataCarrier of the local Instanz DB ("DB\_Command") of the FB3221.  
Head1NoDataCarrier := DB3221.DBX 52.5 (#Head1NoDataCarrier)

Head1Error:	signalize an error status while command execution; connect with variable #HeadXError of the local Instanz DB ("DB_Command") of the FB3221. Head1Error := DB3221.DBX 52.4 (#Head1Error)
Head1Busy:	signalize the current command execution; connect with variable #HeadXBusy of the local Instanz DB ("DB_Command") of the FB3221. Head1Busy := DB3221.DBX 52.3 (#Head1Busy)
Head1Status:	shows the actual status of the command execution; not used for the implementation of the FB3221
Head1ReplyCounter:	shows the actual value of the reply counter of the unit; not used for the implementation of the FB3221
Parameter for the initialisation and error handling (in/out parameter):	
InitFinish:	Signalize (positive edge) the successfully execution of the initialisation routine; not used for the implementation of the FB3221; it should be used to program an error handling routine inside the application program after an error occurs
SetRestart:	by setting this variable the initialisation routine begins; it is not used for the implementation of the FB3221; it should be used to program an error handling routine inside the application program after an error occurs

## Configuration of the FB 3221 "Command Head X":

### ☐ Netzwerk 2 : Titel:

```
CALL "Command_HeadX" , "DB_Command"      FB3221 / DB3221
  HeadNumber      := "HeadNumber"        MB710
  CommandCycles   := "CommandCycles"     MB711
  StartAddress    := "StartAddress"      MW712
  CommandLength   := B#16#3C
  NumberReadDBHead1 := 321
  NumberWriteDBHead1 := 322
  NumberInstDB    := 32
  Read            := "ReadCommand"       M700.2
  Write           := "WriteCommand"      M700.3
  End_Command     := "EndCommand"       M700.1
  Error           := "ErrorCommand"     M700.5
  Busy            := "BusyCommand"      M700.4
  NoDataCarrier   := "NoDataCarrier"    M700.6
  StartCommand    := "StartCommand"     M700.0
```

The function block FB3221 "Command\_Head\_X" need to call together with the according instanz data block "DB\_Command" inside the application program.

Example:

```
CALL FB3221; DB3221
```

It is possible to rename the function and the data block. The internal variables used as local variables. No global variables used inside the FB3221.



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## Input parameter:

HeadNumber: [Byte]	defines the channel on which the command should be executed; Channel 1: HeadNumber := B#16#1 This variable should be connected to a byte variable of the customer specific application program
CommandCycles: [Byte]	defines the number of executed command cycles inside the read or write routine of the FB3221. The configuration is in hexadecimal format. The maximal number is B#16#2. The first command Read/write 60 Bytes of user data. The second command read/write 52 Bytes of data. To read or write a specific data quantity following configuration is necessary: 60 Bytes: CommandCycles := B#16#1 112 Bytes: CommandCycles := B#16#2
CommandLength: [Byte]	defines the length of the user data which are inside one telegram; by using the IQC21 RFID tag the length is fixed at 60 Bytes 60 Bytes: CommandLength := B#16#3C It is possible to configure this variable permanently with this value.
NumberReadDBHead1/2:[INT]	defines the number of the data block in which the read in data of head 1/2 are copied while read command execution. The length of the data block should be 112 Bytes (mirror of the complete memory of the IQC21) or it should have the same length like the read in data NumberReadDBHead1 := 321
NumberWriteDBHead1/2:[INT]	defines the number of the data block in which the write data for head 1/2 are copied before starting command execution. The length of the data block should be 112 Bytes (mirror of the complete memory of the IQC21) or it should have the same length like the data which should be written NumberWriteDBHead1 := 322
NumberInstDB: [INT]	defines the number of the according instance data block of the according function block for the IDENTControl NumberInstDB := 32
Read: [Bool]	defines that a reading cycle will be executed (start of the execution triggered by input "StartCommand")
Write: [Bool]	defines that a writing cycle will be executed (start of the execution triggered by input "StartCommand")

## In/Out parameter:

StartCommand: [Bool] defines the start of a command routine by setting to true

## Out parameter:

End_Command: [Bool]	signalize with a positive edge the end of a command routine; this output will reset to false if a command routine starts
Error: [Bool]	signalize that an error occurs while execution of a command routine
Busy: [Bool]	signalize that the execution of a command routine is still active; after the start this bit is set to true until the command routine is finished
NoDataCarrier: [Bool]	signalize that a RFID tag leaves the detection range of the head while execution of the command routine