# BARTEC

#### Supplementary description – Translation of the original Addendum to user manual 11-A1S4-7D0001

BCS36x8ex Series

Type 17-A1S4-\*HP\* ATEX / IECEx Zone 1/21 CSA Class I, II, III Division 1

Type B7-A2S4-\*HP\* ATEX / IECEx Zone 2/22 CSA Class I, II, III Division 2

Date: 16th July 2020

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## 1. General information for the connection to PLC

The BARTEC system of the BCS36x8ex series consists of a hand-held scanner (corded or Bluetooth) and an associated universal supply module(USM) or base station.

The hand-held scanner can be connected to a PLC via these associated components.

All used interfaces of the USM (USB, RS232, RS422 and RS485) can be connected to a PLC.

There are a number of different manufacturers for PLCs. The connection of a hand-held scanner depends on the availability of an interface to the PLC and the ability of the PLC to process the incoming data. The PLC must support the open ASCII protocol.

There is no compatibility list existing.

The following must be observed when connecting the handheld scanner to a PLC:

- What interfaces are available on the PLC/PLC?
  - The USM supports the following interfaces.
    - USB-SPP (virtual serial interface)
    - RS232
    - RS422
    - RS485
- The PLC supports the open ASCII protocol.
- What interface parameters are set on the PLC?

All interconnected components must be set to the same parameters. Otherwise, the communication can not work correctly or not at all.

- Baud Rate
- parity
- Stop Bit
- Data Bit
- Hardware/Software Handshaking



The way of processing the data at the PLC and what has to be set at the scanner is the responsibility of the plant operator.

E.g. a serial interface has no intelligence of its own and cannot process incoming data independently. This means that the controller must monitor the serial interface and process incoming data (read/write routine).

#### Solution 1: availability on the PLC side

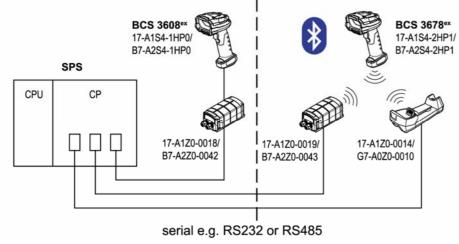
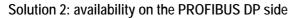


Figure 1 Availability on the PLC side

- Communication controller / processor (CP)
- Open ASCII driver



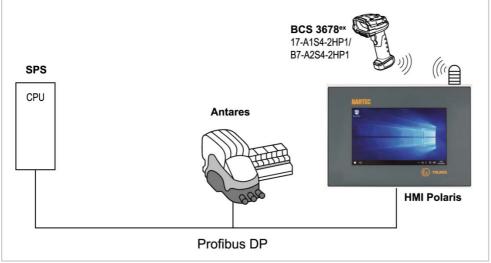


Figure 2 Availability on the DP side

- PROFIBUS DP converter to serial or
- PROFIBUS compatible terminal equipment such as HMI Polaris with the possibility of connecting the scanner

# 2. Connection to PLC

Compatibility with other components or systems:

BARTEC tested only the components described in chapter 3 of this document.

We expect that communication is in general possible with all other PLC and necessary communication modules.

Detailed instructions can be found in the descriptions of the respective manufacturers.



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BARTEC cannot give any further instructions for the processing of the data.

Further processing of the data is the responsibility of the operator.

# 3. Sample Project for Siemens-Simatic S7-300

A sample project is available for a Siemens-SIMATIC S7-300 with CPU 315-2 PN/DP central processing and a CP340 communication processor for the RS232 connection to the Scanner BCS 36x8<sup>ex</sup>.

The project is available as a download on the BARTEC support download page.

http://automation.bartec.de/scannerE.htm

- Data Capture
- BCS3600<sup>ex</sup> Hand-Held Scanner Series
- Programming
- Sample for PLC Siemens SIMATIC S7-300 CPU315 2 PN/DP and CP340

The sample shows what is necessary to establish a connection and what settings are required. Further information can be found in Siemens documentation.

https://support.industry.siemens.com/cs/document/99741983/sample-program-(standard-blocks-cp-340-cp-341)zxx21\_01\_ptp\_com\_cp34x-zip-for-step-7-(tia-portal)?dti=0&lc=en-DE



Siemens and TIA-Portal are registered trademarks.

#### 3.1 Note about scanner

The scanner itself is connected in this sample project via RS232 cable to the CP340.

