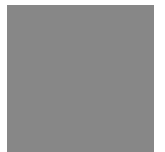


BALLUFF

Software- Description

BIS VU-

Function Block S7-1200/1500



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1 INTRODUCTION

This function block is an example for the communication with a C / VL / VM and VU read/write head. The example is free of charge. Please test carefully if the FB is suitable for your application!

This function block allows a communication between a **BIS V-6102-Cxxx** and **BIS V-6108-Cxxx** and a Simatic® S7-1200/1500 PLC.

The following commandos are supported:

Commands for all read/write heads

Read data carrier (USER-data)

Write data carrier (USER-data)

Store Auto Read start address

Type and serial number

Copy data between data carrier

Initialize CRC_16 data check

Write constant value to data carrier

Specific commands for BIS VU read/write heads

Select tag

Unselect tag

Read EPC

Write EPC

Read TID

Write antenna power

Read antenna power

Read multiple tags

Write parameter

Read parameter

Bulk read

Bulk write

Read number of tags

Get RSSI

Lock tag

Activate custom parameter

ATTENTION

Please test carefully if the used commandos are supported by the BIS V processor and the read/write head!

1 INTRODUCTION

1.1 General Data

Function block name:	BIS_VU_COM
Instance data block:	(an own instance data block has to be setup for each antenna or r/w head)
Invoked blocks:	SFB4 TON
Reserved memory bits:	none
Reserved Timers:	none
Reserved Counters:	none
I/O length:	16 - 254 byte
Invoke:	absolute
Device compatibility:	Siemens Simatic® S7 1200/1500
Software version:	TIA Portal V13 SP1

Multi-tagging is supported by the function block. If there are more data carriers in front of one VU antenna the data carriers have to be selected by select data carrier command. If there is no data carrier selected, the processor sends the appropriate error message. CRC check is not applicable with BIS VU.

1.2 Recommendations of FB invoke

The function block should be called only once for each read/write head. Multiple calls of the function block at the same time are not allowed.

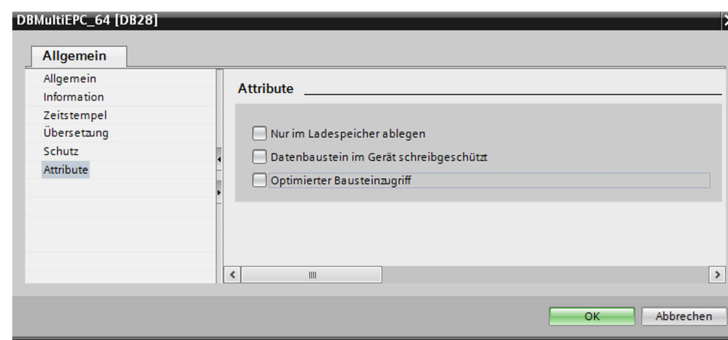
If the function block is conditionally called and the calling condition is false before FB sets it Ready output, the **"Init"** input has to be set.

If the PLC restarts the Init input has to be set for one cycle. FB parameters could be attached dynamic if necessary.

2 COMMISSIONING

2.1 DB parameter

The maximum read/write length of the FB is 65,534 byte. The data blocks for send-,receive and multiple EPC data have to setup according the FB input parameters **Offset_DBSend**, **Offset_DBReceive**, **EPC_DB_OFFSET**, **Data_Length** and in suitable length for the used commands. The data blocks DBSend, DBReceive and DB_MultiEPC may not create with the attribute "optimized block access".



2.2 Device parameter for BIS V-6102-Cxxx und BIS V-6108-Cxxx

Same values for the parameters **Dynamic Mode** and the **HW_LADDR** have to be set in HW configuration and for FB call!

