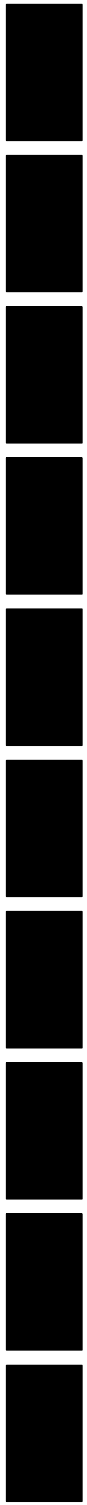
PRO → UZ250

User Manual
A91M.12-705 560.00-0595

PRO → UZ250
Type: PRO-UZ25
Version 1.0

User Instructions
DOK-705 561.00-0595



Notes
Table of Contents

Notes

Application Note

Caution The relevant regulations must be observed for control applications involving safety requirements.
For reasons of safety and to ensure compliance with documented system data, repairs to components should be performed only by the manufacturer.

Training
AEG Schneider Automation offers suitable training that provides further information concerning the system (see addresses).

Data, Illustrations, Alterations
Data and illustration are not binding. We reserve the right to alter our products in line with our policy of continuous product development. If you have any suggestions for improvements or amendments or have found errors in this publication, please notify us by using the form on the last page of this publication.

Addresses
The addresses of our Regional Sales Offices, Training Centers, Service and Engineering Sales Offices in Europe are given at the end of this publication.

Terminology

Note This symbol emphasizes very important facts.

Caution This symbol refers to frequently appearing error sources.

Warning This symbol points to sources of danger that may cause financial and health damages or may have other aggravating consequences.

Expert This symbol is used when a more detailed information is given, which is intended exclusively for experts (special training required). Skipping this information does not interfere with understanding the publication and does not restrict standard application of the product.

Path This symbol identifies the use of paths in software menus.

Figures are given in the spelling corresponding to international practice and approved by SI (Système International d' Unités).
I.e. a space between the thousands and the usage of a decimal point
(e.g.: 12 345.67).

Abbreviation	Explanation
A-byte	Address byte in Modnet 1F
A1-byte	Subaddress byte in Modnet 1F
APS	Automatic Polling Service
IL	Instruction list
AWP	User program
BGT	Subrack
D1-, D2-, D3-, D4-byte	1st - 4th data byte in Modnet 1F
F-byte	Function byte in Modnet 1F
GP	General polling
IP	Internal processing
SP	Short polling
KOS	KOS 140
LAN	Local Area Network
LM	Long message
NLQ	Near Letter Quality
PV-Number	Process variable number
SFB	Standard Function Block
UST	Outstation
UZ	Submaster

Objectives

This description is intended for configurers of Geadat UZ250 master stations.

The configurer is then able to
- ❒ install the programming device,
- ❒ install the software,
- ❒ configure with the software,
- ❒ document the configuration,
- ❒ pass the parameters obtained,
- ❒ transfer the generated IL to the controller and start it.

Arrangement of This Guide

Part I Check list how to proceed in order to start operations with a master station.

Part II Description of the main menu PRO-FWT.

Part III This part describes how to configure the Geadat UZ250 master station with PRO → UZ250.

Part IV This part describes how to parameterize the KOS 140 with PRO → UZ250.

Part V File Structures.

Part VI contains the index.

Relevant documentation

Geadat U250
Fernwirktechnik
Benutzerhandbuch
A91M.12-704 132

Automatisierungsgerät A250
Benutzerhandbuch
A91M.12-271 953

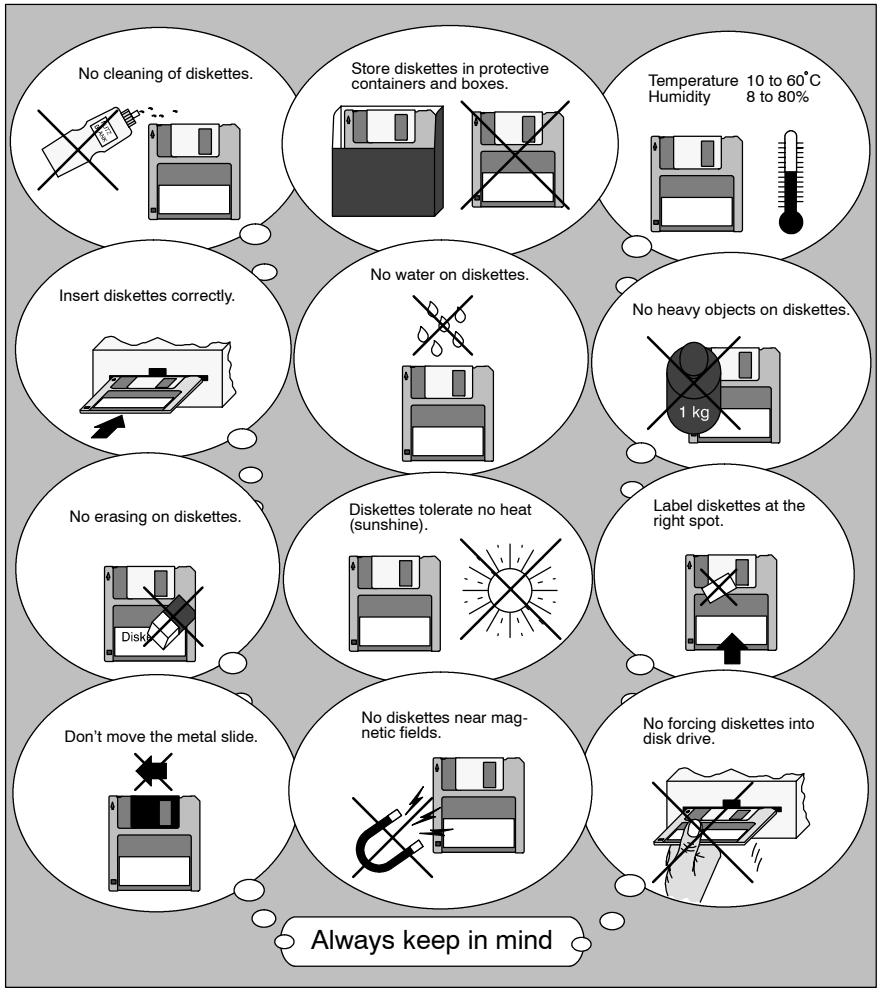
Dolog AKF → A120/A250
Typ AKF125
Version 4.2
Benutzeranleitung
E-Nr. 424 275 181

Validity

This description is valid for the:

Software	PRO → UZ250, Version 1.0	
	Dolog AKF → A120/A250, Version 6.0	
KOS 140 firmware package containing	FPL 002	703 558.00
	FWL 003	700 171.00
	FWL 004	700 173.00
	FWL 005	700 174.00
	FWL 006	700 175.00
	FWL 051	700 178.00
	FWL 052	700 179.00

Handling 3 $^{1}/_{2}$” Diskettes



Handling 5 1/4" Diskettes

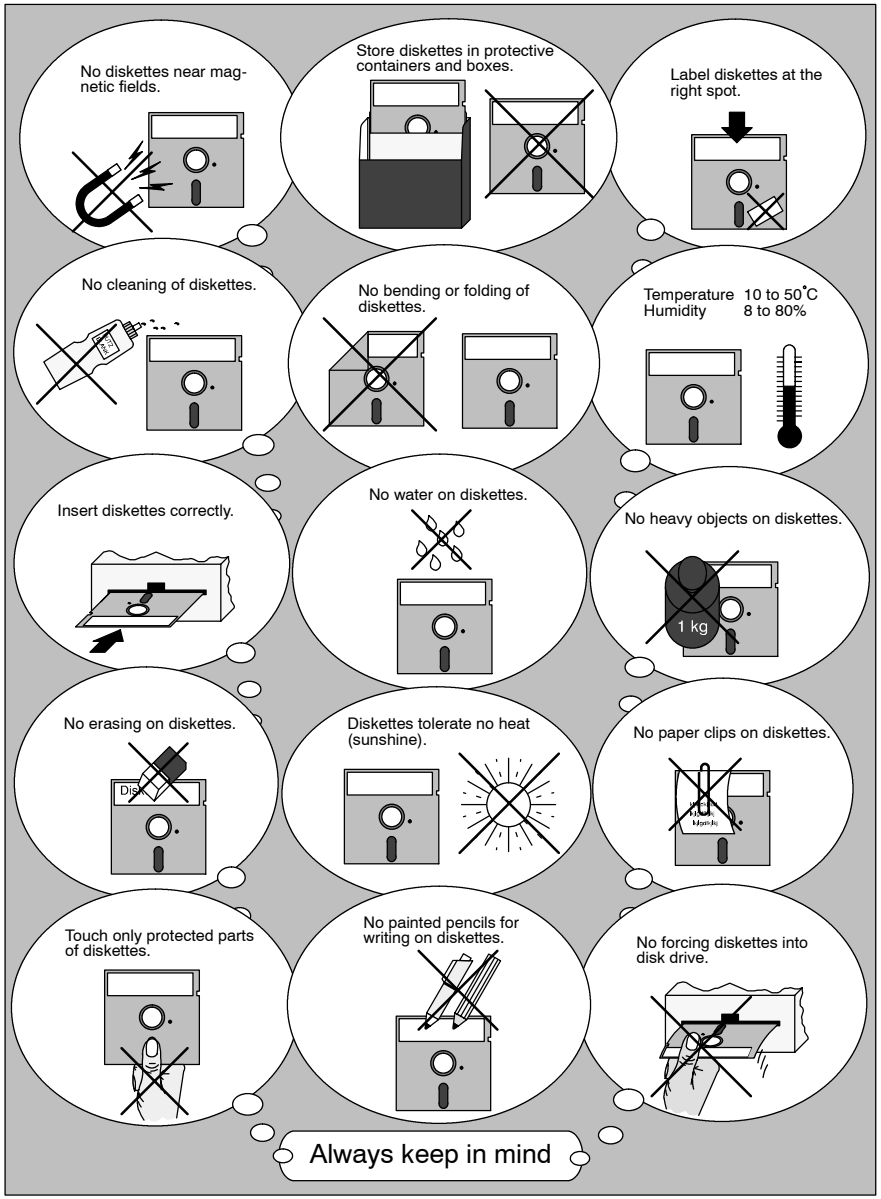


Table of Contents

Part I
How to proceed

Chapter 1
Check List

Step by step procedures for

- configuration
- parameterizing and programming
- system start-up

of a Geadat UZ250 outstation are defined here using check lists.

1.1 Checklist for parameterizing and configuring

Before you start the configuration of your UZ250 master station with the software package PRO → UZ250, you should read the following checklist and refer to the corresponding chapters for details.

- ❒ Make sure that you have the right software environment for the configuration software PRO → UZ250 (Part III, chapter 1.2)
- ❒ Make sure that you have the right hardware environment (Part III, chapter 1.2)
- ❒ Install the configuration software PRO → UZ250
- ❒ Learn how to use the keyboard and the mouse (Part III, chapter 2.3 and 2.4)
- ❒ Start the configuration aid PRO - UZ250 via the main menu PRO → FWT (Part II, chapter 1.3 and Part III, chapter 5.1.2)
- ❒ Go to the data entry level (Part III, chapter 5.2)
- ❒ Enter the system name and the master station address via the “configuration data” menu (Part III, chapter 5.2.1)
- ❒ Enter the submaster configuration (Part III, chapter 5.2.2)
- ❒ Activate the “Line-configuration” menu and enter the outstation list and the input/output data (Part III, chapter 5.2.3)
- ❒ Activate the “module selection” menu and enter the changes and additions, if necessary.
- ❒ Call the KOS parametrization using the ZOOM function in the menu ”Module selection”. Begin with the master KOS (Part III, chapter 5.2.5).

