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

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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

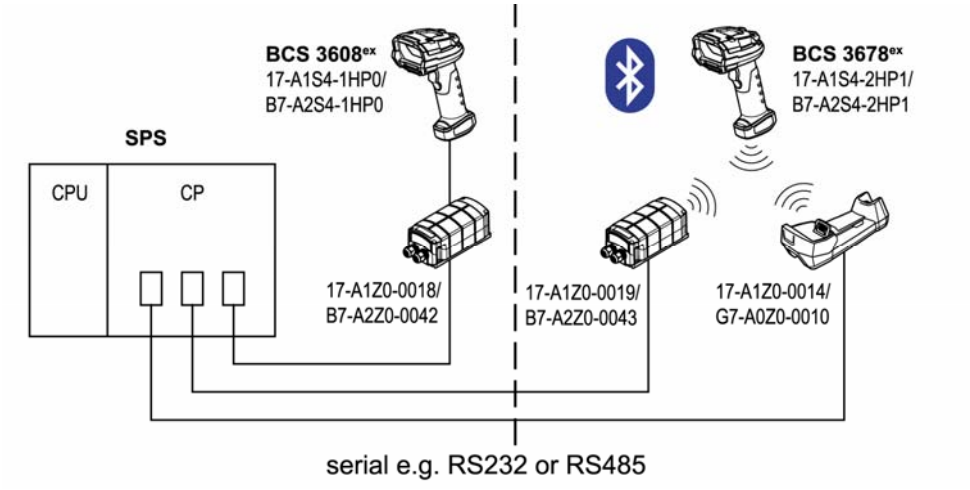


Figure 1 Availability on the PLC side

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

Solution 2: availability on the PROFIBUS DP side

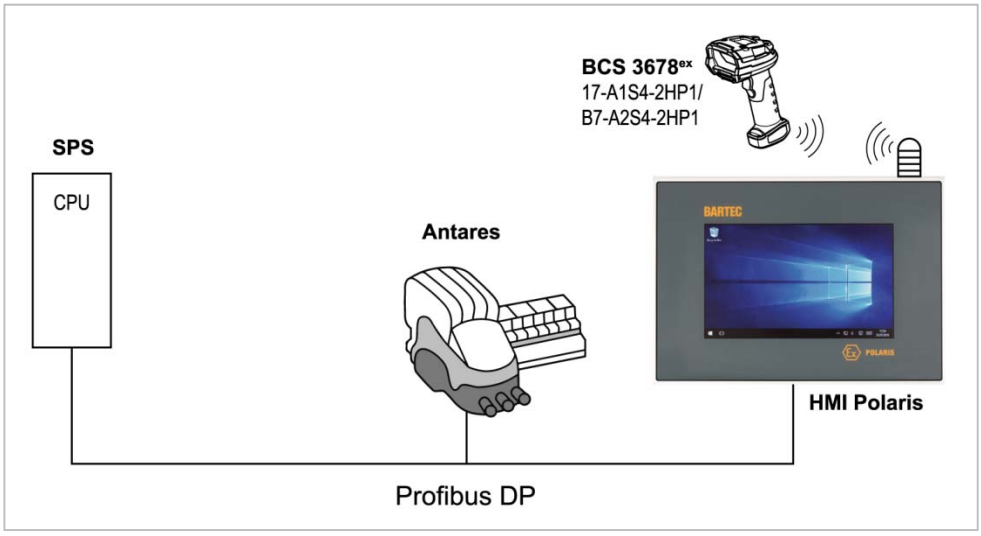


Figure 2 Availability on the DP side

- 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.

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 36x8ex.