Device Parameter:

Device parameter slot 0

Global diagnostic	disable	=	Not active
	enable	=	Permit the module's diagnostic messages
HMI read only	disable	=	Device settings via display enabled
	enable	=	Device settings via display disabled
LEDs off	disable	=	LEDs on
	enable	=	LEDs at the processor of after 30min
IO-Link Port Function	NO input	=	Input as normally open contact
	NC input	=	Input as normally closed contact
	Output	=	Output function
	IO-Link	=	IO-Link function
IO-Link Safe State	0, 1, Last value	=	Save state of IO-Link Outputs

2 COMMISSIONING

RFID Head Parameter:

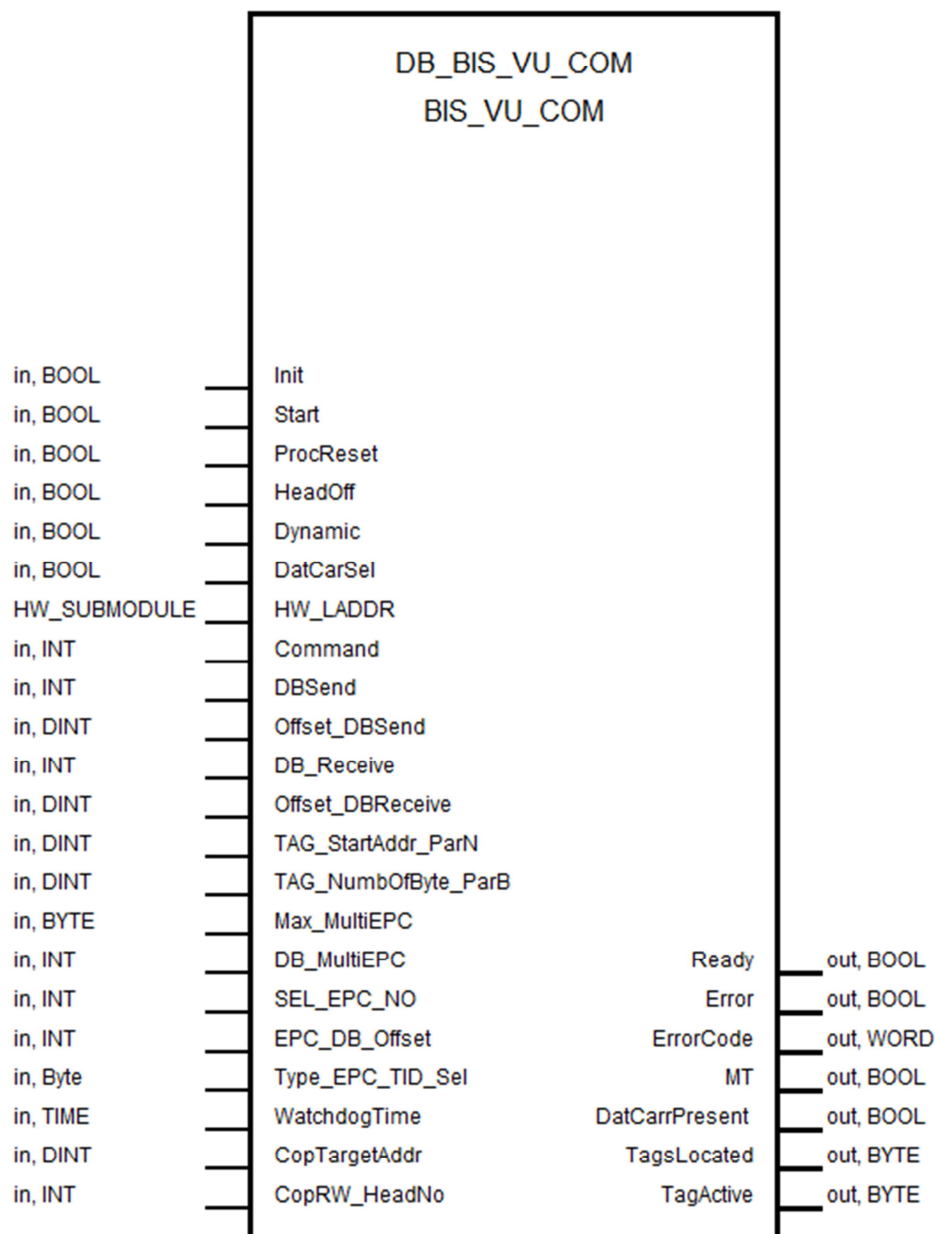
CRC	disable	=	Not active
	enable	=	The CRC check is a procedure for determining a check value for data in order to be able to recognize transmission errors.
Not available for BIS VU heads.			
Dynamic Mode	disable	=	Dynamic mode deactivated. Error number 01 _{hex} is applied if job is started without tag
	enable	=	The processor unit accepts the job and stores it regardless of whether a tag is in the active zone or not. If the tag enters the active zone the stored job is run.
Type and Serial Number	disable	=	First bytes of data carrier are displayed.
	enable	=	the type of the read/write head and serial number are displayed when CP occurs
Slow Tag Detection	disable	=	Default, fast tag detection
	enable	=	The antenna is switched on for tag detection only every 200ms
Low Antenna Power	disable	=	Default, high antenna power
	enable	=	Transmitting power is reduced for the read/write head.
Head LEDs Off	disable	=	Head LEDs are on
	enable	=	The LEDs are switched off on the respective read/write head
UID Compare Count	1..7	=	This parameter indicates how often the 5-byte ID count of a BIS L-1__-03 tag is imported and compared before the tag is shown as identified
Tag Type	All Tag...	=	Default, all tag types are detected