- ❒ Define the message distribution for the master KOS in the menu ”Data for monitoring direction” (Part IV, chapter 2.2.4).
- ❒ Check whether the settings correspond to your requirements for signal prompting (Part IV, chapter 2.2.5) for the slave KOS in conversion mode.
- ❒ Check whether the SEAB parameters and APS parameters are correctly set for your requirements (Part IV, chapters 2.2.1 and 2.2.2).
- ❒ Check whether the KOS parameters are correctly set for your requirements. Enter the station address for a slave KOS (Part IV, chapter 2.2.3).
- ❒ Generate the KOS firmware EPROMs
- ❒ If necessary, now generate the parameter EPROMs
- ❒ Leave the KOS parametrization and return to the PRO → UZ250 main menu.
- ❒ Call the menu ”Generate ASCII import files for AKF” (Part III, chapter 5.4)
- ❒ If ”Internal Processing” was chosen in the submaster configuration menu, also call ”Internal Processing” first (Part III, chap. 5.2.2)
- ❒ Activate the IL generation (Part III, chapter 5.4)
- ❒ Generate the ASCII import files
- ❒ Save your system to disk (Part III, chapter 5.3)
- ❒ Print the documentation (Part III, chapter 5.6)

1.2 Checklist for system startup

- ❒ Verify that the switches and jumpers of each module are set correctly.
- ❒ Plug the firmware Eproms into the KOS.
- ❒ If necessary, mount the UEM 001 on the KOS.
- ❒ Mount the subracks.
- ❒ Plug and wire the boards into the slots defined in the configuration.

1.3 Checklist for parametrization and programming

Once you have completed the configuration and start-up of the hardware, you can proceed with the parametrization of the KOS and the programming and the PC*.

⚠ **Caution If it is the initial start-up, the ALU basic software must first be booted.**

- ❒ Leave the expert software PRO-UZ250
- ❒ Call the function ”Read in ASCII” for AKF125 in the PRO-FWT main menu (Part II, chap. 1.3.1)
- ❒ Then call the function ”AKF25 call” (Part II, chap. 1.3.2)
- ❒ Create the link to the PC* with the ”Setup” menu
- ❒ Choose the ”Load” menu
- ❒ Link the program
- ❒ Load the program

or

- ❒ Generate a PC* EPROM
- ❒ Load the expert data for KOS one after the other
- ❒ Start the PC* with the ”Online” menu

☞ **Note** Further information about start-up can be found in the user manuals Geadat 250 and Modicon A250.

Part II
Main Menu PRO → FWT

Chapter 1
Operating

1.1 General Information

The PRO-FWT main menu enables you to choose individual software packages required for starting up a Geadat telecontrol station without having to return to the DOS level.

☞ **Note** Of course only the software packages which were installed can be called.

☞ **Note** This main menu is always installed with the individual software packages PRO... It is started from the operating system level with the call “PRO-FWT”.

Operation:

You can select one of two kinds of operator interface.

- Pulldown menues
- Icons

The interface can be set with the >Desktop<.

Both interfaces can be used with the cursor keys and with the mouse.

The individual menues or functions are called by clicking with the left mouse key or with RETURN. In pulldown menus, the call can also be made using the reference characters, which are displayed in a different color.

The menu window is closed with ESC or by clicking with the right mouse key.

Passive functions are displayed in the pulldown menu without a reference charcter and in a different color. These cannot be selected or are skipped with the cursor.

Example: The program is in graphic mode; only a switch to text mode is now possible. After switching, the graphic mode function is active and the text mode function is passive.

1.2 Expert system PRO...

The 120-series includes the expert systems:

- PRO-U120 for outstations with Modnet 1/F
- PRO-UZ250 for submaster stations with Modnet 1/F
- PRO-Z120 for master stations with Modnet 1/F
- PRO-U121 for outstations with Modnet 1/W
- PRO-M121 for mimic diagram control with Modnet 1/W (in preparation)

The 250-series contains the expert systems:

- PRO-U250 for outstations with Modnet 1/F
- PRO-UZ250 for submaster stations with Modnet 1/F
- PRO-UZ251 for submasters with Modnet 1/W (in preparation)

1.3 Dolog AKF...

The two software products AKF12 and AKF25 are provided for programming the telecontrol stations.

The 120-series can be programmed with AKF12. The 250-series can be programmed with AKF25.

☞ **Note** The Dolog AKF... software has large memory requirements. If you loaded memory-resident programs or operator interfaces, the remaining main memory may not be sufficient for Dolog AKF. In this case the functions “Read in ASCII-IL” and “Call” cannot be executed. Leave PRO-FWT and remove the call of these programs from the “AUTOEXEC.BAT” or the “CONFIG.SYS” and make a warm restart (<Ctrl>+<Alt>+<Del>). Then start PRO-FWT and select “Read in ASCII-IL” or “Call” again.

1.3.1 ...Read in ASCII

With this call, the particular AKF reads in a control file generated by PRO-Tool (AKF12.CMD or AKF25.CMD).

The AKF station is set up using this control file and the ASCII-IL generated by PRO-Tool is read in.

The station which was last processed with a PRO-Tool by the function “Set up PLC Station” or “Generate ASCII Import Files for AKF” is always processed.

1.3.2 ...Call

Dolog AKF can be started directly by PRO-FWT with this call.
All the Dolog AKF functions can be executed.

If you only use the standard IL of PRO... and have no special IL blocks, you can limit yourself to the following function calls:

- Set up link to PLC
- Bootload basic software
- Link IL
- Load IL in the RAM and start

or

- Program IL on EPROM
- Print IL

The exact instructions can be found in the Dolog AKF A120/A250 user manual.

Caution The PRO-Tools assume Dolog AKF A120 version 5.0 bzw. Dolog AKF → A120/A250 Version 4.2 voraus.

1.4 Tools

The following 3 tools can be used together with special PC plug-in cards to simulate master stations and outstations.

Teleview:

For Modnet 1/F/1N together with PC-V24, PC-GDUE, PC-WT

TEL001

For Modnet 1/F/1N and AWD together with PC-AWD1

TEL002

For Modnet 1/W together with PC-AWD1

PRO-SFB

This tool copies the SFBs developed specially for telecontrol engineering into the AKF125 directory and creates a file SFB.BAT, which links these SFBs into AKF125.
The function must be called once after each installation of AKF125 or PRO-UZ250. The sources for the SFBs are installed together with the PRO-SFB program using PRO-UZ250.

1.5 Desktop

Language

You can switch directly between German and English.

Screen

PRO-FWT can run as required in graphic mode or in text mode with an EGA or VGA card. For all other screen adaptors, there is an automatic switch to text mode and this setting cannot be changed.

In graphic mode you can also define whether PRO-FWT should work with icons or only with pulldown menues.

You can choose one of three color representations both in graphic and in text mode. For clarity you should choose two-tone representation for some PCs. The pulldown menues have a light background for “black-and-white”, and a dark background for “inverse black-and-white”.

Version numbers

The current data (part number, version, date) are entered in a version file when the individual PRO-tools are installed. The file is displayed on the screen with this function.

The display is in a scroll box, i.e. it can be shifted up/down with the cursor or by clicking the cursor fields with the mouse cursor.

AKF Program Path

In order to be able to work with different AKF versions, the program path of the required AKF12 and AKF23 version can be entered here. PRO-FWT provides the default settings of the AKF installation program as default entries. The subdirectory in which the AKF12.EXE or AKF25.EXE reside including the drive identifier must be defined as program path.

Example: C:\AEG-A91\AKF125
C:\AEG-A91\AKF25V5
D:\AKF125

You must make sure that a "\" is entered after the drive identifier to specify the program path from the master directory. The current entries are stored when you leave PRO-FWT and are available again at the next call.

PRO-FWT always works with the current program paths in the calls "Read in IL" and "AKF..call".

Part III
Configuration Instructions

Chapter 1
Introduction

1.1 Program package PRO → UZ250

The program package PRO-UZ250 consists of

- disks with the configuration software
- a disk with the KOS firmware
- the user manual

1.2 System requirements

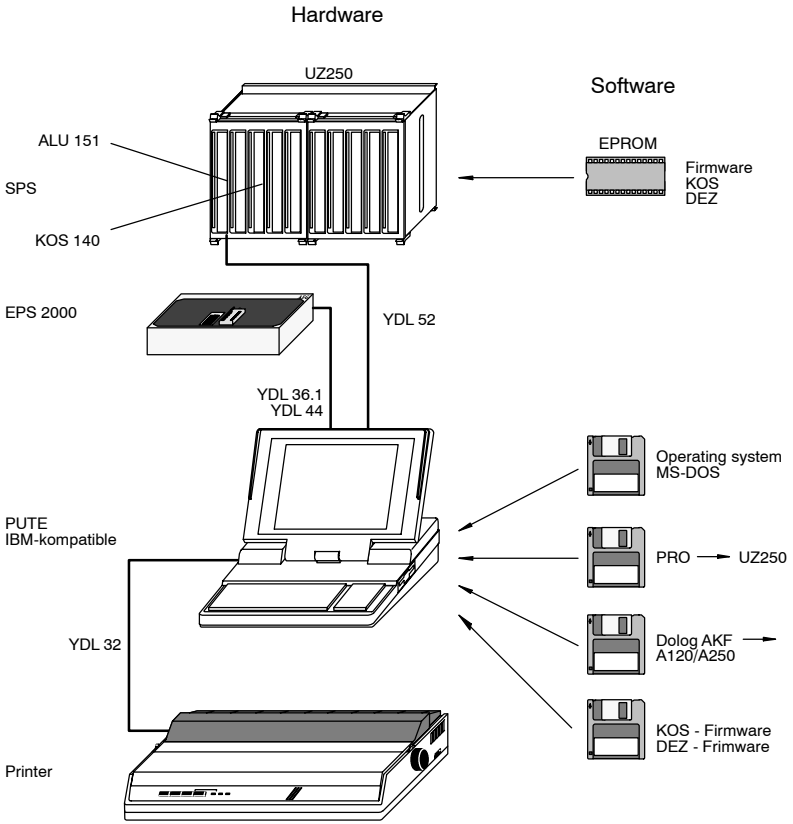


Figure 1 Components for configuration and programming

1.2.1 Hardware

PUTE IBM-compatible PCs with hard disk and 640 Kbyte main memory. A guarantee is only given for AEG Schneider Automation devices.

Printer (with parallel interface)
DRU 292/293
DRU 120
DRU 096
DRU 1200
PRT 294/295

EPROM programming station
EPS 2000

1.2.2 Software

- DOS Version 5.0, 6.0, 6.1
- Dolog AKF → A120/A250 Version 4.2

1.3 Installation

Installation PRO → UZ250

Switch on device (operating system level), display “C>”.

Step 1 Diskette 1 in diskette drive A or B

Step 2 Installation routine with call ”A:INSTAL” or ”B:INSTAL”, depending on the drive selected, and start <Cr>.

Step 3 Now follow the directions given in the installation routine.

Chapter 2
Overview And General Information

2.1 Summary of Features

PRO → UZ250 supports the user in the configuration and start-up of the Geadat UZ250 master station.

- The subracks including module assignment are defined automatically by specifying the lines to the outstations (Master KOS) and master stations (slave KOS).
- A bill of materials is determined for the configured station.
- An instruction list (IL) is generated based on the parameters entered
- Symbol tables and external data structures for the ”Internal Processing” are generated.
- Transfer of instruction list to Dolog AKF → A120
- The expert station is generated for parametrizing the KOS with AKF125
- Transfer of generated parameters to KOS 140 with EPROM.
- System documentation by printing
  - the bill of materials
  - hardware configuration
  - submaster configuration
  - loading
  - KOS data
  - Internal processing
- Archiving on hard disk or diskette of the files entered and generated
- A bottom-up configuration with PRO-U250 and PRO-U120 is possible

2.2 Rough structure

Data entry (Chapter 5.2)

- Project data
- Submaster configuration
- Line configuration
- Subrack selection
- Module selection
- Library

Archiving (Chap. 5.3)

- Read Data
- Save Data
- Erase File
- Change Drive

Generate ASCII import files for AKF (Chap. 5.4)

- Generate ASCII-IL (German)
- Generate ASCII-IL (English)
- Create ASCII import files
- Internal processing

Printer output (Chap. 5.5)

- Print the bill of materials
- Print the hardware configuration
- Print the submaster configuration
- Print the loading
- Print the internal processing
- Print the KOS data
- Print all lists
- Printer selection
- Printer output to file

Screen Output (Chap. 5.6)

- Display the System configuration
- Display the bill of materials

Bottom-up configuration import (Part V, Chap. 1)
Black-and-white / color switch
Return to PRO-FWT main menu
Language selection German/English

2.3 Keyboard operation

If a command is specified in pointed brackets < > in the following description, this means that the corresponding key should be pressed.
<Cr> = Press RETURN key.
<Alt>+<Ctrl>+<Del>=Warm restart, all three keys are pressed simultaneously.
<F1> → <F3> = the function keys F1 and F3 are pressed one after the other.