The scanner is programmed to following parameters:

Factory default	t
-----------------	---

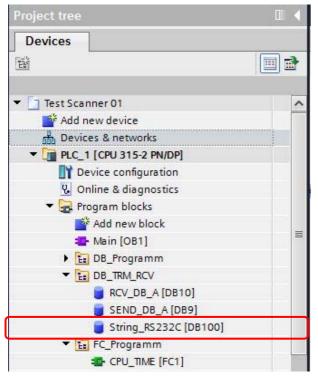


#### Set Factory Defaults

Standard RS232	Standard RS-232 <sup>1</sup>			
	Parameter	Default	Page Number	
	RS-232 Host Parameters			
	RS-232 Host Types	Standard	10-7	
Then scanner is set to	Baud Rate	9600	10-10	
following RS232 interface parameters.	Parity Type	None	10-11	
	Stop Bits	1 Stop Bit	10-12	
Full list of default	Data Bits	8-Bit	10-12	
parameters can be found in Zebra "Product Reference	Check Receive Errors	Enable	10-13	
Guide"	Hardware Handshaking	None	10-13	
	Software Handshaking	None	10-15	
	Host Serial Response Time-out	2 Seconds	10-17	
	RTS Line State	Low RTS	10-18	

### 3.2 Note about PLC

The scanned data's from scanner are written into the DB100 data block as charakters.



#### 3.3 Sample project

The sample project "Test Scanner 01.zap15" is a zap file.

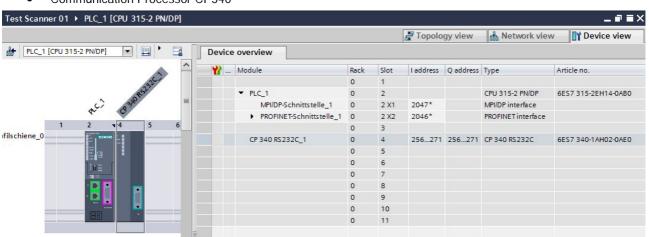
Can be opened by using the Siemens software, can be found under the TAB "Project" and navigate to "**Project**" and "**Retrieve**".

Project Edit View	v Insert	Online	Options					
* New								
👌 Open			Ctrl+O					
Migrate project								
Close			Ctrl+W					
- Save	Save Ctrl-							
Save as		Ctrl	+Shift+S					
Delete project			Ctrl+E					
Archive								
Retrieve								
Multiuser			×					
Open project from	n Teamcen	ter						
Card Reader/USB	memory		F					
T Memory card file			•					
Start basic integr	ity check							
C:\Users\korb\Doc	uments \\	Test Scan	ner 01					
C:\Users\korb\Des	ktop 3\PC-S	\PC-Stat	ion 01					
C:\Users\korb\Doc	uIModex	Test BAs O	1_V15					
C:\Users\korb\Doc	u\Modex	Bilfinger O	1_V15					
C:\Users\korb\Doc	uments II	TestProjec	t_V15					
C:\Users\korb\Doc	umentslAu	toma\Pr	ojekt1					
C:\Users\korb\Doc	umen\Pra	axair 8Al H	ART 01					
C:\Users\korb\Do.	\Australia	RMA R114	544 <mark>01</mark>					
Exit			Alt+F4					
	RCV_RS2							
		fees1						

#### 3.4 Hardware Configuration

The sample project "Test Scanner 01.zap15" is created with the following hardware configuration.

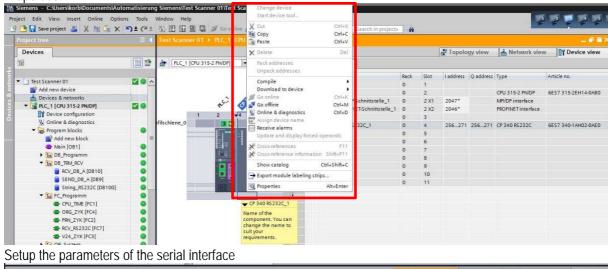
- Siemens SIMATIC S7-300 central processing unit CPU 315-2 PN/DP
- Communication Processor CP340



#### Software Configuration 3.5

It's important to know that the serial interface parameters on all connected devices are identical. Setup:

- Right click on the CPU 315-2 PN/DP •
- Properties •

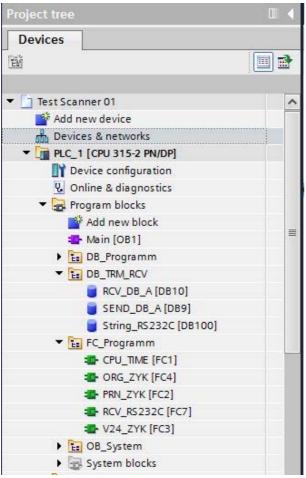


Setup the parameters of the serial interface .