More information concerning the parameters is available in the BIS V- manual.

Function Block description for BIS VU

3 FB PARAMETER DESCRIPTION

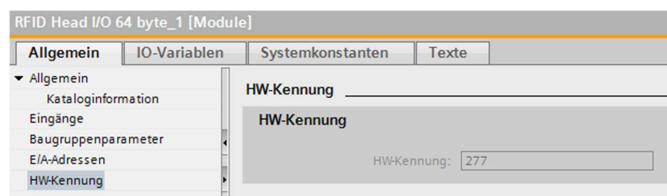
3.1 FB illustration S7-1200/1500



3 FB PARAMETER DESCRIPTION

3.2 Input parameter

Init	<p>Function block initialization</p> <p>Must be set for one cycle each time the PLC is restarted. Static variables, control bits and upcoming commandos are reset. The function is done when Ready is set again.</p>
Start	<p>Start function</p> <p>Start = 1 starts a job.</p> <p>This signal must be set until the Ready output goes to 0.</p> <p>The function is done when Ready or Error is set again.</p>
ProcReset	<p>Reset function block and r/w head</p> <p>ProcReset = 1 sets the function block and ground state r/w head.</p> <p>The signal must be set until the Ready parameter goes to false.</p> <p>The function is done when Ready is set again.</p> <p>The processor unit needs a few seconds for a reset sequence!</p>
HeadOff	Head power is switched off
Dynamic	<p>Activation or deactivation of the WatchdogTime for dynamic mode</p> <p>Dynamic = 0: Watchdog Timer is on</p> <p>Dynamic = 1: Watchdog Timer is off</p> <p>If the Dynamic Mode is used, the watchdog timer has to be disabled.</p>
DatCarSel	<p>Additional parameter for commando 47_{hex}; 53_{hex}; 54_{hex}; 55_{hex}.</p> <p>Data carrier selection All = 0 / Selected = 1.</p>
HW_LADDR	<p>Hardware identifier of RFID module. The I/O area is determined by the hardware identifier. The hardware identifier is shown in the properties of RFID module.</p>
Command	<p>Job type</p> <p>Command = 81_{hex}: Read data carrier (USER-data)</p> <p>Command = 82_{hex}: Write data carrier (USER-data)</p> <p>Command = 87_{hex}: Store Auto Read start address</p> <p>Command = 09_{hex}: Type and serial number</p> <p>Command = 91_{hex}: Copy data between data carrier</p> <p>Command = 92_{hex}: Initialize CRC_16 data check</p> <p>Command = B2_{hex}: Write constant value to data carrier</p> <p>Command = 40_{hex}: Select tag</p> <p>Command = 41_{hex}: Unselect tag</p> <p>Command = 42_{hex}: Read EPC</p>