US keyboard	German keyboard
<Esc>	<Eing lösch>
<Ctrl>	<Strg>
<Home>	<Pos1>
<End>	<Ende>
<Prtsc>	<Druck>
<PgUp>	<Figure ↑ >
<PgDn>	<Figure ↓ >
<Ins>	<Einf>
<Del>	<Entf> oder <Lösch>
<Return>	<Übernahme> (auch <Enter> oder <↵>)

Function keys

The individual submenues are selected with the function keys.

There is always a return to the previous menu level with <F9>.

Help is always called with <F10>.

Arrow keys (cursor keys)

The parameters are selected or modified in some menues with these keys.

Caution If your PUTE does not have a separate cursor block, make sure that the key <Num Lock> is switched off as otherwise the number block is active.

<Return> key

The input in the line editor is terminated or the selected parameter is accepted with this key.

<Esc> key

There is a return to the previous menu level with this key.

Toggle

Different settings can be selected by pressing the <Return> key repeatedly.

2.4 Mouse operation

The right mouse key corresponds to <Esc> or <F9>.

Menu call:

Set the mouse cursor to the red (inverse) function key fields and click with the left key.

Selection within the menu:

Set the mouse cursor to the desired input line or selection field and click with the left mouse key.

Set the module or slot location in the menu ”I/O-module selection” in this way and then delete or set by clicking the red (inverse) function fields.

A selected module can also be entered by twice clicking a subrack location.

File selection window:

Select the system or file with the mouse cursor and click with the left mouse key. If the mouse cursor is set to the upper or lower free line in the window and clicked, the scroll function is carried out if necessary.

Setting the mouse cursor to the text RETURN and clicking activates the corresponding RETURN function.

2.5 General information

The following symbol specifies how to select the described function.
Counting always starts with the main menu.
The brackets contain the function keys which must be pressed in the main menu.

Example:
“Data input”,”Subrack selection”
(F1 → F4)

Note The specifications Ex By in the titles are also included in the lower right corner of the screen pages. They display the menu level and menu image.
In this way the relevant chapter for a particular screen page can easily be found using a cross reference list.

Remark window:

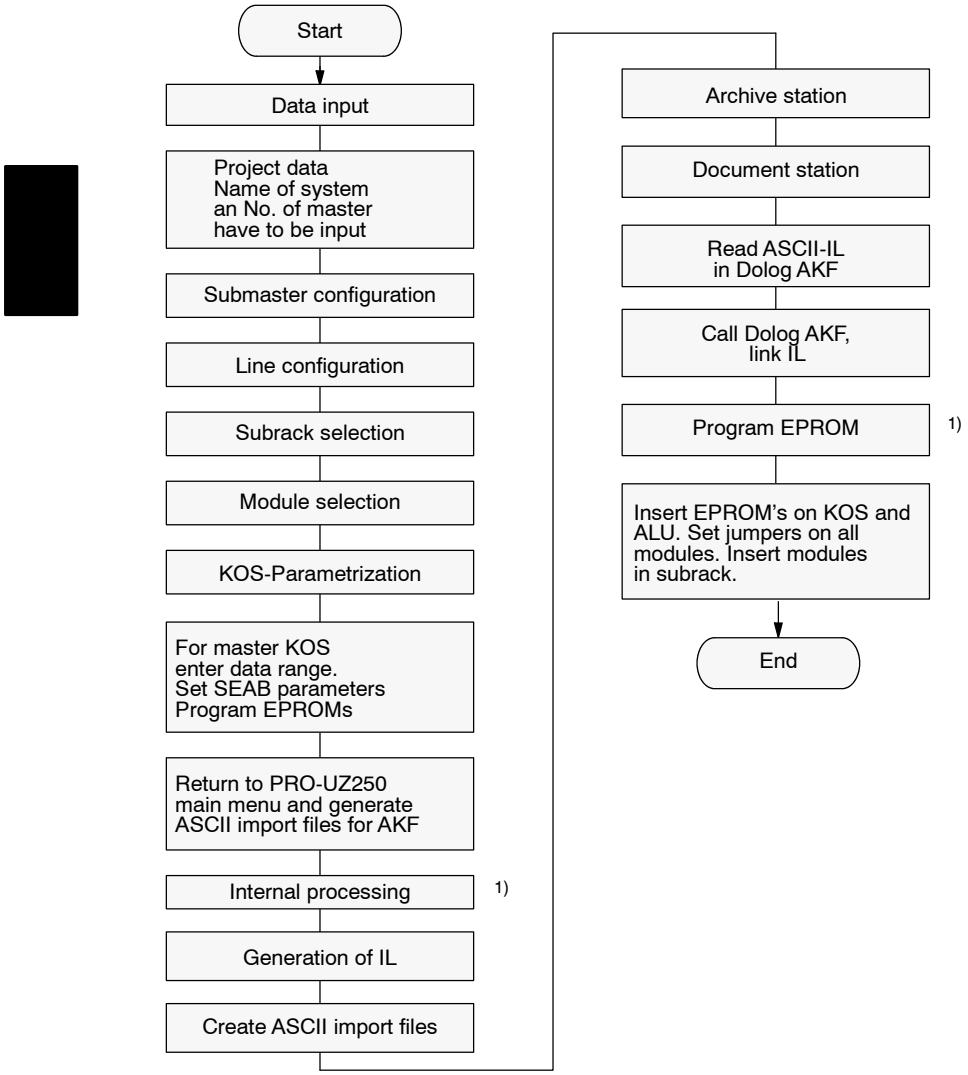
If an incorrect input is made when configuring with PRO → UZ250 or if a limit is exceeded, this is displayed on the screen with the corresponding output. In order to delete this remark window from the screen, press any key. You can then correct the input and continue with configuration.

YES-NO Box

In a YES-NO box, only <Y> or <N> may be entered or the corresponding field can be clicked with the mouse cursor. Some of the functions can be aborted with <Esc> if entry is not compulsory for the system.

