User Manual

Connection to BRC-Symbolic

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SÜTRON ELECTRONIC GMBH

Version	Date	Modifications
1	21.07.2005	First edition
2	23.11.2005	Validation extended, chapter "Important Notes" added

Overall Table of Contents

1 Important Notes

1.1 Symbols

The symbols in this manual are used to draw your attention on notes and dangers.

Danger
This symbol is used to refer to instructions wich, if ignored or not carfully followed could result in personal injury.

Note
This symbol indicates application tips or supplementary notes.

Reference to source of information
This symbol refers to detailed sources of information on the current topic.

1.2 Safety Notes

- Read this manual carefully before using the operating device. Keep this manual in a place where it is always accessible to all users.
- Proper transportation, handling and storage, placement and installation of this product are prerequisites for its subsequent flawless and safe operation.
- This user manual contains the most important information for the safe operation of the device.
- The user manual, in particular the safety notes, must be observed by all personnel working with the device.
- Observe the accident prevention rules and regulations that apply to the operating site.
- Installation and operation must only be carried out by qualified and trained personnel.

1.3 Intended Use

- The device is designed for use in the industry.
- The device is state-of-the art and has been built to the latest standard safety requirements. However, dangerous situations or damage to the machine itself or other property can arise from the use of this device.
- The device fulfills the requirements of the EMC directives and harmonized European standards. Any modifications to the system can influence the EMC behavior.

1.4 Target Group

All configuration and programming work in connection with the automation system must be performed by trained personnel only (e.g. qualified electricians, electrical engineers).

The configuration and programming personnel must be familiar with the safety concepts of automation technology.

2 BRC-Symbolic

The protocol provides random read and write access to all global data objects of the controller.

The programming software adopts the data objects of the symbol file (file_name.SYM) which are created when the controller project is compiled.

The connected operating device uses the symbolic name to access a data object.

The device data base (GSD) file SE03081A.GSD can be used to set the operating devices' parameters in the PLC software for the PROFIBUS. After a standard installation of the programming software, this file is available in the following path: **C:\Programme\suetron\TSwin .net 4.00 (EN)\FBs\PROFIBUS\TYP_GSD** or in our Internet download area.

2.1 Data Types

The length of a variable is determined by the length defined in the programming software CoDeSys.

2.1.1 Single Variables

You can access variables of the following type: BOOL, SINT, INT, DINT, BYTE, USINT, WORD, UINT, DWORD, UDINT, REAL, STRING, LINT, ULINT, LREAL and BITORBYTE.

2.1.2 String Variables

For string variables, the variable type STRING(N) is used, where N is the length of the string.

String variables can not be longer than 64 characters.

2.1.3 Tables

If ARRAY variables are used in table fields, the data type ARRAY [1..N] must be used. ARRAY [1..N] must be of one of the following base types:

- BOOL
- BYTE
- WORD
- DWORD
- SINT
- INT
- DINT
- USINT
- UINT
- UDINT
- LINT

– ULINT
– LREAL
– REAL or
– STRING.

2.2 Programming

2.2.1 Connection Settings

2.2.1.1 Transport Layer

Select the physical connection option.

Table 2-1 Transport layer

Configurable Values	Default Value
SIS serial	X
PROFIBUS-DP	
Ethernet	

2.2.1.2 Connection Name

You can define symbolic names for up to 16 connections. These connection names are used as SIS protocol connection settings.

2.2.1.3 Variable List

This parameter specifies the directory in which the variable list *.sym is stored.

To select a directory, click the Browse button.

The variable list *.sym is created by the programming software IndraLogic when compilation takes place.

From this file, the programming software reads all entries whose symbolic name is shorter than 80 characters.

2.2.1.4 Controller Address (optional)

Enter a numerical 15 digit value for the controller address.

2.2.1.5 Axis Address (optional)

Enter a numerical 3 digit value for the axis address.

2.2.2 Protocol Parameters for SIS

2.2.2.1 Connection Name

The names which you entered into the connection settings are used as connection names.

2.2.2.2 Address

This parameter specifies the SIS address of the communication participant.

Table 2-2 Address

Configurable Values	Default Value
1 to 126	1

2.2.2.3 Controllers

This parameter specifies the runtime system of the controller.

Table 2-3 Controller

Configurable Values	Default Value
SIS-Master	X
SIS-Multi-Master	

2.2.2.4 Duplex Operation

Select this parameter when using an RS232/RS422/RS485 interface.

The parameter Half Duplex applies only in conjunction with the RS485 interface.

Table 2-4 Duplex operation

Configurable Values	Default Value
Full Duplex (RS232, RS422)	X
Half Duplex (RS485/2-Draht)	

2.2.2.5 Device Address

This parameter specifies the SIS address of the operating device.

Table 2-5 Device address

Configurable Values	Default Value
1 to 126	1

2.2.2.6 Baud Rate

This parameter specifies the communication rate.

Table 2-6 Baud Rate

Configurable Values (Baud)	Default Value
4800	
9600	
19200	
38400	X
46875	

2.2.2.7 Parity

This parameter specifies the parity used to control the communication.