(Figure TIA-Portal: Devices & networks, properties of RFID I/O module)

3 FB PARAMETER DESCRIPTION

	Command = 43 _{hex} : Write EPC
	Command = 44 _{hex} : Read TID
	Command = 45 _{hex} : Write antenna power
	Command = 46 _{hex} : Read antenna power
	Command = 47 _{hex} : Read multiple tags
	Command = 48 _{hex} : Write parameter
	Command = 49 _{hex} : Read parameter
	Command = 53 _{hex} : Bulk read
	Command = 54 _{hex} : Bulk write
	Command = 55 _{hex} : Read number of tags
	Command = 56 _{hex} : Get RSSI
	Command = 57 _{hex} : Lock tag
	Command = 58 _{hex} : Activate custom parameter
DB_Send	Data block for write data
Offset_DBSend	Start address for write data in the data block
DB_Receive	Data block for read data
Offset_DBReceive	Start address of read data in the data block
TAG_StartAddr_ParN	Write/read start address in the data carrier or parameter number for Com 48 _{hex} or 49 _{hex} .
TAG_NumbOfByte_ParB	Length in the code tag for read or write procedures. For the jobs 81 _{hex} (read), 82 _{hex} (write), 43 _{hex} (EPC write), B2 _{hex} write constant value, length have to be set there.
Max_MultiEPC	Maximum number of Data carriers for commando 47 _{hex} . Limit 0-50.
DB_MultiEPC	Data block for multi tagging
SEL_EPC_NO	Selector of EPC's in "DB_MultiEPC" for command 40 _{hex} . Limits 1-50
Type_EPC_TID_Sel	Type for commando 40 _{hex} and 47 _{hex} . 0 = Select data carrier or read multiple data carrier by EPC. 1 = Select data carrier or read multiple data carrier by TID. 2 = Select data carrier with EPC code from array "DB_Send". 3 = Select data carrier with TID code from array "DB_Send". Custom parameter for commando 58. 0 = Custom-Parameter deactivated. 1 = Custom-Parameter activated.
EPC_DB_Offset	Data byte Offset in "DB_MultiEPC" for command 40 _{hex} and 47 _{hex}
WatchdogTime	Monitoring timer for commands
CopTargetAddr	Copy data carrier. Start address target data carrier
CopRW_HeadNo	Copy data carrier. Number of read/write head that target data carrier is in front of

3 FB PARAMETER DESCRIPTION

3.3 Output parameter

Ready	Job completed This bit is set when the job was completed. This output will be reset by a rising edge of Start or Reset input.
Error	Job completed with error This bit is set if the job was completed with an error and is reset with a rising edge at Reset or Start input.
ErrorCode	If the Error bit is set, the error number will be displayed here as hex value.
MT	Notification Multiple Tags are detected, more than one data carrier in range of antenna.
DatCarrPresent	Data carrier present / data valid. This bit is only true when a tag is activated from processor. Notice for VU R/W heads: After the Carrier follow-up time the bit will Change to false, even a tag is in the active range of the antenna.

3.4 General error codes

Error No.	Meaning	Effect	Remedy
00 _{hex}	No error		
01 _{hex}	No data carrier in range of antenna	depends on parameter Dynamic. Not relevant in dynamic mode	Check distance between code tag and read/write head
02 _{hex}	Read error	Command canceled. Processor- and FB go to base state	Check distance between code tag and read/write head
03 _{hex}	Read canceled because data carrier was removed	Command canceled. Processor- and FB go to base state	Check distance between code tag and read/write head. and read/write head. For dynamic mode: Check velocity
04 _{hex}	Write error	Command canceled. Processor- and FB go to base state Command Caution: Some data may have already been written to the code tag	Check distance between code tag and read/write head
05 _{hex}	Write canceled because data carrier was removed	Command canceled. Processor- and FB go to base state Command Caution: Some data may have already been written to the code tag	Check distance between code tag and read/write head. and read/write head. For dynamic mode: Check velocity