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

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

- Data Capture
- BCS3600ex 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	**Set Factory Defaults**

Standard RS232

Standard RS-232[1]

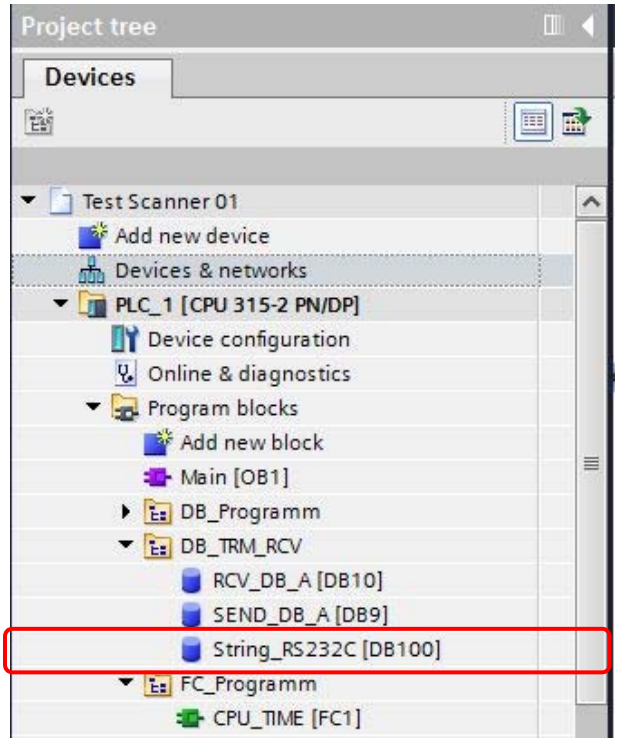
Then scanner is set to following RS232 interface parameters.

Full list of default parameters can be found in Zebra "Product Reference Guide"

Parameter	Default	Page Number
RS-232 Host Parameters		
RS-232 Host Types	Standard	*10-7*
Baud Rate	9600	*10-10*
