

CL200 / CL350 / CL400 / CL500

SPSKanal

Software Module Description



Edition

101



BOSCH
Automation

CL200 / CL350 / CL400 / CL500

SPSKanal Software Module Description

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Notes:

1 Safety Instructions

Before you start working with the software module SPSKanal, we recommend that you thoroughly familiarize yourself with the contents of this manual. Keep this manual in a place where it is always accessible to all users.

1.1 Intended use


This instruction manual presents a comprehensive set of instructions and information required for the standard operation of the described products.

The products described hereunder

- have been developed, manufactured, tested and documented in compliance with the safety standards. These products pose no danger to persons or property if they are used in accordance with the handling stipulations and safety notes prescribed for their configuration, mounting, and proper operation.
- comply with the requirements of
 - the EMC Directives (89/336/EEC, 93/68/EEC and 93/44/EEC)
 - the Low-Voltage Directive (73/23/EEC)
 - the harmonized standards EN 50081-2 and EN 50082-2
- are designed for operation in industrial environments, i.e.
 - no direct connection to public low-voltage power supply,
 - connection to the medium- or high-voltage system via a transformer.

The following applies for application within a personal residence, in business areas, on retail premises or in a small-industry setting:

- Installation in a control cabinet or housing with high shield attenuation.
- Cables that exit the screened area must be provided with filtering or screening measures.
- The user will be required to obtain a single operating license issued by the appropriate national authority or approval body. In Germany, this is the Federal Institute for Posts and Telecommunications, and/or its local branch offices.

 **This is a Class A device. In a residential area, this device may cause radio interference. In such case, the user may be required to introduce suitable countermeasures, and to bear the cost of the same.**

The faultless, safe functioning of the product requires proper transport, storage, erection and installation as well as careful operation.

1.2 Qualified personnel

The requirements as to qualified personnel depend on the qualification profiles described by ZVEI (central association of the electrical industry) and VDMA (association of German machine and plant builders) in:

Weiterbildung in der Automatisierungstechnik
edited by: ZVEI and VDMA
MaschinenbauVerlag
Postfach 71 08 64
D-60498 Frankfurt.

The present manual is designed for PLC technicians. They need special knowledge on the controllers CL200 / CL350 / CL400 / CL500.

Interventions in the hardware and software of our products, unless described otherwise in this manual, are reserved to our specialized personnel.

Tampering with the hardware or software, ignoring warning signs attached to the components, or non-compliance with the warning notes given in this manual may result in serious bodily injury or material damage.

Only electrotechnicians as recognized under IEV 826-09-01 (modified) who are familiar with the contents of this manual may install and service the products described.

Such personnel are

- those who, being well trained and experienced in their field and familiar with the relevant norms, are able to analyze the jobs being carried out and recognize any hazards which may have arisen.
- those who have acquired the same amount of expert knowledge through years of experience that would normally be acquired through formal technical training.

With regard to the foregoing, please note our comprehensive training program. For up-to-date information, web shop for teachware and online seminar booking, please refer to <http://www.bosch.de/at/didactic> or call our training center at (+49) (0) 60 62 78-258.

1.3 Safety markings on products



Warning of dangerous electrical voltage!



DANGER! Corrosive battery acid!



Electrostatically sensitive components!



Disconnect mains power before opening!



Lug for connecting PE conductor only!



Functional earthing or low-noise earth only!



Connection of shield conductor only

1.4 Safety instructions in this manual



DANGEROUS ELECTRICAL VOLTAGE

This symbol is used to warn of a **dangerous electrical voltage**. The failure to observe the instructions in this manual in whole or in part may result in **personal injury**.




DANGER

This symbol is used wherever insufficient or lacking compliance with instructions may result in **personal injury**.



CAUTION

This symbol is used wherever insufficient or lacking compliance with instructions may result in **damage to equipment or data files**.

 This symbol is used to draw the user's attention to special circumstances.

★ This symbol is used if user activities are required.

1.5 Safety instructions for the described product

**DANGER**

Danger of life through inadequate EMERGENCY-STOP devices!
EMERGENCY-STOP devices must be active and within reach in all system modes. Releasing an EMERGENCY-STOP device must not result in an uncontrolled restart of the system!
First check the EMERGENCY-STOP circuit, then switch the system on!

**DANGER**

Danger for persons and equipment!
Test every new program before starting up a system!

**DANGER**

Retrofits or modifications may adversely affect the safety of the products described!
The consequences may include severe injury, damage to equipment, or environmental hazards. Possible retrofits or modifications to the system using third-party equipment therefore have to be approved by Bosch.

1.6 Documentation, software release and trademarks

Documentation

The present manual provides information about the application of the software module SPSKanal, which is used to extend the input/output range of the controllers CL200 / CL350 / CL400 / CL500.