3 FB PARAMETER DESCRIPTION

Error No.	Meaning	Effect	Remedy
07 _{hex}	Wrong command identifier (Job) or number of bytes for read/write command is 0	Processor- and FB go to base state	Check parameter settings
09 _{hex}	Cable break on selected read/write head, r/w head not connected or r/w head defective	Command canceled. Processor- and FB go to base state	Check r/w head
0D	Communication to the R/W head disrupted	Command canceled. Processor- and FB go to base state	Check r/w head
0E _{hex}	CRC for the read data and CRC for the data carrier do not agree	Command canceled. Processor- and FB go to base state	Check data carrier
0F _{hex}	Bit headers are not equal	Processor and FB go to base state	Check programming and content of bitheaders, I/O addresses correct.
20 _{hex}	Address assignment of the read/write job is outside the memory range of the data carrier	Processor and FB go to base state	Check programming
21 _{hex}	This function is not possible for this data carrier	Processor and FB go to base state	Check data carrier
30 _{hex}	License key incorrect	Processor and FB go to base state	Check program parameters
31 _{hex}	Invalid parameter set	Processor and FB go to base state	Check program parameters
32 _{hex}	Password required	Processor and FB go to base state	Set password
33 _{hex}	Password invalid	Processor and FB go to base state	Set correct password
34 _{hex}	Memory area is locked	Processor and FB go to base state	Unlock Memory or tag permlocked
35 _{hex}	Value range of the parameter incorrect	Processor and FB go to base state	Check program parameters
36 _{hex}	Data Carrier selection error	Processor and FB go to base state	Select data carrier, re-start command

This error list is corresponding to the status codes in user's manual.

3 FB PARAMETER DESCRIPTION

3.5 FB internal error codes

Error No.	Meaning	Effect	Remedy
80 _{hex}	Monitoring time expired	Processor and FB go to base state	Check programming
81 _{hex}	Undefined command	Processor and FB go to base state	Check programming
82 _{hex}	Wrong Index for select EPC command	Processor and FB go to base state	Check programming Limit between 1 and 25
83 _{hex}	EPC length exceeds the limit	Command canceled. Processor and FB go to base state	Restart processor
84 _{hex}	EPC length exceeds the limit	Command canceled. Processor and FB go to base state	Check programming, Limit 65,534 byte
50 _{hex}	No connection to RFID module	Processor and FB go to base state	Check hardware configuration and Profinet - connection. Initialize FB again
51 _{hex}	Data could not be read from RFID module	Processor and FB go to base state	Check hardware configuration and Profinet - connection. Initialize FB again
52 _{hex}	Data could not be write to RFID module	Processor and FB go to base state	Check hardware configuration and Profinet - connection. Initialize FB again
53 _{hex}	FB Internal Error	Processor and FB go to base state	Check hardware configuration and Profinet - connection, check length of DB_Send/ DB_Receive initialize FB again

3 FB PARAMETER DESCRIPTION

3.6 Description of commandos

The commandos are selected by a hexadecimal value at the “**Command**” input. With a rising edge at “**Start**” input the commando is executed. After successful execution the “**Ready**” Output is true and “**Error**” is false.

Read data carrier 81_{hex}:

Data carrier is read from “**TAG_StartAddr_ParN**”. The amount of data is defined by the parameter “**TAG_NumbOfByte_ParB**”. The data are stored in “**DB_Receive**”. The byte offset is defined by the parameter “**Offset_DBReceive**”.

Write data carrier 82_{hex}:

The data are read out of “**DB_Send**” and written to carrier at the byte “**TAG_StartAddress_ParN**”. The amount of data is defined by the parameter “**TAG_NumbOfByte_ParB**”.