Parity Type	None	*10-11*
Stop Bits	1 Stop Bit	*10-12*
Data Bits	8-Bit	*10-12*
Check Receive Errors	Enable	*10-13*
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

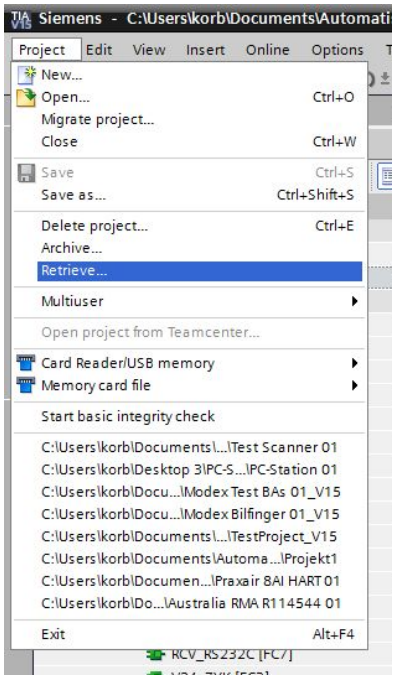
The scanned data´s from scanner are written into the DB100 data block as charakters.



3.3 Sample project

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

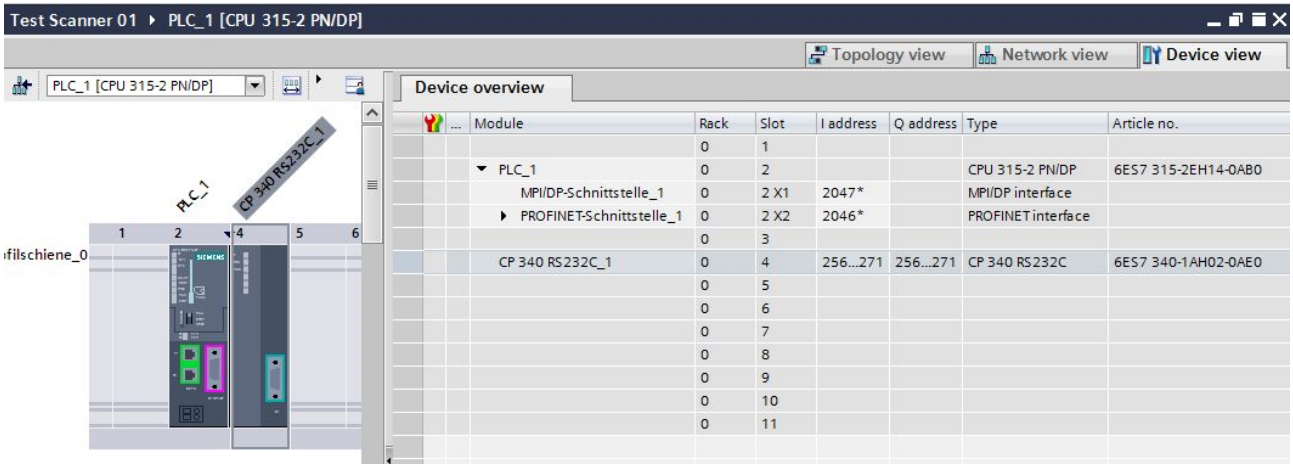
Can be opened by using the Siemens software, can be found under the TAB “Project” and navigate to “**Project**” and “**Retrieve**”.