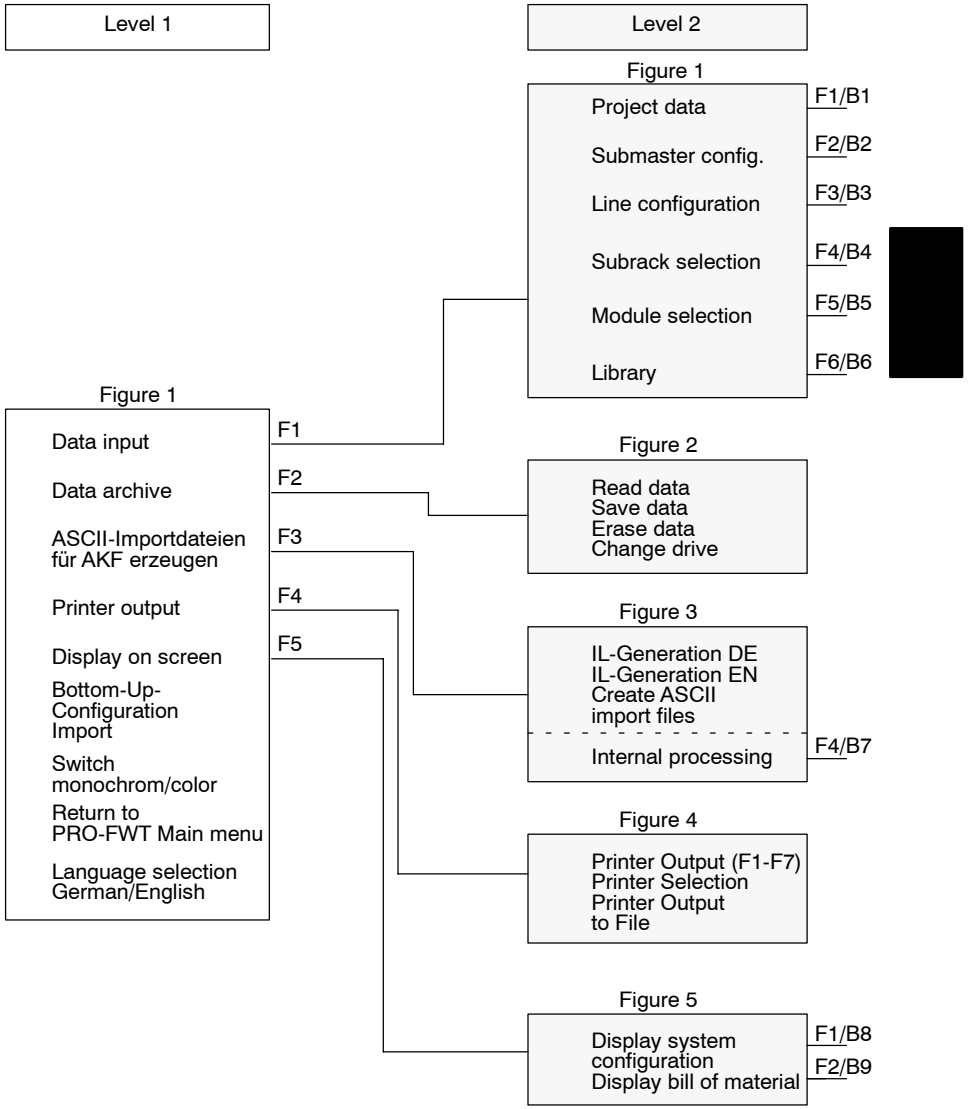
Chapter 3
Overview How To Work

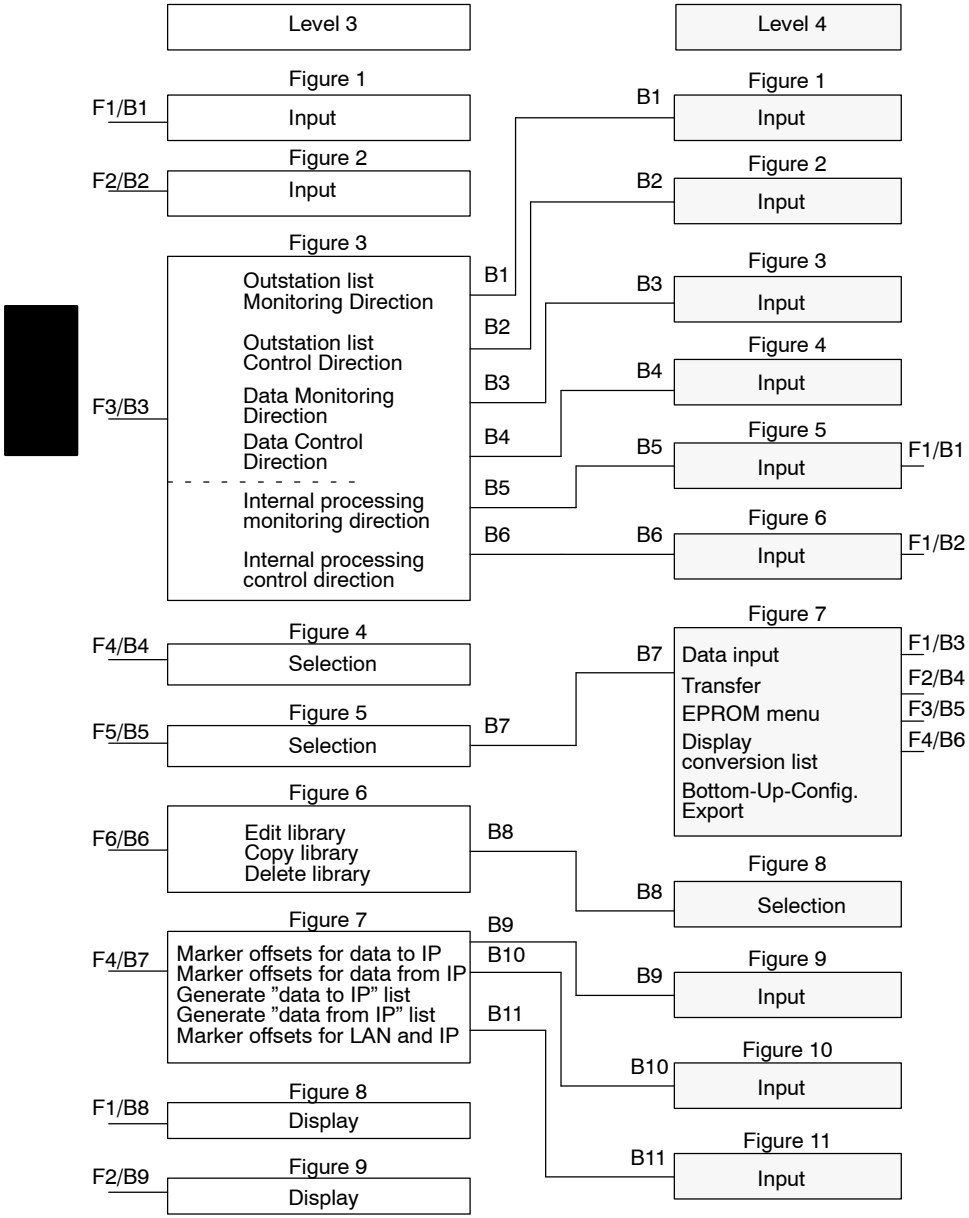
3.1 Flow Chart

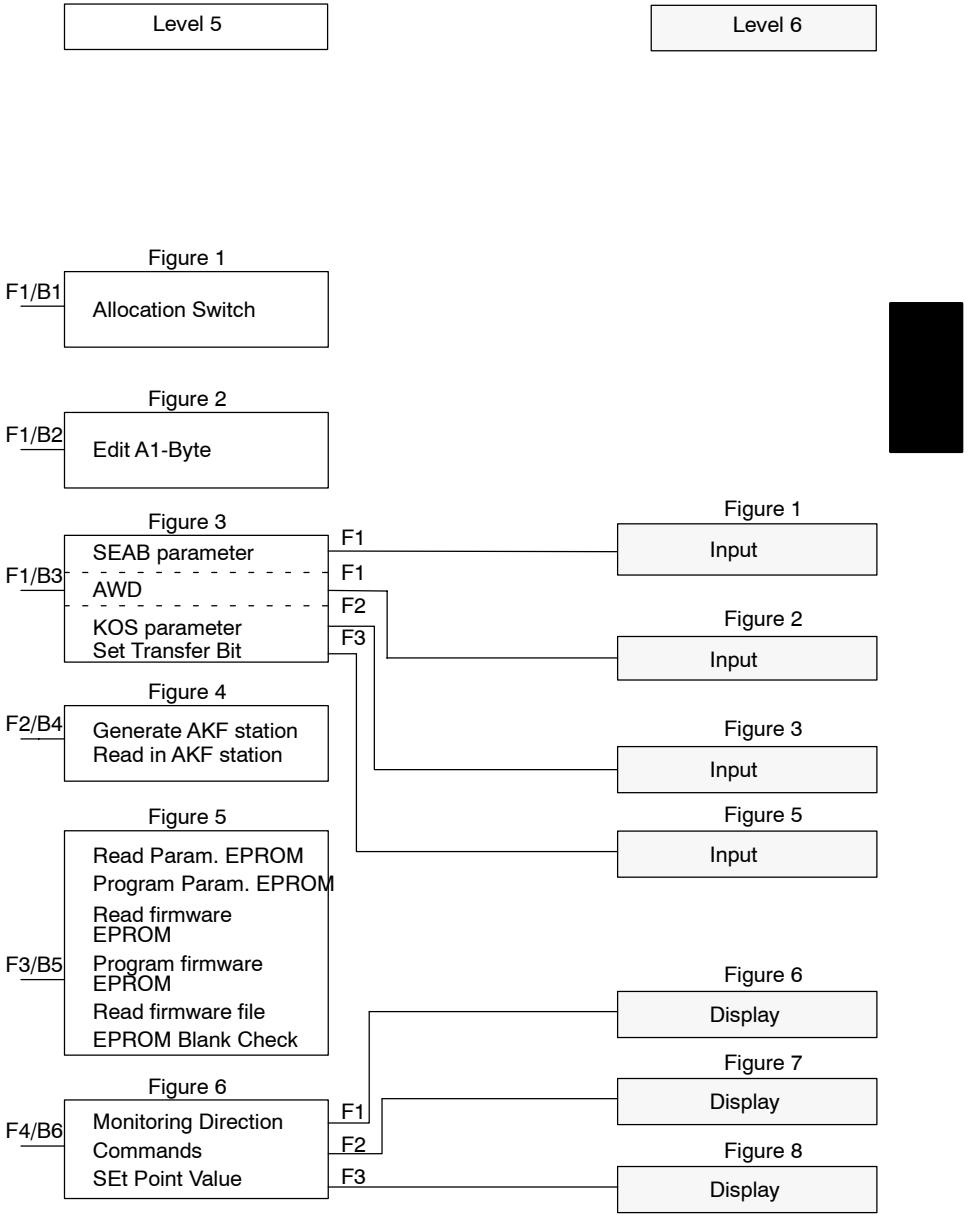


1) If necessary

3.2 Tree Structure of the Menues



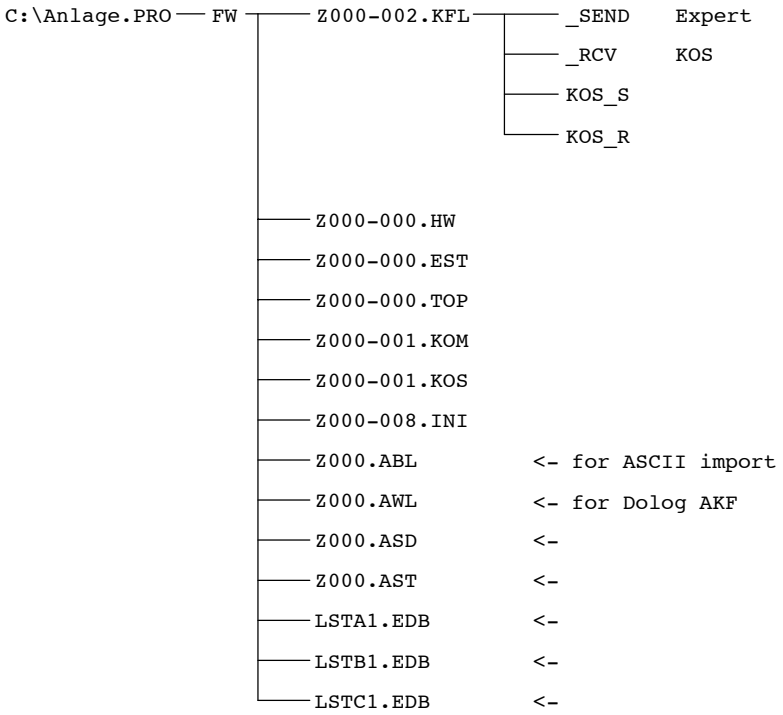

Level 3
Level 4
Figure 1
F1/B1
Input
Figure 2
F2/B2
Input
Figure 3
F3/B3
Outstation list
Monitoring Direction
Outstation list
Control Direction
Data Monitoring
Direction
Data Control
Direction
Internal processing
monitoring direction
Internal processing
control direction
B1
B2
B3
B4
B5
B6
Figure 4
F4/B4
Selection
Figure 5
F5/B5
Selection
B7
Figure 6
F6/B6
Edit library
Copy library
Delete library
B8
Figure 7
F4/B7
Marker offsets for data to IP
Marker offsets for data from IP
Generate ”data to IP” list
Generate ”data from IP” list
Marker offsets for LAN and IP
B9
B10
B11
Figure 8
F1/B8
Display
Figure 9
F2/B9
Display
Figure 1
B1
Input
Figure 2
B2
Input
Figure 3
B3
Input
Figure 4
B4
Input
Figure 5
B5
Input
F1/B1
Figure 6
B6
Input
F1/B2
Figure 7
B7
Data input
Transfer
EPROM menu
Display
conversion list
Bottom-Up-Config.
Export
F1/B3
F2/B4
F3/B5
F4/B6
Figure 8
B8
Selection
Figure 9
B9
Input
Figure 10
B10
Input
Figure 11
B11
Input


Level 5
Level 6
Figure 1
F1/B1
Allocation Switch
Figure 2
F1/B2
Edit A1-Byte
Figure 3
F1/B3
SEAB parameter
AWD
KOS parameter
Set Transfer Bit
F1
F1
F2
F3
Figure 4
F2/B4
Generate AKF station
Read in AKF station
Figure 5
F3/B5
Read Param. EPROM
Program Param. EPROM
Read firmware EPROM
Program firmware EPROM
Read firmware file
EPROM Blank Check
Figure 6
F4/B6
Monitoring Direction
Commands
SEt Point Value
F1
F2
F3
Figure 1
Input
Figure 2
Input
Figure 3
Input
Figure 5
Input
Figure 6
Display
Figure 7
Display
Figure 8
Display

3.3 Directory Structure

During installation, the TOOL directory PRO-UZ250 is set up in the main directory PRO-FWT. The individual programs (EXE files) and the system information for PRO-UZ250 are stored there. The subdirectory TEXTE is also set up there. TEXTE contains the macros for generating the IL, the files with the menu and help texts, the library and the firmware file for KOS 140.

The files set up by PRO-UZ250 are stored as follows:



Explanations about Zxxx-yyy.HW etc.

xxx Master station no. (001 ... 127)
yyy Line number (001 ... 999) or
Teilnehmernummer KOS or
The number 000 is used for files which contain the data for the whole master station and which are not assigned to a certain line.

The name for the plant directory and the submaster numbers are entered in the ”Project Data” menu (see Part II, chap. 5.2.1). The line numbers are entered in the ”Submaster Configuraiton” submenu.

The node numbers of the KOS and not the line numbers are used for distinguishing in the remote load station of the KOS. This should make it easier for the user to enter data to the menu ”Load Expert Data” under Dolog AKF.

Chapter 4
Configuration

4.1 Definition of the Interfaces

4.1.1 KOS Data Structure

The KOS data structure contains 180 bytes in each direction.

Since the ALU and the KOS run asynchronously, a handshake is installed with the transfer status (1st byte in the data structure). This ensures that no data which was not yet processed by the other end is overwritten.
Once all the bytes to be transferred have been set, a ”1” is entered in the transfer status byte. No new data may be transferred as long as the other end has not acknowledged the old data with ”0”.

The input and output bytes are set as follows:

	USTE x.y	Input direction (KOS to ALU)
	USTA x.y	Output direction (ALU to KOS)
	USTE x.1	Transfer status (input direction)
	USTA x.1	Transfer status (output direction)
	USTE x.2	Number of data blocks (8)
	USTA x.2	Number of data blocks (8)
	USTE x.3	Reserve
	USTA x.3	Reserve
From	USTE x.4	Transfer blocks input direction
From	USTA x.4	Transfer blocks output direction

4.1.2 Structure of the Transfer Blocks

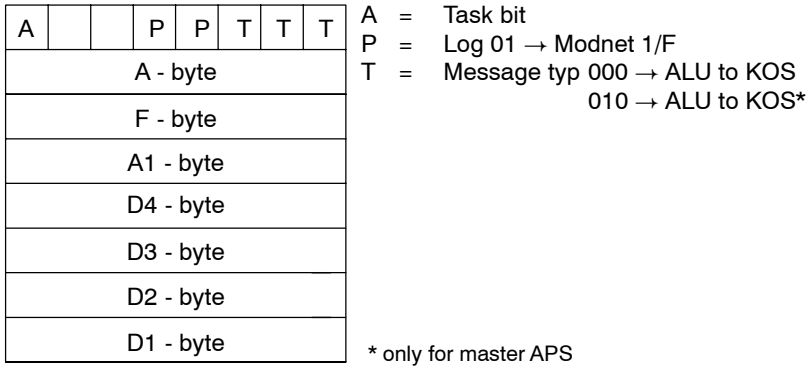


Figure 2 Output direction (starting with USTA x.4)

The task byte is set to 88H if the transfer block contains a message.