Overview of available manuals:

Manuals	English	German
CL200 Manual	1070 072 145	1070 072 091
CL200 Operations List	1070 072 151	1070 072 090
CL400 Manual	1070 072 143	1070 072 085
CL500 Manual	1070 072 123	1070 072 041
CL350 / CL400 / CL500 Operations List	1070 072 127	1070 072 044

 **In this manual the floppy disk drive always uses drive letter A:, and the hard disk drive always uses drive letter C:.**

Special keys or key combinations are shown enclosed in pointed brackets:

- Named keys: e.g., <Enter>, <PgUp>,
- Key combinations (pressed simultaneously): e.g., <Ctrl> + <PgUp>

Trademarks

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PROFIBUS® is a registered trademark of the PROFIBUS Nutzerorganisation e.V. (user organization).

2 Extension of the input/output range of the PLC

2.1 Introduction

The function module SPSKanal gives you the possibility to map inputs/outputs of Profibus-DP stations directly into data modules without assigning I/O addresses of the PLC.

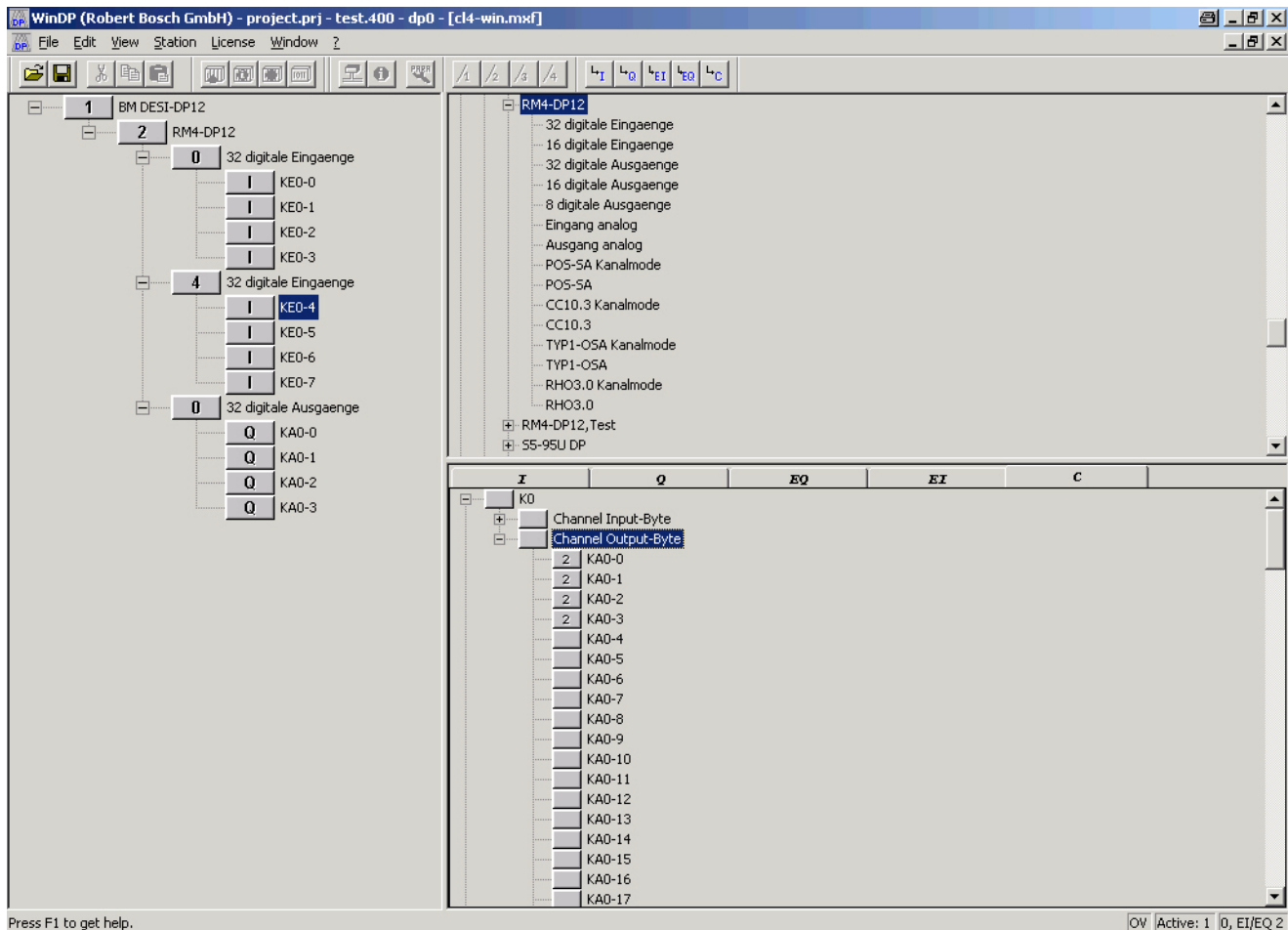
The advantage of this approach is that the inputs/outputs of the PLC are still available for other applications.