Table 2-7 Parity

Configurable Values	Default Value
None	
Even	X
Odd	

2.2.2.8 Handshake

This parameter specifies the method used to control the communication.

Table 2-8 Handshake

Configurable values	Default Value
No Handshake	X
Hardware	
Software	

2.2.2.9 Data Bits

This parameter specifies the number of data bits.

Table 2-9 Data bits

Configurable Values	Default Value
8	X

2.2.2.10 Stop Bits

This parameter specifies the number of stop bits.

Table 2-10 Stop bits

Configurable Values	Default Value
1	X

2.2.2.11 Delay Until Connection Set-up

This parameter specifies the waiting time after which the operating device starts the communication.

Table 2-11 Delay until connection set-up

Configurable Values	Default Value
5 s to 255 s	5 s

2.2.2.12 Response Time Slave

This parameter specifies how long the operating device waits for a response from the controller.

Table 2-12 Response time - slave

Configurable Values	Default Value
100 ms to 25500 ms	1000 ms

2.2.2.13 Bus Idle Time

This parameter specifies the waiting time between sending and receiving.Applies only if the interface is operated in the half duplex mode.

Table 2-13 Bus idle time

Configurable Values	Default Value
0 ms to 65535 ms	5 ms

2.2.2.14 Repetitions

This parameter specifies how often the communication is repeated after an error occurred.

Table 2-14 Repetitions

Configurable Values	Default Value
0 to 5	3

2.2.3 Protocol Parameters for PROFIBUS-DP

2.2.3.1 Device Address

This parameter specifies the SIS address of the operating device.

Table 2-15 Device address

Configurable Values	Default Value
1 to 126	2

2.2.3.2 Delay Until Connection Set-up

This parameter specifies the waiting time after which the operating device starts the communication.

Table 2-16 Delay until connection set-up

Configurable Values	Default Value
5 s to 255 s	5 s

2.2.3.3 Response Time Slave

This parameter specifies how long the operating device waits for a response from the controller.

Table 2-17 Response time - slave

Configurable Values	Default Value
10 ms to 65535 ms	1000 ms

2.2.4 Protocol Parameters for Ethernet

2.2.4.1 Connection Table

In the connections table you define connections for up to 16 controllers.

In column **connection name** the connection names of the main dialog are adopted.

Enter a valid IP address to each connection name into the column **IP - address of control**.

2.2.5 Polling Area

The poll area is used to manage the write coordination byte, the serial message channel and the LEDs in the function keys. This area is continuously polled by the operating device.

This protocol requires you to set up the poll area with three single variables. The variables must be part of the same connection!

The data types BYTE, USINT, WORD or UINT must be used to address the poll area.

2.2.6 Status Messages

Status messages are the static assignment of flags (bits) in the controller to plain text messages in the operating device. For status message addressing, use the data types BYTE, USINT, WORD, UINT, DWORD, UDINT, or ARRAY[1..N]. The following applies when using ARRAY: The type size multiplied by N provides the size of the message system in bytes.

2.2.7 Date & Time

Use the data type ARRAY[1..N]_OF_UINT8 to transfer the time and date; where N must correspond to the number of bytes to be transferred. If a 2-digit year format is used, you need to transfer 7 bytes; for a 4-digit year format, 8 bytes must be transferred.

2.3 Error Messages

Error messages are displayed on the operating device along with a code and subcode. Error messages are composed as follows:

Communication Error

Code XXXXX

Subcode XXXXX

Retries XXXXX

Table 2-18 Error messages, BRC-Symbolic

Code	Subcode	Description	Possible Cause
40		Illegal system variable	The system variable is not supported by this operating device.
50	03	Framing error on serial interface	
	06	Parity error on serial interface	
	10	Poll area error	No poll area defined
	12	Poll area error	Poll area defined more than once
	16	Memory overrun	
	50	Memory allocation not possible	No memory allocated
51		SPC3 hardware defect	
	1	Wrong initialization	Inputs/outputs not correctly initialized
	2	Wrong initialization	
	4	Wrong initialization	Memory not correctly initialized
	16	No hardware / no SPC3	Interface hardware missing or defective
52		SPC3 not configured properly	
	1	Physical connection error	Cable defective or not connected
	2	Logical connection error	Wrong participant number
	3	Wrong input length	
	4	Wrong output length	
	5	Invalid configuration	
54		SPC3 disconnects from bus	
55		Internal SPC3 error	
56		Waiting time in SPC3 exceeded; no more telegrams received from master	

Table 2-18 Error messages, BRC-Symbolic

Code	Subcode	Description	Possible Cause
60	40	Wrong checksum	
	60	Waiting time exceeded: No response	Cable interruption, connection cutoff, wrong baud rate
	70	Transmission buffer too small	
80		Field bus error	
	10	Ready bit in status byte of master not set	
90		Response with length 0 received	
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		
	20		
	21		
	22		
	23		
	24		
	25		
	26		
91 to 110	1	Error in response telegram	
	2	Error in response telegram	
120			
	1	Telegram contains errors	
	2	Variable does not exist	
	3	Illegal process	
	4	User not logged in	
	5	Value can not be converted as required by variable type	
	6	Handle was expected	
	7	No memory	

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