Transfer field for data in the command direction (10 bytes)

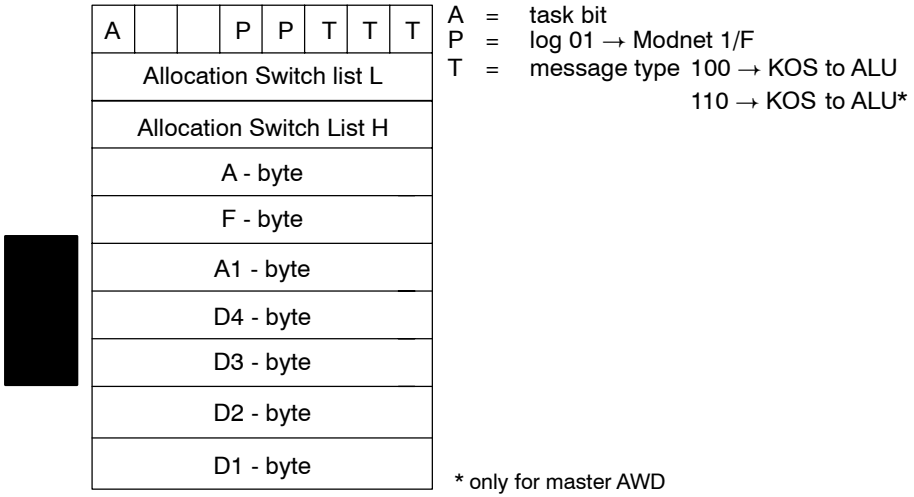


Figure 3 Input direction (starting with USTE x.4)

The task byte is set to 8CH by the KOS-FW.

Table 1 Distribution of the Blocks in the USTA and USTE Fields

USTA x. 4	...	USTA x. 11	1st block
USTA x. 12	...	USTA x. 19	2nd block
USTA x. 20	...	USTA x. 27	3rd block
USTA x. 28	...	USTA x. 35	4th block
USTA x. 36	...	USTA x. 43	5th block
USTA x. 44	...	USTA x. 51	6th block
USTA x. 52	...	USTA x. 59	7th block
USTA x. 60	...	USTA x. 67	8th block
USTE x. 4	...	USTE x. 13	1st block
USTE x. 14	...	USTE x. 23	2nd block
USTE x. 24	...	USTE x. 33	3rd block
USTE x. 34	...	USTE x. 43	4th block
USTE x. 44	...	USTE x. 53	5th block
USTE x. 54.	..	USTE x. 63	6th block
USTE x. 64		USTE x. 73	7th block
USTE x. 74		USTE x. 83	8th block

Transferring the time to the ALU

KOS stores the current time in the last 8 bytes USTE x.173 ... USTE x.180 in each transfer scan.

USTE x.173 = year	USTE x.174 = month
USTE x.175 = day of the week	USTE x.176 = day
USTE x.177 = hour	USTE x.178 = minute
USTE x.179 = special character	USTE x.180 = second

The time information is transferred BCD-coded. The day of the week is defined as follows: 1 = Monday ... 7 = Sunday

Definition of the special characters:

1st bit	Switch to reserve antenna
2nd bit	Report SZ/WZ switch, is set 1 hour before switching
3rd bit	Summer time
4th bit	Winter time
5th bit	Switching second

4.1.3 Allocation Switch

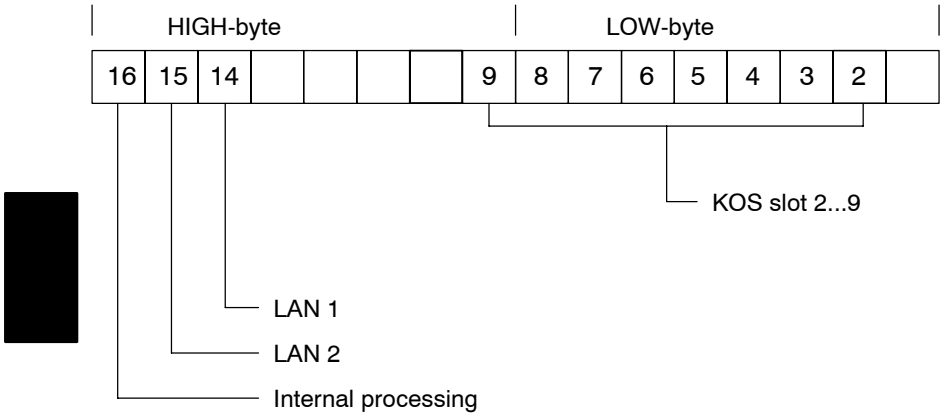


Figure 4 Allocation Switch

A power supply module must always be plugged into slot 1. This slot is therefore not available for a KOS and is not used in the allocation switch.
The 10th to 13th bits are not currently defined.

4.1.4 Internal Interface

There are 67 marker bytes for transferring to the internal processing. The offset for this area can be configured. The structure corresponds to the distribution in the USTA field.

If the transfer status is not equal to 0, a message is contained in at least one transfer block. A block which has been written is marked by setting the task byte. The data is fetched from there with a SFB and entered in the data model.

There are 83 marker bytes for transferring data from the internal processing to a master KOS (outstation), slave KOS (master station) or LAN 1/2. The structure in this marker byte area corresponds to that of the USTE field. The offset can be configured.

The task byte is set in the transfer block and the message is entered in the remaining bytes. The transfer status is set to 1. As soon as the telegram has been fetched by SFB and passed on, the task byte is set to 0. The transfer status byte is set to 0 by the SFB when all the blocks have been distributed. Messages may only be entered in the marker area when the transfer status is set to 0.

The bit corresponding to the KOS slot to which the message should be transferred must be set to 1 in the Allocation Switch.

4.1.5 Internal Data Model

Marker word areas are defined for storing the data to or from the internal processing.

For the input and output direction each:

Signals	256 words
8-bit measured values	128 words
Counted measurands	256 words
Transient information.	256 words
16-bit measured values	256 words
Setpoint values	256 words

A configurable offset can be defined for the marker word area for each data type (separately for input and output directions). A receiving and a send bit are assigned to each marker word. An offset can be defined for these marker bits in the input and output directions. The marker bits are assigned without gaps. The priority of the assignments of the marker bits corresponds to that of the above list.

Example:
5 signals, 3 counted measurands, 4 16-bit measured values to internal processing
5 signals, 3 counted measurands, 3 setpoint values from internal processing

Offset marker bit input direction = 10.1
Offset marker bit output direction = 54.1

Offset marker word	Input dir.	Output dir.
Signal	MW 100	MW 1500
8-bit measured value	MW 356	MW 1756
Counted measurand	MW 484	MW 1884
Transient information	MW 740	MW 2140
16-bit measured value	MW 996	MW 2396
Setpoint value	MW 1252	MW 2652

Assignment by PRO-UZ250 as follows:

Outputs:		
1st signal	MW 100	M 10.01
2nd signal	MW 101	M 10.02
3rd signal	MW 102	M 10.03
4th signal	MW 103	M 10.04
5th signal	MW 104	M 10.05
1st counted measurand	MW 484	M 10.06
2nd counted measurand	MW 485	M 10.07
3rd counted measurand	MW 486	M 10.08
1st 16-bit measured value	MW 996	M 10.09
2nd 16-bit measured value	MW 997	M 10.10
3rd 16-bit measured value	MW 998	M 10.11
4th 16-bit measured value	MW 999	M 10.12

Inputs:		
1st signal	MW 1500	M 54.01
2nd signal	MW 1501	M 54.02
3rd signal	MW 1502	M 54.03
4th signal	MW 1503	M 54.04
5th signal	MW 1504	M 54.05
1st counted measurand	MW 1884	M 54.06
2nd counted measurand	MW 1885	M 54.07
3rd counted measurand	MW 1886	M 54.08
1st setpoint value	MW 2652	M 54.09
2nd setpoint value	MW 2653	M 54.10
3rd setpoint value	MW 2654	M 54.11

In the input direction, the messages are decoded with a SFB and stored in the word defined in the configuration. The SFB also sets the corersponding receiving bit.

In the output direction, the corresponding marker words are entered from the user program. The send bits are set with SFBs (old/new-comparison, pulse threshold, AZI).

4.2 Definition of the Types of Linkage

There are two different modes for transporting process data to the superior master station.

Transparent mode:

The data is channeled through the submaster without changing the messages.

Conversion mode:

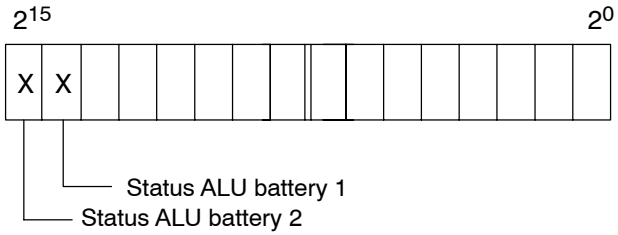
The data from different outstations is converted and passed on to the superior system with a station address.

These different modes only have an effect on the parametrization of the slave KOS. The parametrization of the master KOS and the instruction list in the ALU remain unchanged.

4.3 System Information

The following organization signals are generated by the standard IL. They give information about the status of the UZ250:

Structure of the organization signal A1=0



Structure of the organization signals A1 = 1 to 4

- Subaddress A1 = 1 corresponds to 1st subrack (central subrack)
- Bits 2^0 to 2^8 correspond to slots 1...9 in the subrack

- Subadress A1 = 2 corresponds to 2nd subrack (1st extension subrack)
- Bits 2^0 to 2^8 correspond to slots 21...29 in the subrack

- Subaddress A1 = 3 corresponds to 3rd subrack (2nd extension subrack)
- Bits 2^0 to 2^8 correspond to slots 41...49 in the subrack

If a DTA 112 is used as the central or extension subrack, only the first 4 bits are required to identify the slots.

These organization signals are transferred to all the slave KOS with the global address 127 if there is a change. The slave passes these messages on to the master station with its own station address.

4.4 Configuration Limits

- Addressing in the range of a submaster must be unique. Each slave KOS is assigned its own station address (also in transparent mode), i.e. a maximum of 126 outstations can be configured.

- In conversion mode, a maximum of 256 messages per data type can be configured in monitoring direction, distributed on n outstations. In control direction, the maximum is 256 setpoint values and 1024 commands. These limits always refer to a slave KOS.

- A maximum of 7000 messages can be configured per master KOS in monitoring direction, if APS mode is set, only 5000 messages are possible.

- The number of communications modules is limited to 8 (corresponding to slots 2 ... 9).

4.5 Special Features

- A selective data interrogation (long message) from a submaster to an outstation is not possible since the data range in the submaster exceeds the SEAB monitoring times.

  For a slave KOS in conversion mode, the data can only be requested from its data model with a long message.

  All of this assumes that the data from the outstations is transmitted spontaneously, i.e. the transfer bits or relocation periods must be parametrized for all the data of the otustation.

Submasters:

- Organization signals are redefined (see chapter 4.6).
- Organization commands are newly defined (see chapter 4.7).

Requirements for parametrizing the outstations:

- Counted measurands must be parametrized with pulse thresholds or ring buffer entries.
- The transfer bits must be parametrized for all the data if it is not parametrized as ring buffer data.

Internal Processing:

The internal processing (or SFB 400 message distribution) cannot distinguish between ring buffer data and data from the data model. This means that measured values or counted measurands from the ring buffer of the outstation could overwrite current values from the data model of the outstation in a general polling.

☞ **Note** Messages from the ring buffer of the outstation should therefore not be transferred to the internal processing.

However, if processing in the submaster is mandatory, a modification in the outstation should be used to duplicate the corresponding data and transfer it with different subaddresses in order to permit assignment using the master KOS.