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

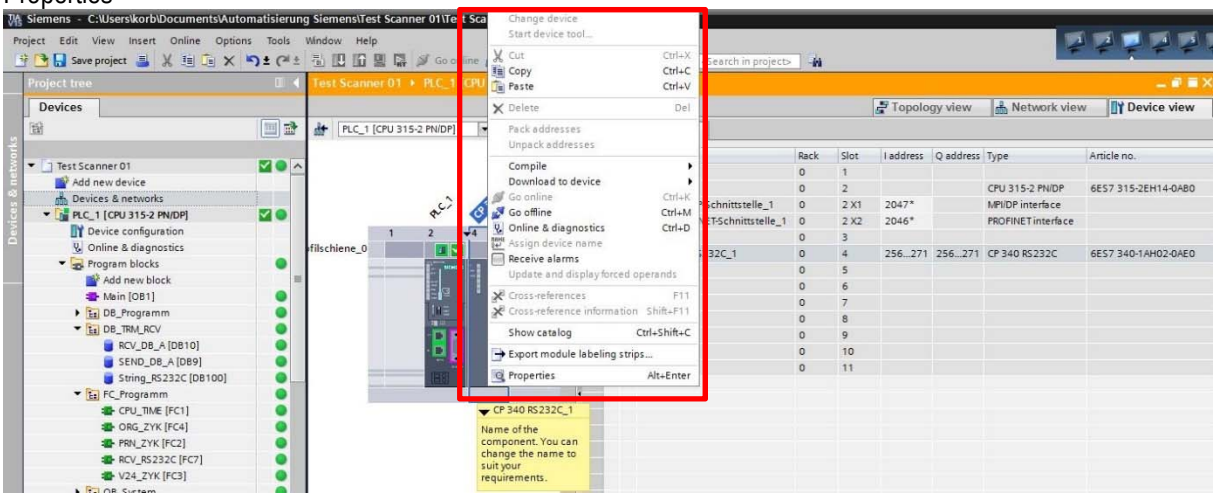


3.5 Software Configuration

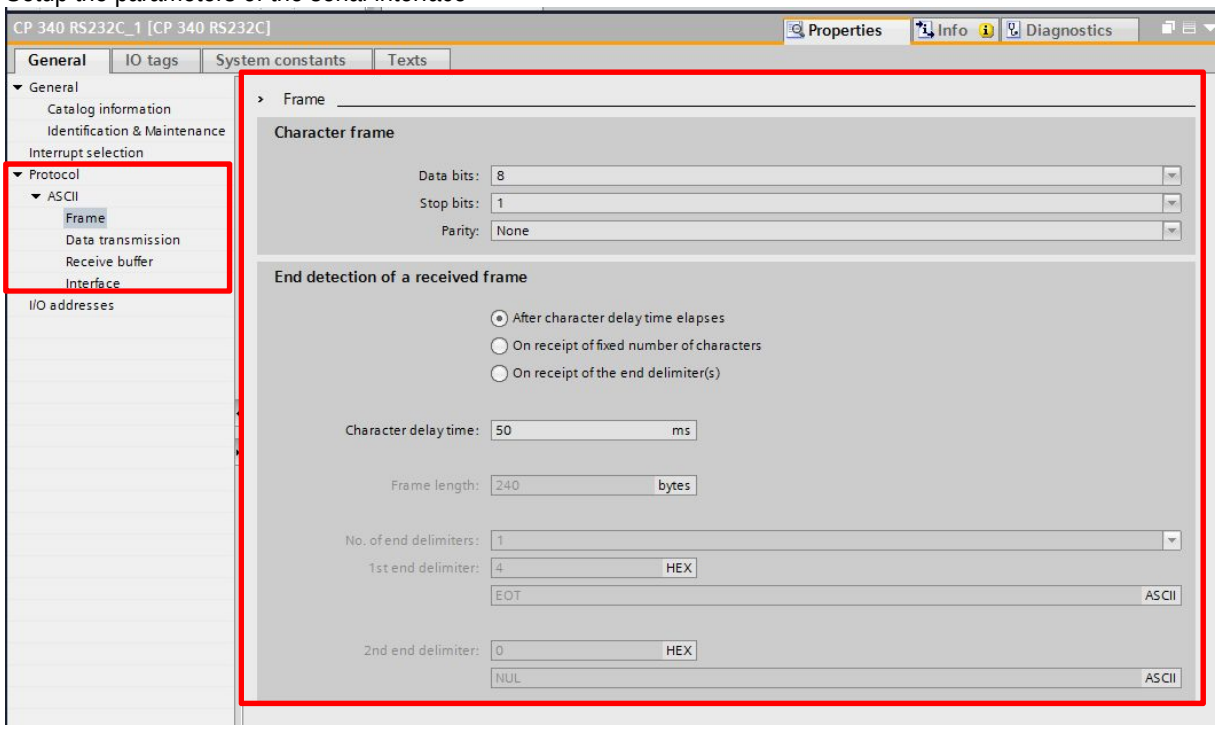
It´s important to know that the serial interface parameters on all connected devices are identical.

Setup:

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

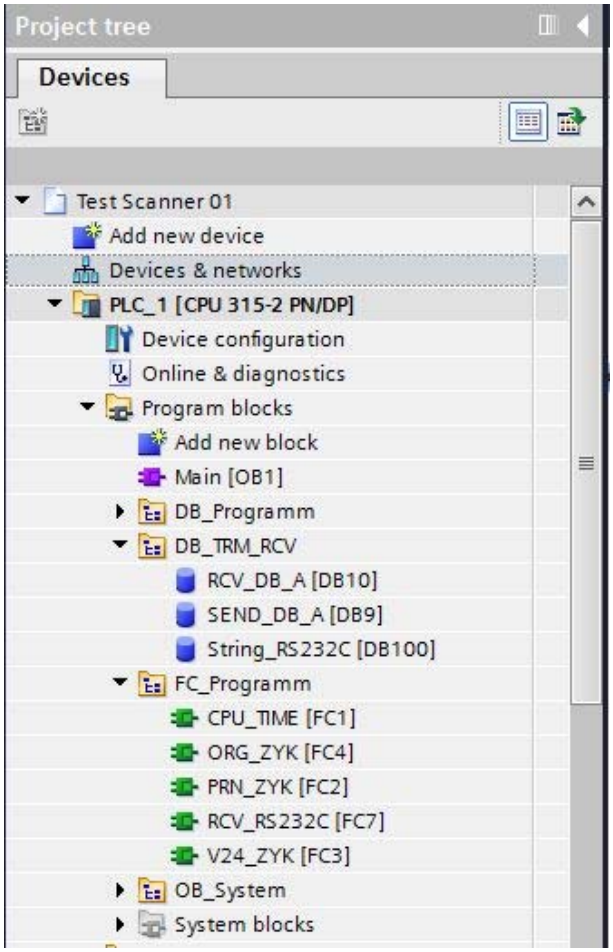


- Setup the parameters of the serial interface



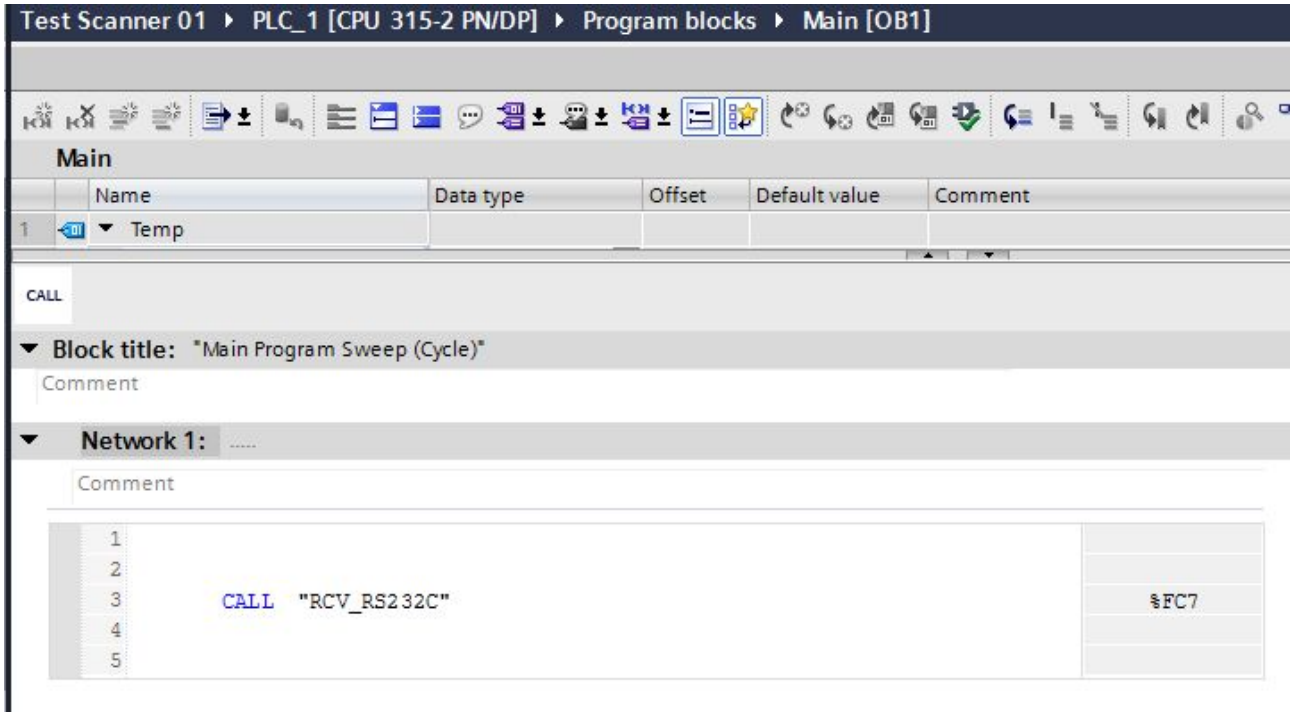
3.6 Project tree for necessary modules

The project tree shows all the necessary modules.