Store start address for “Auto Read” function 87_{hex}:

The “Auto Read” start address is stored in the processor EEPROM. The “Auto Read” start address is defined by the parameter “**TAG_StartAddress_ParN**”.

Type and serial number 09_{hex}:

Read the read/write head type, data carrier type and UID of data carrier in the field. The dates are stored in “**DB_Receive**”. The ReadByte [0] contains the UID length information, ReadByte [1] contains the head type, ReadByte [2] contains the data carrier type, ReadByte [3..n] contains the UID. The amount of bytes stored in ReadByte[0] are transferred to data-block.

Copy data between data carrier 91_{hex}:

Data carrier is read from “**TAG_StartAddress_ParN**”. The amount of data is defined by the parameter “**TAG_NumbOfByte_ParB**”. The data are copied too the r/w head selected with FB input “**CopRW_HeadNo**”. The data are moved to the target data carrier, starting at “**CopTargetAddr**”.

Initialize CRC 16 data check 92_{hex}:

The data are read out of “**DB_Send**” and written to carrier at the byte “**TAG_StartAddress**” with CRC_16 checksum. The amount of data is defined by the parameter “**TAG_NumbOfByte**”. Parameter CRC must be selected for data carrier initialization, otherwise the command behaves the same as 02_{hex} write data carrier.

Write constant value to data carrier B2_{hex}:

Constant values are written to data carrier the parameter for start byte on tag is “**TAG_StartAddress**”. The amount of constant values is defined by the parameter “**TAG_NumbOfByte**”. The data byte for constant value is read from “**DB_Send**”.

Read data carrier EPC 42_{hex}:

This function reads EPC from Data carrier to “**DB_Receive**” The EPC length is stored in ReadByte [0], ReadByte [1..n] contains the EPC. The bytes amount in ReadByte[0] is transferred to data block. The lowest byte of EPC is stored in the higher byte address in the data block.

3 FB PARAMETER DESCRIPTION

DB30Receive						
Name	Datentyp	Offset	Startwert	Beobachtungswert	Remanet	
Static						
ReceiveData	Array[0..999] of Byte	0.0				
ReceiveData[0]	Byte	0.0	16#0	16#0C		
ReceiveData[1]	Byte	1.0	16#0	16#22		
ReceiveData[2]	Byte	2.0	16#0	16#9A		
ReceiveData[3]	Byte	3.0	16#0	16#40		
ReceiveData[4]	Byte	4.0	16#0	16#12		
ReceiveData[5]	Byte	5.0	16#0	16#78		
ReceiveData[6]	Byte	6.0	16#0	16#02		
ReceiveData[7]	Byte	7.0	16#0	16#11		
ReceiveData[8]	Byte	8.0	16#0	16#88		
ReceiveData[9]	Byte	9.0	16#0	16#88		
ReceiveData[10]	Byte	10.0	16#0	16#62		
ReceiveData[11]	Byte	11.0	16#0	16#00		
ReceiveData[12]	Byte	12.0	16#0	16#E2		

Write data carrier EPC 43_{hex}:

This function writes the EPC from "DB_Send" to the data carrier. The length information must be applied to FB input "TAG_NumberOfByte".

Read data carrier TID 44_{hex}:

This function reads the TID of the data carrier and transfers the data to "DB_Receive". ReadByte [0..n] contains the TID. The FB input parameter "TAG_NumbOfByte" defines the number of byte that are read from tag. The data are stored in "DB_Receive".

Select Tag 40_{hex}:

Tag selection commando for multitagging. With the Parameter "Sel_EPC_NO" a EPC canbe selected from data block "DB_MultiEPC". If the input value is "1", EPC_01 is selected, the maximum value is "50". The "DB_MultiEPC" contains EPC of data carriers read with commando 47. In "DB_MultiEPC" also individual EPC codes can be stored and selected. If data are copied into the datablock, it's not allowed to overwrite No_Tag and EPC_Length. The parameter "EPC_DB_Offset" defines the byte offset in the datablock. This input is only recommended, if the byte No_Tag doesn't start at Byte 0.