4.6 System Information

from outstation								to master station							
										U	UF	UFN	DU1	DU2	
A	F	A1	D1	D2	D3	D4		A	F	A1	D1	D2	D3	D4	
bb	FE	30	00	06	FF	FF	minute pulse missing start						xxxxxxxx	xxxxxx01	
bb	FE	38	00	0A	FF	FF	end						xxxxxxxx	xxxxxx10	
bb	FE	33	06	FF	FF	FF	time missing start						xxxxxxxx	xxxx01xx	
bb	FE	3B	06	FF	FF	FF	end						xxxxxxxx	xxxx10xx	
bb	FE	25	FF	D3	FF	FF	ring buffer warning						xxxxxxxx	xxx1xxxx	
bb	FE	25	FF	D4	FF	FF	start						xxxxxxxx	xx11xxxx	
bb	FE	25	FF	D5	FF	FF	end						xxxxxxxx	xx00xxxx	
bb	FE	33	07	FF	FF	FF	IL-KOS link start						xxxxxxxx	01xxxxx	
bb	FE	3B	07	FF	FF	FF	disturbed end						xxxxxxxx	10xxxxx	
bb	FA	00	..	XX			module failure start						xxxxxx01	xxxxxxxx	
				00			end						xxxxxx10	xxxxxxxx	
													--------	---------	
								aa	EE	bb	00	00	yyyyyyyy	yyyyyyyy	
bb	FA	00	..	2^6			missing status signal for cancelled command	aa	EE	bb	00	02	00000000	00000001	
bb	FA	01	XX	XX			module failure\ per slot	aa	EE	bb	01	00 ..	xxxxxxxx	xxxxxxxx	
bb	FA	FF	XX	XX			module failure/ on bit	aa	EE	bb	01	FE	xxxxxxxx	xxxxxxxx	

from master KOS		to master station						
				U	UF	UFN	DU1	DU2
		A	F	A1	D1	D2	D3	D4
station disturbance	start						xxxxxxxx	xxxxxx01
	end						xxxxxxxx	xxxxxx10
serial bus busy	start						xxxxxxxx	xxxx01xx
	end						xxxxxxxx	xxxx10xx
M5 error	start						xxxxxxxx	xxx1xxxx
	end						xxxxxxxx	xxx0xxxx
							--------	---------
		aa	EE	bb	00	01	yyyyyyyy	yyyyyyyy

aa = SEAB address UZT/UZU
bb = SEAB address UST

yyyyyyyy = bitwise OR operation on information

4.7 System Commands

from the master station								to the outstation						
A	F	A1	D1	D2	D3	D4		A	F	A1	D1	D2	D3	D4
aa	EF	bb	00	00	00	01	general interrogation	bb	FB	2F	FF	00		
aa	EF	bb	00	00	00	02	measured value relocation	bb	FB	22	FF	12		
aa	EF	bb	00	00	00	04								
aa	EF	bb	00	00	00	08								
aa	EF	bb	00	00	00	10	set date	bb	FF	2F	FF	E1	dd	dd
aa	EF	bb	00	00	00	20	set time	bb	FF	2F	FF	E0	ee	ee
aa	EF	bb	00	00	00	40	start of send inhibit	bb	FF	2F	FF	D6	00	00
aa	EF	bb	00	00	00	80	end of send inhibit	bb	FF	2F	FF	D7	00	00
aa	EF	bb	00	00	01	00	norm buffer	bb	FF	2F	FF	D1	00	00
aa	EF	bb	00	00	02	00	delete all transfer bits	bb	FF	2F	FF	01	00	00
aa	EF	bb	00	00	04	00	start od send inhibit ring buffer	bb	FF	2F	FF	F6	00	00
aa	EF	bb	00	00	08	00	end of send inhibit ring buffer	bb	FF	2F	FF	F7	00	00
aa	EF	bb	00	00	10	00								
aa	EF	bb	00	00	20	00								
aa	EF	bb	00	00	40	00								
aa	EF	bb	00	00	80	00								

aa = SEAB address UZT/UZU
bb = SEAB address UST

dddd = date of the UZT/UZU
eeee = time of the UZT/UZU

4.8 Messages for Master APS Operation

In master APS operation, the connection can also be set up by IL in addition to a parametrizable, automatic establishment of a connection by the master KOS or by the master computer. The following table shows the necessary instructions.

Note The marker byte for internal processing should always be used in the IL
(see Part III, chapter 4.1.5).

Messages from the IL to the master KOS

AB	L	A	F	A1	D1	
08	04	01	00	xx	xx	establish connection to UST xxxx
08	04	02	00	00	00	abort connection
08	04	03	00	00	00	automatic establishment of connection off *)
08	04	03	01	00	00	automatic establishment of connection on *)

*) These message may only be sent if a connection is established

xxxx = station address 0...65535 (0...126 for Modnet-1F)
AB = task byte

The master KOS transfers the following status signals to the IL:

AB	L	A	F	A1	D1	
09	04	01	00	xx	xx	establishment of connection introduced
09	04	01	01	xx	xx	connection established to xxxx from Z
09	04	01	11	xx	xx	connection established to xxxx from UST
09	04	01	FF	00	00	establishment of connection disconnected
09	04	02	01	00	00	line not parametrized
09	04	02	02	00	00	UST not parametrized
09	04	02	03	00	00	no connection established
09	04	02	04	xx	xx	connection established to another UST
09	04	02	05	00	00	AWD is busy (dialling, call)
09	04	02	06	00	00	UST cannot be reached (modem error)
09	04	02	06	01	00	UST cannot be reached (dialling task)
09	04	02	06	02	00	UST cannot be reached (call by UST)
09	04	03	00	00	00	long message sent
09	04	03	01	00	00	message send error (LT)
09	04	03	01	01	00	message send error (polling)
09	04	03	02	00	00	message receiving error (LT)
09	04	03	02	01	00	message receiving error (polling)

xxxx = station address 0...65535 (0...126 for Modnet-1F)
AB = task byte

Chapter 5
Handling

Configurating, parameter assignment and programming with PRO → UZ250 is described in this chapter.

This chapter is a reference manual for the person configuring. Its structure corresponds to that of the menues.

5.1 General Information

The individual menu points are described in the order listed below.

- Data input — Chapter 5.2
- Data archive — Chapter 5.3
- IL generation and transfer — Chapter 5.4
- Printer output — Chapter 5.5
- Screen output of the bill of materials — Chapter 5.6

5.1.1 The Line Editor

The line editor is used for inputting project data, commenting the data point list and extending the library file.

Table 2 Keyboard Definition (US-Keyboard)

Key	Definition
⇐ (Backspace)	Delete character to the left
<Del>	Delete character above cursor
<Ins>	Insert/overwrite switch (is displayed to the right in the last screen line)
<Home>	Cursor to first character of input line
<End>	Cursor to last character of input line
<←>	Cursor one position to left
<→>	Cursor one position to right
<↑>	Cursor to start of previous input line
<↓>	Cursor to start of next input line
<Cr>	Terminate input
Only for data point list, library and bill of materials	
<PgUp>	Previous page
<PgDn>	Next page

☞ **Note** The complete set of characters can be edited with <Alt>+<ASCII-keyboard code>. The number sequence may only be entered using the numeric block.
The corresponding tables can be found in the PUTE user manual or in the printer manual.

Example:
The letter Ä should be input with the keyboard code. Press the Alt key and then the digits 1, 4 and 2 one after the other. Release the Alt key and the Ä appears on the screen.

5.1.2 Starting PRO → UZ250 E1 B1

PRO → UZ250 is started from the main menu PRO → FWT. A header used for selecting the current version of the operating software appears once after the call. The main menu PRO → UZ250 appears after pressing any key and you can begin configuration.

PRO → UZ250 loads the last processed system and station into user memory after the call.

Caution The system ”NONAME” and the station ”Z001-000” are set by the installation routine during the first start.

5.1.3 Autosave

Before leaving certain submenues, the data edited or generated there are stored on hard disk. In particular these are the menues:

- Data input
- Configuration of the submaster
- Configuration of the line
- Edit Library
- Generate IL
- Display of the bill of materials on the screen

5.2 Data Input E2 B1

5.2.1 Project data E3 B1

”Data input”,”Project data”
(F1→F1)

The last date of station processing is displayed. The user cannot change this line.

System
An input of at most 8 characters is **required**. The system name is at the same time the name of the subindex in which the data of the outstation are archived (see Chap. 3.3). For this reason only characters which are permitted as index names under DOS may be input.

Comments, Operator
A maximum of 16 characters may be input. All characters which can be displayed may be used (see Chap. 5.1.1).

The specifications define more exactly a submaster. They are printed in the documentabion in the form of a header.

Number of submaster
It is also used to identify the individual files during archiving, if more than one submaster is to be configured in a system (see Chap. 3.3).

☞ **Note** You can copy the station set by overwriting the system name or the number of submaster station. First, however, it must be stored with the “data archive” menu.

Example:
System “EXAMPLE” and submaster No. “1” are loaded and should be copied to “EXAMPLE\Z005-000”.

Step 1 Overwrite submaster number “1” with a “5”.

Step 2 Leave menu with <F9> or <Esc>.

Step 3 Interrogate if data should be copied. Answer with <J> <Cr>.

Step 4 master station is copied.

If you answer step 3 with <N> <Cr>, the system “EXAMPLE” submaster no. “1” is not copied but “EXAMPLE\Z005-000” is opened as the new station.

☞ **Note** If the station “EXAMPLE\Z005-000” already exists, the corresponding message appears on the screen. You can now decide whether the archived data should be overwritten or loaded into user memory.

In the same way you can copy “EXAMPLE\Z001-000” to “TEST\Z003-000” by overwriting the system names and the submaster number.

You can then modify and supplement the corresponding menues.

5.2.2 Submaster Configuration E3 B2

”Daten Input”,Submaster Configuration”
(F1→F2)

Order of mounting:
In automatic assignment by PRO-UZ250, the master KOS and then the slave KOS or vice versa is assigned to the slots, depending on the setting. The last KOS type to be configured can be extended without problems. Otherwise the equipment mounted is moved.

Example:

Slot 2	Master
Slot 3	Master
Slot 4	Slave

A further slave KOS can be configured without changing the equipment mounting and data models. If a further master is entered, the slave is moved to slot 5 and the file with the KOS data (data model) is deleted and then generated again.

Number of master KOS:
The number of master KOS must be entered. The master KOS polls the outstations assigned to it in the menu ”Outstation list monitoring direction”. A master KOS can pass on a maximum of 7000 messages in the monitoring direction. In AWD operation, however, only 5000 messages can be passed on. In control direction, the limits of the SEAB-1F log are valid.

Number of slave KOS transparent mode:
A slave KOS in transparent mode passes on the messages it receives from IL without changing them, i.e. the address byte and the subaddress byte of a message are not changed.

Number of slave-KOS conversion mode:
A slave KOS in conversion mode converts the messages from different outstations and passes them to the superior system with a station addresss, i.e. the messages from different outstations have the same address byte and only differ in their subaddress byte. The limits of the SEAB-1F log are valid for the number of possible messages. However, commands are an exception since only 1024 commands can be converted due to the capacity of the parameter EPROM.

Configuration limits:
A maximum of 8 KOS boards can be configured. Any combination of master and slave KOS is permitted.

A mandatory line number must be configured for each KOS. The input window for the line number can be called with <F1>. Numbers from 1 to 999 are permitted.

Create FA6 Messages

In order to permit connections to master stations which cannot process FA6 system messages, these can be suppressed.

☞ **Note** Operation without FA6 messages is only possible for a slave KOS in transparent mode.

The information that an outstation has failed below the submaster is no longer passed on as an organization signal, sondern muß bei Bedarf von einer Anwender-AWL als ”normale” Meldung aus der internen Verarbeitung an die Slave-KOS übergeben werden.

☞ **Note** See ”Suppress the transfer of internal errors”, Part IV, chapter 2.2.3.

Organization signals which are generated by the outstation (module failure, KOS–ALU link disturbed, etc.) are passed on without change. Organization commands (e.g. general pollings) are also passed on without change in the control direction.

Limitations:

Selective data interrogations from the outstations are not possible since the slave KOS hsa no data model in transparent mode. Instead, it stores the incoming messages in a temporary buffer in the order of their arrival. A time synchronization of the outstations by a time message from the master station is also not possible.

Special Mode for Master APS:

If the outstations are linked with the submaster by automatic polling (APS), it can be necessary for an outstation to be dialled from several master KOS (max. 4).

If the special mode for master APS operation is now selected, an outstation can be allocated to several masters in the menu ”Outstation List Monitoring Direction”.

In the menu ”Data Monitoring Direction”, the data of the outstation is automatically accepted for all corresponding master KOS as soon as it is configured.

Internal processing:

”Yes” must be set here if data is to be passed from the submaster to outstations or central stations with a user IL or accepted from these. If this is the case, the address with which data is transferred to or received from the master for this internal processing is prompted.