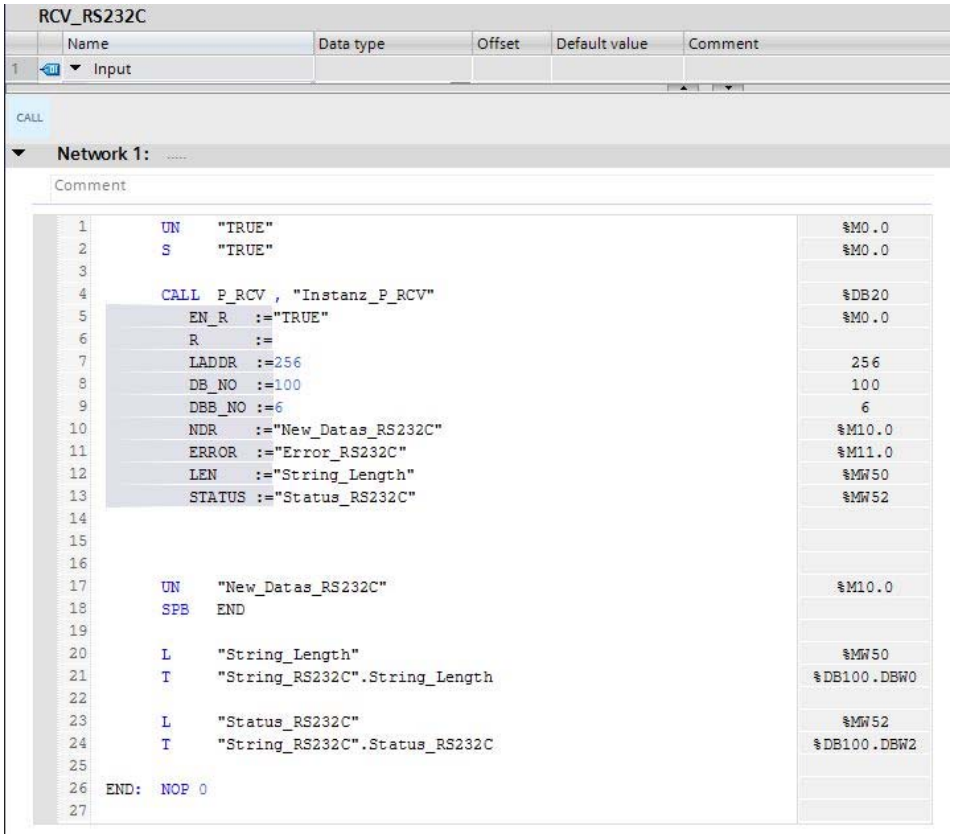
3.7 Main [OB1]

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



3.8 Function FC7 / RCV_RS232C

The function FC7 control the handling of the data.



3.9 Instances of the data module

The instance defines the different parameter.

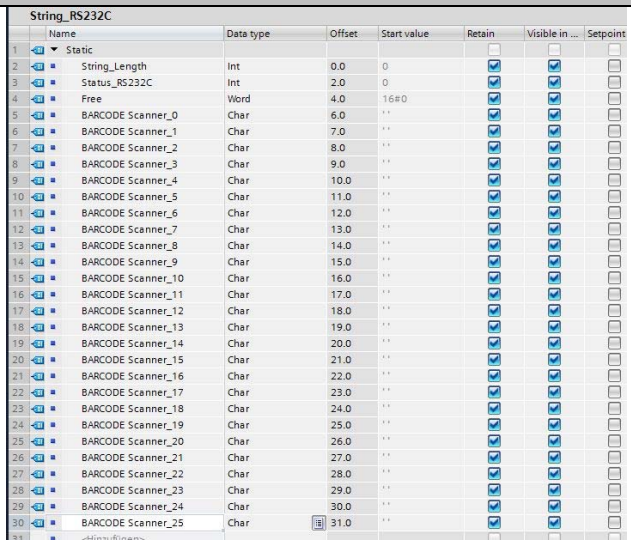
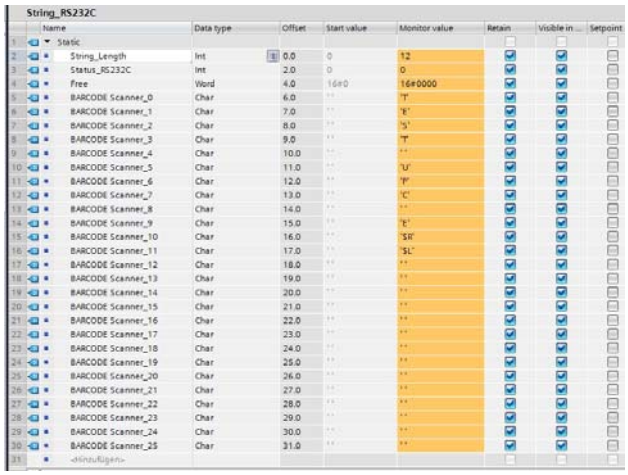
Data length --- Length of incoming barcode data