Is the FB-Parameter Type_EPC_TID_Sel = 0 selection processed by EPC.

Is the FB-Parameter = 1 selection processed by TID.

Is the FB-Parameter = 2 Select data carrier with EPC code from array "DB_Send".

Is the FB-Parameter =3 Select data carrier with TID code from array "DB_Send".

NOTE

If the the value 1 – 3 is selected at the FB input "Type_EPC_TID_Sel" the data length have to be set at the input "TAG_NumbOfByte_ParB"! If the value at the FB input is 2 or 3 the selection data are copied out of "DB_Send" beginning with the address "Offset_Send".

Unselect Tag 41_{hex}:

Unselect Tag. This commando has no further parameters.

Set antenna power 45_{hex}:

Parameter value = settable power (dBm) * 4. For more information refer to the manual. The values are not saved persistent in the processor. The setting value for the antenna power is read out of "DB_Send". The data byte can be selected with the parameter "Offset_DBSend".

3 FB PARAMETER DESCRIPTION

Read antenna power 46_{hex}:

Parameter value = settable power (dBm) * 4.

The antenna power is read to "DB_Receive". The read data byte can be selected with the Parameter "Offset_DBReceive". Valid values are between 0_{dez} und 144_{dez}.

Read multiple tags EPC 47_{hex}:

The EPC of the data carriers located in front of the antenna are read and stored in the "DB_MultiEPC". The "EPC_DB_Offset" parameter is added in the data storage and allows an individual data storage in the data block. For creation of the DB there are two UDT's (user defined data tables) available. In byte 0 is stored the number of data carriers and in byte 1 is stored the EPC length if the "EPC_DB_Offset" is 0.

NOTE: Each time you start the command, the data in "DB_MultiEPC" is overwritten. If the job fails, the old data is retained. The data are not deleted

The "Max_MultiEPC" parameter specifies the maximum number of data carriers.

Is the FB-Parameter "Type_EPC_TID_Sel" = 0 EPC's are read. Is the Parameter = 1 TID of the data carriers are read. With the FB Input "DatCarSel" are all (=0) or only selected (=1) data carriers read.

For the setup of EPC DB two UDT's are available:

Data type UDT 41 for 12 Byte EPC (96Bits):

MultiEPC_12Byte			
	Name	Datentyp	Defaultwert
1	No_Tag	Byte	B#16#0
2	EPC_Length	Byte	B#16#0
3	EPC_01	Array[0..11] of Byte	
4	EPC_02	Array[0..11] of Byte	
5	EPC_03	Array[0..11] of Byte	
6	EPC_04	Array[0..11] of Byte	
7	EPC_05	Array[0..11] of Byte	
8	EPC_06	Array[0..11] of Byte	
9	EPC_07	Array[0..11] of Byte	
10	EPC_08	Array[0..11] of Byte	
11	EPC_09	Array[0..11] of Byte	
12	EPC_10	Array[0..11] of Byte	

Data type UDT 42 for 62 Byte EPC (496Bits):

MultiEPC_64Byte			
	Name	Datentyp	Defaultwert
1	No_Tag	Byte	B#16#0
2	EPC_Length	Byte	B#16#0
3	EPC_01	Array[0..63] of Byte	
4	EPC_02	Array[0..63] of Byte	
5	EPC_03	Array[0..63] of Byte	
6	EPC_04	Array[0..63] of Byte	
7	EPC_05	Array[0..63] of Byte	
8	EPC_06	Array[0..63] of Byte	
9	EPC_07	Array[0..63] of Byte	
10	EPC_08	Array[0..63] of Byte	
11	EPC_09	Array[0..63] of Byte	
12	EPC_10	Array[0..63] of Byte	

3 FB PARAMETER DESCRIPTION

Write parameter 48_{hex}:

BIS VU r/w head parameter are transmitted. The parameter number have to be set at "TAG_StartAddr_ParN". The length information has to be set at input "TAG_NumbOfByte_ParB".