CP 340 RS232C_1 [CP 340 RS23	32C]		<b>Q</b> Properties	🗓 Info 🔒 📱 Diagnostics	78
General IO tags Sys	tem constants Texts				
✓ General Catalog information	> Frame				
Identification & Maintenance Interrupt selection	Character frame				
✓ Protocol	Data bits:	8			-
▼ ASCII	Stop bits:	1			-
Frame	Parity:	None			
Data transmission Receive buffer	-				
Interface	End detection of a received	frame			
I/O addresses					
		<ul> <li>After character delay time elapses</li> </ul>			
		On receipt of fixed number of characters	1		
		<ul> <li>On receipt of the end delimiter(s)</li> </ul>			
	Character delay time:	50 ms			
	Frame length:	240 bytes			
	No. of end delimiters:	1			T
	1st end delimiter:	4 HEX			
		EOT			ASCII
	2nd end delimiter:	0 HEX			
	the the definition.	NUL			ASCII

#### 3.6 Project tree for necessary modules

The project tree shows all the necessary modules.



### 3.7 Main [OB1]

In OB1 with command "call", the routine for receiving of data is started.

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	<i>l</i> ain							
	Name			Data type	Offset	Default value	Comment	t
-	🔟 🔻 Temp							
_				2				
	lock title: "N	Main Prog	ram Sweep	(Cycle)*				
	mment		ram Sweep (	(Cycle)"				
			ram Sweep (	(Cycle)*				
Co	mment		ram Sweep	(Cycle)*				
Co	mment Network 1:		ram Sweep	(Cycle)*				
Co	Metwork 1: Comment		ram Sweep	(Cycle)*				
Co	Metwork 1: Comment		ram Sweep (					%FC7

### 3.8 Function FC7 / RCV\_RS232C

The function FC7 control the handling of the data.

Name		Data typ	e Offset	Default value	Comment
🕣 🔻 Input					
L					
Network	1:				
Comment					
1	UN	"TRUE"			%M0.0
	S	"TRUE"			%M0.0
3 4	CALL	P RCV , "Instanz	D DCV"		\$DB20
5		R :="TRUE"	F_RUV		*DB20 \$M0.0
6		_R := IRUE :=			
7		DDR :=256			256
8		NO :=100			100
9		B NO :=6			6
10		R :="New Datas	B5232C"		\$M10.0
11		ROR :="Error RS23			%M11.0
12		N :="String Len			%MW 50
13		ATUS :="Status RS2	8		\$MW 52
14		_			
15					
16					
17	UN	"New_Datas_RS232C			%M10.0
18	SPB	END			
19					
20	L	"String_Length"			%MW 50
21	Т	"String_RS232C".S	tring_Length		%DB100.DBW
22					
23		"Status_RS232C"			%MW 52
24	Т	"String_RS232C".S	tatus_RS232C		<pre>%DB100.DBW</pre>
25					
26 END	: NOP 0				

#### 3.9 Instances of the data module

The instance defines the different parameter.

Data length --- Length of incoming barcode data

Status --- Feedback from the module according to Siemens

Barcode Scanner 0-25 --- Data defined as "CHAR". Length can free defined. In sample 0-25

End of String --- End character. In this sample defined as "**\$R**" (ASCII code "**0**C")

The end of string character is not mandatory as long as the length of the data string is known.