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 “0C”)

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. Barcode: TEST UPC E
	

String_RS232C

	Name	Data type	Offset	Start value	Retain	Visible in ...	Setpoint
1	Static						
2	String_Length	Int	0.0	0			
3	Status_RS232C	Int	2.0	0			
4	Free	Word	4.0	16#0			
5	BARCODE Scanner_0	Char	6.0	''			
6	BARCODE Scanner_1	Char	7.0	''			
7	BARCODE Scanner_2	Char	8.0	''			
8	BARCODE Scanner_3	Char	9.0	''			
9	BARCODE Scanner_4	Char	10.0	''			
10	BARCODE Scanner_5	Char	11.0	''			
11	BARCODE Scanner_6	Char	12.0	''			
12	BARCODE Scanner_7	Char	13.0	''			
13	BARCODE Scanner_8	Char	14.0	''			
14	BARCODE Scanner_9	Char	15.0	''			
15	BARCODE Scanner_10	Char	16.0	''			
16	BARCODE Scanner_11	Char	17.0	''			
17	BARCODE Scanner_12	Char	18.0	''			
18	BARCODE Scanner_13	Char	19.0	''			
19	BARCODE Scanner_14	Char	20.0	''			
20	BARCODE Scanner_15	Char	21.0	''			
21	BARCODE Scanner_16	Char	22.0	''			
22	BARCODE Scanner_17	Char	23.0	''			
23	BARCODE Scanner_18	Char	24.0	''			
24	BARCODE Scanner_19	Char	25.0	''			
25	BARCODE Scanner_20	Char	26.0	''			
26	BARCODE Scanner_21	Char	27.0	''			
27	BARCODE Scanner_22	Char	28.0	''			
28	BARCODE Scanner_23	Char	29.0	''			
29	BARCODE Scanner_24	Char	30.0	''			
30	BARCODE Scanner_25	Char	31.0	''			

String_RS232C

	Name	Data type	Offset	Start value	Monitor value	Retain	Visible in ...	Setpoint
1	Static							
2	String_Length	Int	0.0	0	12			
3	Status_RS232C	Int	2.0	0	0			
4	Free	Word	4.0	16#0	16#0000			
5	BARCODE Scanner_0	Char	6.0	''	'T'			
6	BARCODE Scanner_1	Char	7.0	''	'E'			
7	BARCODE Scanner_2	Char	8.0	''	'S'			
8	BARCODE Scanner_3	Char	9.0	''	'T'			
9	BARCODE Scanner_4	Char	10.0	''	''			
10	BARCODE Scanner_5	Char	11.0	''	'U'			
11	BARCODE Scanner_6	Char	12.0	''	'P'			
12	BARCODE Scanner_7	Char	13.0	''	'C'			
13	BARCODE Scanner_8	Char	14.0	''	''			
14	BARCODE Scanner_9	Char	15.0	''	'E'			
15	BARCODE Scanner_10	Char	16.0	''	'$R'			
16	BARCODE Scanner_11	Char	17.0	''	'$L'			
17	BARCODE Scanner_12	Char	18.0	''	''			
18	BARCODE Scanner_13	Char	19.0	''	''			
19	BARCODE Scanner_14	Char	20.0	''	''			
20	BARCODE Scanner_15	Char	21.0	''	''			
21	BARCODE Scanner_16	Char	22.0	''	''			
22	BARCODE Scanner_17	Char	23.0	''	''			
23	BARCODE Scanner_18	Char	24.0	''	''			
24	BARCODE Scanner_19	Char	25.0	''	''			
25	BARCODE Scanner_20	Char	26.0	''	''			
26	BARCODE Scanner_21	Char	27.0	''	''			
27	BARCODE Scanner_22	Char	28.0	''	''			
28	BARCODE Scanner_23	Char	29.0	''	''			
29	BARCODE Scanner_24	Char	30.0	''	''			
30	BARCODE Scanner_25	Char	31.0	''	''			