5.2.3 Line Configuration E3 B3

”Data Input”,”Line Configuration”
(F1→F3)

The line configuration comprises four submenues. The outstation list must first be entered in monitoring direction and then in control direction. The menues ”Input data” and ”Output data” can be processed in any order, but output data is only entered in conversion mode for the slave KOS.

Outstation list monitoring direction E4 B1

”Data input”,”Line configuration”,”Outstation list monitoring direction”
(F1→F3→F1)

A maximum of 126 outstations can be driven at one submaster. The SEAB-1F permits 127 station addresses, but each slave KOS has its own station address and at least one slave KOS must be configured, leaving only 126 station addresses.

These 126 possible outstations can be distributed on one or more lines (master KOS). One screen page is displayed per line.

Operating:
A configured outstation is marked with an X. If several lines are configured, you can page between the individual screen pages with <PgUp> and <PgDn>. Outstations which were already allocated to another line are marked with a -B- and cannot be entered again. Dies gilt nicht, wenn bei der Unterzentralenkonfiguration der Sondermode für Master-AWD eomgestellt wurde.

An outstation is set or deleted by toggling with RETURN or the X key or by clicking with the mouse.

The input window for the line numbers can be called with <F1> if it was changed.

Outstation list control direction **E4 B2**

”Data input”,”Line Configuration”,”Outstation list control direction”
(F1→F3→F2)

The outstation for which a slave KOS should accept commands and setpoints is defined here.

Caution This also includes organization commands such as general polling, relocate counted measurands, etc.

One screen page is displayed per line. Only outstations which were already allocated to a master KOS as well as the station address of the internal processing can be entered. An outstation can be allocated to several slave KOS (control master, auxililary master).

Operating:
A configured outstation is marked with an asterisk *. If several lines are configured, you can page between the individual screen pages with <PgUp> and <PgDn>. Outstations which were not yet allocated to any master KOS are marekd with –N– and cannot be entered.

An outstation is set or deleted by toggling with RETURN or the * key or by clicking with the mouse.

The input window for the line numbers is called with <F1> if these are to be changed.

Data monitoring direction E4 B3

”Data input”,”Line configuration”,”Data monitoring direction”
(F1→F3→F3)

Here you can enter which and how many messages come from the individual outstations. 256 messages can be processed per outstation and data type. A master KOS, however, can only process a maximum of 7000 messages in monitoring direction. The number is limited to 5000 messages in APS operation. The limits of the SEAB-1F log are valid in control direction.

Note The number of organization messages is not interrogated since the organization messages always contain a general pointer and are passed to all slave KOS for further processing.

Operating:
There is a separate scren page available for each outstation. You can page with <PgUp> and <PgDn>. The outstation whose line is being processed is faded into a status line.

The number of messages is entered in decimal.

You can change to the next or previous data type with <↓> and <↑>.

The following limits are monitored:

1. 256 messages per data type and outstation

2. a total of 7000/5000 messages per master KOS

If one of these limits is exceeded, there is a remark on the screen and the input is rejected.

Data control direction **E4 B4**

”Data input”,”Line configuration”,”Data control direction”
(F1→F3→F4)

This menu can only be called for slave KOS in U–mode or for internal processing of LAN 1 and 2. The number of commands and setpoint values to be converted by the particular KOS is entered per outstation. 256 setpoint values and 1024 commands per slave KOS can be converted.

Note This menu is not called for a slave KOS in transparent mode since commands and setpoint values are passed on unchanged. The terminal block preceding the messages can be deduced for the definitions in the menu ”Outstation list monitoring direction”.

A screen page is provided per outstation. You can page with <PgUp> and <PgDn>. The outstation whose line is being processed is faded into a status line.

The number of messages is entered in decimal.

The following limits are monitored:

1. 256 setpoint value messages per slave KOS

2. 1024 command telegrams per slave KOS

If one of these limits is exceeeded, a remark is output to the screen and the input is rejected.

Internal processing monitoring direction E4 B5

”Data input”,”Line configuration”,”Internal processing monitoring direction” (F1→F3→F5)

The number of messages to be transferred from the internal processing using the slave KOS or a LAN is entered here. A maximum of 256 messages can be defined for signals, transient information, counted measurands and 11-bit measured values and a maximum of 128 messsages for 8-bit measured values.

Allocation switch E5 B1

”Data input”,”Line configuration”,”Internal processing monitoring direction”,”Allocation switch” (F1→F3→F5→F1)

Pressing <F1> calls the menu with which the allocation switch can be set for each individual message. All the slave KOS in U-mode for which the address of the internal processing can be set in the menu ”Outstation list control direction” and LAN 1 and 2 are set in the allocation switch.
The user defines the slave KOS to which the messages should be transferred using this pointer. It is possible to pass a message to several slave KOS.
You can set the bits of the pointer field in the lower part of the screen for each message. The setting is valid for the selected message.

You can set whether the slot locations of the KOS modules or the line numbers should be faded in. Since the selected setting is often valid for several messages, they can be transferred to copy store and assigned to any number of messages without having to select the pointer field.

Keyboard input:

<F9> or <Esc>	:	Return to previous menu level
Cursor <↑>,<↓>	:	Select message
<PgUp>	:	Scroll message list forwards
<PgDn>	:	Scroll message list backwards
<Alt>+<L>	:	Change between line number and pointer bit
<Alt>+<M>	:	Mark pointer field for copying
<Alt>+<C>	:	Copy pointer field
<TAB>	:	Change between pointer field and message list
Cursor <←–>	:	Select bit in pointer field

Cursor <→> : Select bit in pointer field
<Return> : Toggle between yes and no in pointer field

The subaddrsses are entered with the number keys.

Mouse operation:
The right mouse key corresponds to <Esc>.
The left key is clicked.
Choose and click the messages or bits in the pointer field. A double click on the same bit in the pointer field toggles between yes and no.
Clicking <↑↑> or <↓↓> corresponds to <PgUp> and <PgDn>.
Functions are called by clicking the relevant function field.

Internal processing command direction E4 B6

”Data input”,”Line configuration”,”Internal processing command direction” (F1→F3→F6)

The number of setpoint values to be transferred from the internal processing to the individual outstations is set here. No more than 256 setpoint values may be output in the total.

Edit A1-byte E5 B2

”Data input”,”Line configuration”,”Internal processing command direction”,”Edit A1-byte” (F1→F3→F6→F1)

The subaddresses for the setpoint values can be set by pressing <F1>. PROUZ250 assigns the subaddresses per outstation without gaps beginning with 0.

5.2.4 Selection of Subracks E2 B1

”Data input”,”Selection of Subracks”
(F1→F4)

Selection: **E3 B4**
The selected subracks are displayed inversely. You can change the setting with <↑> or <↓>.

If an existing selection is “reduced”, any I/O modules are deleted.

You are informed if this is the case so that you can retract the change.

When leaving the menu with <F9> or <Esc>, the selected subracks are included in the configuratino of the station.

5.2.5 Selection of Modules E2 B1

”Data input”, ”Selection of Modules”
(F1→F5)

Selection: **E3 B5**

The central processing unit, power supply unit, link modules and I/O modules are assigned during equipment configuration.

Like the automatic hardware assignment defined by the menu for the number of PVs, an existing equipment configuration can also be changed.

All the hardware modules available are listed in the box on the left side of the screen.

Table 3 Equipment configuration rules

module	Slot
ALUxxx	1st in central subrack[1)]
DNPxxx	2nd in central subrack[1)]
BIK 116	2nd in central subrack[1)]
DEAxxx	1st in extension subrack[1)]
KOS 140	3rd to 9th in central subrack

All the other modules can be assigned to any of the other slots. It is recommended that DEZ 161 also be equipped in the central subrack.

A help text can be displayed for the marked board with <F1>.

A module can be overwritten by another type of module.

1) Other modules than those specified here are not permitted at these slots.

Keyboard input:

<F9> or <Esc>	:	Return to previous menu level
<Return>	:	Enter module or toggle ALU type
<Del>	:	Delete module
Cursor <↑>,<↓>	:	Select module
Cursor <→>	:	Subrack slot location
Cursor <←>	:	Subrack slot location
<A>	:	Toggle ALU type
<H>	:	Call help text for module
<F1>	:	ZOOM (KOS parametrization)
<F2>	:	Overview/Power flow

Mouse operation:

The modules to be equipped are marked by clicking with the mouse cursor. The slots are then selected and clicked. The module is thus entered in the slot. A module can be deleted by clicking an empty field in the box by entering the empty field in the slot.

ZOOM on/off **E3 B5**

”Data input”, ”Selection of Modules”, ”ZOOM on/off”
(F1→F5→F1)

You can zoom into a module, i.e. you can enlarge its image. The module, that is marked in the subrack on the right side, is displayed on the left side on the screen.

To display another module, simply press <←> or <→> to change to another slot in the subrack. You don’t need to leave the “ZOOM” function.

The I/O module is displayed in the window, that has been opened by the ZOOM function. You can activate the KOS parameterization for the KOS modules that way. The KOS parameterization is described in Part IV.

The individual optional modules (UEM 001 and AWD 001) can be toggled with <Z>.

The parameter file is created the first time that the parametrization is called for a KOS module. If a parameter file already exists, it is interrogated whether its new contents should be created or whether the old contents should be maintained.

Note If there was a change or extension to the menu ”Line configuration”, the paramter file must be newly created.

You must also decide whether or not to keep the existing data model for a slave KOS in conversion mode. If this is the case, messages which are additionally entered in the menues ”Data monitoring direction” or ”Data control direction” are appended to the conversion lists, i.e. the A1 bytes are allocated to the new messages following the last A1 byte of the previous generation run

Example:
An existing parameter assignment with two messages each from outstations 2 and 3 is extended by a message from outstations 2 and 3. The 4 columns define the outstation address, data type, A1 byte in the outstation and A1 byte converted.

Conversion list after 1st generation run:

2	signals	0	0
2	signals	1	1
3	signals	0	2
3	signals	1	3

Conversion list after extension with received data model:

2	signals	0	0	
2	signals	1	1	
2	signals	2	4	← new message
3	signals	0	2	
3	signals	1	3	
3	signals	2	5	← new message

Conversion list after extension with new data model:

2	signals	0	0	
2	signals	1	1	
2	signals	2	2	← new message
3	signals	0	3	
3	signals	1	4	
3	signals	2	5	← new message

Caution The old data model can only be kept if there are extensions. If messages were removed from the lists, a new data model must be generated.

5.2.6 Edit Library E3 B8

Library change E4 B8

”Data input”,”Library”, ”Library change”
(F1→F6→F1)

All existing library files are listed in alphabetical order in a window. The arrow marking the selected library can be shifted with <↑> and <↓>. The lines are scrolled at the start and end of the window if more library files exist than can be displayed in the window.

When installing PRO → UZ250, a library (PRO250_D.BIB) is provided which contains all the necessary hardware and software components for the UZ250. The individual components are listed together with their names and part numbers.

The individual libraries contain 120 positions, which are divided into 3 categories.

Positions 1 - 31 are the subracks and the modules whose number is defined by the configuration (see Chap. Part III, 5.2.4). Only the price per unit can be edited here in the last column.

Positions 32 - 78 are hardware and software components for which you can define whether and how often they should be included in the bill of materials. This is done by entering the required number in the first column.

Positions 79 - 120 are at your free disposition. You can enter for example special modules or the costs for installation and configuration. The costs per item entered here are included in the calculation and in the bill of materials.

If an entry was made in one fo the lines 99 - 120, it is then handled as lines 12 - 98. Only the number and price per unit can be changed. However, the whole line can be deleted with <Del> if the cursor is at the start of the line.

You go to the previous or next line with <↑> and <↓> if the cursor is at the start of the line.

You go to the first possible input position with <→>.

The line editor is valid wihtin an input field.

From the column “number” you always go first to column “price per unit”. As of position 28 you cannot skip directly to the column “price per unit”. If you want to skip a column, press only <Cr>.

Library copy **E3 B6**

”Data input”, ”Library”, ”Library copy”
(F1→F6→F2)

You are prompted for the filename of the new library. The name can have up to 8 characters. PRO → UZ250 appends the extension .BIB and thereby indicates, that the file is a library-file.

It’s usefull to create more than one library-file, if PRO → UZ250 is used as an estimating tool by you. You can enter the unit price for each component in the last column and create some files with different discounts.