Sample instance								Sample instance with received data.									
·								Barco	de: TEST	UPC E							
String	R\$232C		_	_	_	_	_										
Nan		Data type	Offset	Start value	Retain	Visible in	Setpoint										
and the second se	Static							String	R\$232C								
2 -03 =	String_Length	Int	0.0	0				Narr	e	Data type	Offset	Start value	Monitor value	Retain	Visible in	Setpoint	
3 🕣 🗉	Status_RS232C	Int	2.0	0				1 💶 🖛	latic								
4 - 11 =	Free	Word	4.0	16#0				2 🛥 *	String_Length	Int	0.0	0	12	9		8	
5	BARCODE Scanner 0	Char	6.0	11				3 🗠 •	Status_RS232C	Int	2.0	0	0			8	
6	BARCODE Scanner 1	Char	7.0					· · · ·	Free BARCODE Scanner_0	Word Char	4.0	16#0	16#0000				
7	BARCODE Scanner 2	Char	8.0						BARCODE Scanner_0 BARCODE Scanner_1	Char	7.0		161			ä	
								7	BARCODE Scanner_1 BARCODE Scanner_2	Char	8.0		19	, and a second s	, and the second	ä	
8 📶 🖷	BARCODE Scanner_3	Char	9.0					8	BARCODE Scanner, 3	Char	9.0		Ŧ			Ä	
9 📲 🖷	BARCODE Scanner_4	Char	10.0					9	BARCODE Scanner_4	Char	10.0					8	
10 📶 🖷	BARCODE Scanner_5	Char	11.0					10 💶 •	BARCODE Scanner_5	Char	11.0		ω.				
11 📶 🖷	BARCODE Scanner_6	Char	12.0		<b></b>			11	BARCODE Scanner_6	Char	12.0		11			8	
12 📲 🕷	BARCODE Scanner_7	Char	13.0		<ul><li>✓</li></ul>			12	BARCODE Scanner_7	Char	13.0		"C'			8	
13 🕣 🖷	BARCODE Scanner_8	Char	14.0					13 💶 🔹	#ARCODE Scanner_8	Char	14.0		11	000			
14 📲 🔳	BARCODE Scanner_9	Char	15.0					14 📹 +	BARCODE Scanner_9	Char	15.0		"E"				
15 📲 🛎	BARCODE Scanner_10	Char	16.0					15 🚭 =	BARCODE Scanner_10	Char	16.0		'SR'			8	
16 🕣 🔳	BARCODE Scanner_11	Char	17.0	3.3				16 🚭 =	BARCODE Scanner_11 BARCODE Scanner 12	Char Char	17.0		SL.				
17 📲 🖷	BARCODE Scanner 12	Char	18.0	11			ŏ	17	BARCODE Scanner_12 BARCODE Scanner_13	Char	19.0					8	
18 - 1	BARCODE Scanner 13	Char	19.0					19 -0 -	BARCODE Scanner_14	Char	20.0		**			ë	
19 🕣 =	BARCODE Scanner_14	Char	20.0	1.1				20 🗨 •	BARCODE Scanner_15	Char	21,0		11.1			ĕ	
20 - 1	BARCODE Scanner 15	Char	21.0					21	BARCODE Scanner_16	Char	22.0		**	9		ē	
21	BARCODE Scanner 16	Char	21.0					22 🛥 =	BARCODE Scanner_17	Char	23.0		**	9			
								23 📢 •	BARCODE Scenner_18	Char	24.0		11. C				
22 📲 =	BARCODE Scanner_17	Char	23.0					24 😋 •	BARCODE Scanner_19	Char	25.0		11			8	
23 🕣 🕷	BARCODE Scanner_18	Char	24.0					25 🚭 🔹	BARCODE Scanner_20	Char	26.0			2		B	
24 📲 🖷	BARCODE Scanner_19	Char	25.0					26 💶 •	BARCODE Scanner_21	Char	27.0			M		8	
25 📲 =	BARCODE Scanner_20	Char	26.0					27	BARCODE Scanner_22	Char	28.0		12				
26 📲 🖷	BARCODE Scanner_21	Char	27.0					28 🚭 • 29 🚭 •	BARCODE Scanner_23 BARCODE Scanner_24	Char	29.0					B	
27 📶 🔳	BARCODE Scanner_22	Char	28.0	1.1	<b></b>			30 -0 -	BARCODE Scanner_24 BARCODE Scanner_25	Char	30.0			, and the second	×.	8	
28 📲 🖷	BARCODE Scanner_23	Char	29.0					31	-dinzufügen-		31.0		-			Ä	
29 🕣 =	BARCODE Scanner_24	Char	30.0						Constant and the					and the second second	1 1 mar	and an officiary of	
30 📲 🔳	BARCODE Scanner 25	Char	31.0														
31	Himufildans																