2.2 Proceeding

2.2.1 WinDP

In the Profibus-DP configuration software WinDP, an assignment is made between the normal Profibus-DP station and “channel input bytes” or “channel output bytes”, respectively. The assignment byte by byte is possible for the channels 0 to 9, where each channel offers max. 58 byte inputs and 58 byte outputs. The following figure shows an example for the CL400.

The channels 10...31 (CL200) or 10...63 (CL350/CL400/CL500) respectively are reserved for special Profibus-DP stations with channel structure (e.g. RM2-DP12 with Eana channel mode).



2.2.2 WinSPS


The function module SPSKanal is included into the SPS program. The function module takes over the data transport between the Profibus-DP busmaster and the SPS.

3 Function module SPSKanal

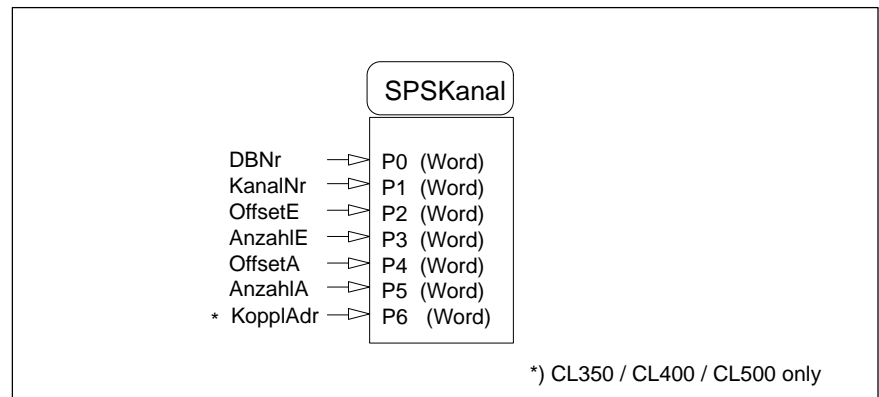
3.1 General

The function module SPSKanal serves as an interface for the SPS channels. SPS channels are available only when a Profibus-DP busmaster is used. In the CL200, the modules ZE200-DP or ZE200A-DP comprise the busmaster functionality, in the CL350/CL400/CL500 the module BM-DP12 is used as the busmaster.

Input/output data for one channel are located in a data module (DM).

 **The function module does not check the data module for existence and length!**

3.2 Project planning scheme



	Meaning
DBNr	Number of the data module for the channel data (no check by function module)
KanalNr	Number of the PLC channel. Range of possible values: 0...63 (no check by function module)
OffsetE	DM offset on input channel data
AnzahlE	Number of the input channel data in bytes (0...57)
OffsetA	DM offset on output channel data
AnzahlA	Number of the output channel data in bytes (0...57)
KopplAdr	Address of the switching matrix of the busmaster BM-DP12 in EZ/AZ area (CL350/CL400/CL500 only)

3.3 Data organisation

For proper operation, the function module needs a data module (DM). The input/output data of the channel can begin on even or on odd byte addresses.

In order to achieve an effective data transmission, the channel input bytes or channel output bytes should be assigned beginning with channel byte address 0 without gaps during the Profibus-DP configuration.

3.4 Technical data

In the CL200, the function module SPSKanal is integrated in the firmware.

The size of the calling module is

- in the CL200: 16 bytes
- in the CL350/CL400/CL500: 330 bytes.

Timing	CL200	CL350/ CL400/ CL500
1 channel input byte	typ. 270 μ s	typ. 250 μ s
29 channel input bytes	typ. 450 μ s	typ. 500 μ s
58 channel input bytes	typ. 575 μ s	typ. 750 μ s
1 channel output byte	typ. 270 μ s	typ. 240 μ s
29 channel output bytes	typ. 450 μ s	typ. 370 μ s
58 channel output bytes	typ. 575 μ s	typ. 500 μ s
1 channel input byte und 1 channel output byte	typ. 275 μ s	typ. 280 μ s
29 channel input bytes und 29 channel output bytes	typ. 580 μ s	typ. 660 μ s
58 channel input bytes und 58 channel output bytes	typ. 800 μ s	typ. 1000 μ s

Used operands:

- in the CL200: data module according to P0
- in the CL350/CL400/CL500: data module according to P0 M248...M255

A Annex

A.1 Abbreviations

Abbrev.	Meaning		
ESD	Electro Static Discharge	FM	Function Module
DM	Data Module	PE	Protective Earth
		PLC	Programmable Logic Controller

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