Read parameter 49_{hex}:

Read BIS VU parameter. The parameter number have to be set at FB input "TAG_StartAddr_ParN". The data byte n+0 in "DB_Receive" contains the length of the parameter. Daten byte n+1 contains the values. The byte n can be selected by FB input "Offset_DBReceive".

Bulk Read 53_{hex}:

Read several data carriers in the range of antenna. From the start address, defined at FB input "TAG_StartAddr_ParN" the amount of data set at "TAG_NumbOfByte_ParB" is stored in "DB_Receive" at the parameter "Offset_DBReceive". A check byte is transmitted at end of each data block from the data carrier, which indicates whether the read data are valid or not:

- 00_{hex}: Data valid
- FF_{hex}: Data invalid

The first byte of "DB_Receive" contains the number of detected tags. Byte 2 and 3 contains the number of bytes transmitted per tag.

Bulk Write 54_{hex}:

Write several data carriers in the range of antenna. From the start address, defined at FB input "TAG_StartAddr_ParN" the amount of data set at "TAG_NumbOfByte_ParB" is read out from "DB_Send" at the parameter "Offset_DBSend". The FB-Output „TagsLocated“ displays the number of located tags. The FB-Output „TagsLocated“ displays the active tag.

Read number of Tags 55_{hex}:

The amount of data carriers in the active field is read to "DB_Receive". With the Parameter "Offset_DBReceive" the data byte can be selected.

Get RSSI Receive Signal Strength Indicator 56_{hex}:











The RSSI type is selected by the input "Type_EPC_TID_Sel".. Data are send to "DB_Receive". With the parameter "Offset_DBReceive" the data byte for storage can be selected.

Function Block description for BIS VU

3 FB PARAMETER DESCRIPTION

Lock Tag 57_{hex}:

Lock memory areas of a data carrier. For better formatting of the data block the data type UDT 43 is available. Four bytes from DB send are transmitted. If the UDT is used, the UDT offset address must be set at FB input “**Offset_DBSend**”.

LockTag			
	Name	Datentyp	Defaultwert
1	 User_Mask_PermLock	Bool	FALSE
2	 User_Mask_Lock	Bool	FALSE
3	 TID_Mask_PermLock	Bool	FALSE
4	 TID_Mask_Lock	Bool	FALSE
5	 EPC_Mask_PermLock	Bool	FALSE
6	 EPC_Mask_Lock	Bool	FALSE
7	 AccsPW_Mask_PermLock	Bool	FALSE
8	 AccsPW_Mask_Lock	Bool	FALSE
9	 KillPW_Mask_PermLock	Bool	FALSE
10	 KillPW_Mask_Lock	Bool	FALSE

WARNING

PermaLock commandos are irreversible. Write commands are impossible after locking commando.

Activate Custom Parameter 58_{hex}:

Activation of compatibility mode for BIS M-41_ r/w heads

The custom parameter is read from the FB Input “**Type_EPC_TID_Sel**”.

Please refer to BIS V-61** or BIS VU manual for further information.

4 DIACLAIMER OF LIABILITY

This demo function block is free of charge and is a universal application example. This demo function block shall help program and configure PLC applications and shall provide possible solutions.

The user is not entitled to claim for warranty, error correction and updates. In particular there is excluded any claims against Balluff GmbH for damages that might result from the use of this demo program. Excluded from this limitation of liability shall be (a) those damages that are based on injury to life, limb or health, (b) a liability according to the Produkthaftungsgesetz (German Product Liability Law) and (c) cases of willful intent.

Please check if the function block is intended for your application before adapting it in plants and machineries.

By using the S7 sample, made available free of charge you accept the limitation of warranty and liability!

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