You also have the possibility, to save library files with certain combinations of components as default files.

Library erase **E3 B6**

”Data input”, ”Library”, ”Library erase”
(F1→F6→F3)

You can delete all libraries, except the default library. You select the library files you want to delete from a window, where all library files are listed in.

5.3 Data Archive E1 B1

Read data E2 B2

”Data archive”, “Read data”
(F2→F1)

All the systems processed so far are listed in alphabetical order in a window. The arrow marking the selected system can be shifted with <↑> and <↓>. The lines are scrolled at the start and end of the window if more systems exist than can be displayed in the window.

The selection is confirmed with <Cr> and the previously processed outstations of this system are then listed. The outstations are selected according to the same principle as described above.

If an outstation selection was confirmed with <Cr>, it is loaded into user memory.

The windows can always be left with <Esc> or <F9> without a new station being loaded.

Save data E2 B2

”Data archive”,”Save data”
(F2→F2)

A station is saved on the drive currently set.

First a subindex is opened containing the name of the system if it does not yet exist. All previously generated files are then saved in this subindex (see also Chap. 3.3).

Several stations can be saved on one diskette.

Erase data **E2 B2**

”Data archive”,”Erase data”
(F2→F3)

As for “read data”, all the previously processed systems and then all outstations are listed in a window.

If the selection of an outstation is confirmed with <Cr>, all the files belonging to this outstation are deleted.

If all the outstations of a system are deleted, the corresponding subindex is automaticlly deleted.

The delete function can be aborted with <Esc> or <F9>.

Change drive **E2 B2**

”Data archive”,”Change drive”
(F2→F4)

Drives A...Z can be toggled with <F4>.
After calling <F4> the drive can be entered directly by the keyboard.

The initial state is the drive from which PRO → UZ250 was started. If this setting is changed, for example from C to A, drive A is now accessed for the functions “read file”, “save file” and “delete file”.

5.4 Generate ASCII Import Files for AKF E1 B1

Generate ASCII-IL (German) **E2 B3**

"Generate ASCII import files for AKF","Generate ASCII-IL (German)" (F3→F1)

The individual generated modules are written to the file Zxxx-000.AWL. The file Zxxx-000.AWL is opened for writing in APPEND mode. APPEND means that additional write operations are always appended at the current file end.

At the start of IL generation, there is an interrogation how the KOS modules should behave if a KOS fails.

The following settings are possible:
1) All KOS modules of the other side are stopped if a single KOS fails.
2) The KOS modules are only stopped if all the KOS of the other side fail.

In this case, stopping means that no messages are passed to the IL. The master KOS no longer poll and the slave KOS accept no messages from the master stations.

If version 2 is selected, all the messages to be sent to the failed KOS are lost.

If a redundant transfer system is to be established in the direction of the master station, version 2 must be set for the slave KOS so that the messages can be transferred with the 2nd KOS.

The failure of one or more KOS modules is trasnferred to the master station in the organization signals with the subaddresses 0...2. The organization signals contain the station addresses of the slave KOS in transparent mode.

”Generate ASCII import files for AKF”,”Generate ASCII-IL (English)” (F3→F2)

The basis for the english ASCII-IL is the german IL, that has been created as described above. But you don’t have to activate the F1 function, because the german IL is generated automatically if you press <F2>. It is then translated into English, i.e. statements and operands that have another designation in English are replaced. Because of this procedure, special english macro files are not necessary.

Note An english ASCII-IL cannot be read in by an german Dolog AKF → A250 and vice versa.

Warning If you again transfer a station to Dolog AKF → A250, remember that the PBs or FBs generated by PRO → UZ250 and the OB are overwritten. If you changed these blocks, you should first save them in another index or on diskette in order to include the changes at a later time.

Create ASCII import files **E2B3**

”Generate ASCII import files for AKF”,”Create ASCII import files” (F3→F3)

The files for the ASCII import are created here under DOLOG-AKF. These are:

- ❒ equipment list (x.ABL)
- ❒ symbols and comments (x.ASD)
- ❒ data structures (x.AST)
- ❒ external data structures (x.EDB)
- ❒ control file (AKF25.CMD)

Note The x.EDB files can only be imported automatically starting with AKF125 Version 6.0. In older AKF versions, there is a remark that line 9 contains an unknown command and the import is cancelled.

Internal processing: **E2B3**

”Generate ASCII import files for AKF”,”Internal processing” (F3→F4)

A data model can be set up for internal data processing. A marker area of 256 words can be assigned for storing the data for the input and output direction for each data type (except realtime signals). The parameter lists for SFBs 394 to 396 are set up using the defined marker areas, the data from the line configuration and the KOS parametrization.

Marker offsets for data to internal processing **E3B7**

”Generate ASCII import files for AKF”,”Internal processing”,”Marker offsets for data to internal processing”
(F3→F4→F1)

The marker areas for the data to be passed to the internal processing are defined. Data to the internal processing can be signals, counted measurands, measured values from the outstations which were assigned the pointer to the internal processing during configuration of the master KOS as well as the setpoint values which were assigned to the outstation address of the internal processing in the menu ”Line configuration - data control direction” .
Commands have a special status. A marker word is defined here in which the commands are stored coded in binary (1...1024). It can be fetched by a user IL there and further processed. The commands can arrive from LAN 1 / 2 or the slave KOS.

Marker offsets for data from internal processing **E3B7**

”Generate ASCII import files for AKF”,”Internal processing”,”Marker offsets for data from internal processing”
(F3→F4→F1)

The marker areas for the data coming from the internal processing are defined. Data from the internal processing can be signals, counted measurands and measured values collected in the user IL and passed on to the master station. Setpoint values can also be defined with a user IL and passed to the outstations. The user IL stores the data in the reserved marker areas. SFBs create the messages and carry out the transport.
Commands have a special status. 1 word is reserved per outstation address (0...127). Commands in the first word of the defined area are sent to outstation 0, commands in the 2nd word of the area to outstation 1, etc. The commands should be entered in the corresponding word coded in binary.

Create list ”Data to internal processing” **E3B7**

”Generate ASCII import files for AKF”,”Internal processing”,”Generate ’Data to internal processing’ list”
(F3→F4→F1)

Create list ”Data from internal processing” **E3B7**

”Generate ASCII import files for AKF”,”Internal processing”,”Generate ’Data from internal processing’ list”
(F3→F4→F1)

The parameter lists for the SFBs are generated using the defined marker areas and data.

Marker offsets for LAN and internal interface **E3B7**

”Generate ASCII import files for AKF”,”Internal processing”,”Marker offstes for LAN and internal interface”
(F3→F4→F1)

A marker area can be defined separately for the input and output directions for storing data for LAN 1 and 2 and the internal processing. The marker blocks are structured like the KOS message blocks: 8*8 bytes each in output direction and 8*10 byte in the input direction.

5.5 Printer Output E1 B1

Each printed page contains a header which includes:

- System name
- Unterzentralen Nr.
- Date of generation
- Comments
- Operator

Printout of the bill of materials E2 B4

”Printer output”,”Bill of materials”
(F4→F1)

A query is made whether a new bill of materials should be generated for the printout. If yes, all existing library files are offered for selection in order to determine the bill of materials.

If a library is selected with prices per unit, you can specify whether the total price of the station should also be printed.

Printout of the hardware configuration E2 B4

”Printer output”,”Hardware configuration”
(F4→F2)

The selected subrack(s) including the equipment mounting are printed in graphic form. The I/O module slots are designated with 1 to 18 to correspond with their slot address.

The subracks are displayed in three rows. The bottom row is only intended symbolically for optional modules and not for I/O modules.

The two upper rows contain the slots which can be addressed by the ALU. Actually both rows shoudl be displayed sequentially if no bus extension cable is used. This was not done so that the printout could be made in DIN A4 format. A configured bus extension cable is printed as connection between the 1st and 2nd rows.

Printout of the submaster configuration **E2 B4**

”Printer output”,”Configuration of submaster”
(F4→F3)

The submaster configuration is printed as a graphic. 5 slots are displayed per page. For the slots of the master KOS, the connected outstations are printed as a branch below the KOS. The outstations are combined in one box for continuous station addresses; otherwise one box is printed per outstation. If due to poor address allocation the branch is too long to be able to be printed on one DIN A4 page, printing extends past the perforation in order to obtain a complete representation.

Printout of the internal processing **E2 B4**

”Printer output”,”Internal processing”
(F4→F4)

A summary of the defined marker areas (word, byte, bit) is printed. A list containing the messsages to and from the internal processing is also printed. The list has an A, F and A1 byte as well as the marker word (source, target) and the change bit (send or receive bit).

Printout of the loading **E2 B4**

”Printer output”,”Loading”
(F4→F5)

The configured module as well as its load of the 5V and 24V power supply is printed for each slot.

Printout of the KOS data E2 B4

”Printer output”,”KOS data”
(F4→F6)

You can print the data for all KOS modules or for parts of them. The slot numbers are entered separated by commas or with a dash (example: 1,3-6). If you want to print the data for all the KOS modules, enter <*>.

The following data is printed:

- SEAB parameters
- KOS parameters
- pointer list (only master KOS)
- conversion list (only slave-KOS in conversion mode)

The station addresses, data type and subaddresses of the individual messages from the outstations are printed with the pointer lists. The slave KOS with the slot number and line number to which these messages are to be passed on is printed to the right.

The messages are also listed with station address, data type and subaddress in the conversion lists. The new converted subaddress is also printed along with an entry whether a signal prompt should be set if there is a change.

Printout of all lists E2 B4

”Printer output”,”All lists”
(F4→F7)

All the lists which exist are printed.

Printer selection **E2 B4**

”Printer output”,”Printer selection”
(F4→F8)

A printer output is only possible using the parallel standard interface LPT1 with PRO → UZ250. Output using the serial interface is not recommended since this is already used for the link to the PLC, the EPROM programming panel and the mouse.

Expert If you want to use the printer with a serial interface nevertheless, you can direct the output in the MS-DOS level using MODE commands before PRO → UZ250 is started. The necessary commands can be found in the DOS manual.

Note IBM character set II must be set in the printers.

The following printers can be selected from PRO → UZ250:

- ❒ DRU 292 = DIN A4 matrix printer (OKI)
- ❒ DRU 293 = DIN A3 matrix printer (OKI)
- ❒ DRU 120 = DIN A4 matrix printer (Citizen)
- ❒ DRU 096 = DIN A3 ink jet printer
- ❒ PRT 294 = DIN A4 matrix printer
- ❒ PRT 295 = DIN A3 matrix printer
- ❒ DRU 1200 = DIN A4 laser printer
- ❒ EPSON LQ550 = DIN A4 matrix printer

All printers with Centronics interface!

You can also switch to script mode for the matrix printers. The printer output, however, will be somewhat slower. The corresponding selection window appears on the screen as soon as a matrix printer was selected.

Selection is made with the mouse or <↓> <↑>. The printer driver is activated with <Cr>.

The printer control commands for the printers offered for selection by PRO → UZ250 are defined in the driver file DRU.DRV in the subdirectory PRO–UZ12. You can extend this file by futher printer drivers with an editor, taking the input rules into consideration. When the printer is selected, the new printer is listed with the text specified in the selection window for DRIVERNAME and provided for selection.

Input rules:

- Up to 15 drivers can be entered. For new drivers, simply copy the text between the lines.
- A valid driver name must appear after the text string ”CURRENT PRINTER”.
- A 1 or 0 must appear after the text string ”NLQ [0=AUS 1=EIN]”.
- There may be no ”empty” drivers in this file, i.e. all the drivers must be described with name and data.
- Decimal numbers and text strings (in inverted commas) can be entered. Avoid superfluous blanks (but they are permitted in a text string). The individual elements are separated by commas.
- Up to 80 elements can be specified for INITIALIZATION, CONTROL COMMAND PER PAGE and END PRINT. Up to l5 elements for the rest of the parameters.
- Do not overwrite any colons and makes sure that your input always starts in the 26th column.
- Any text string with a maximum of 15 characters can be defined for the DRIVERNAME.

Example:

```
 AKTUELLER DRUCKER:DRU 292/293
 NLQ [0=AUS 1=EIN]:1
------------------------------------------------------------
               DRIVERNAME:DRU 292/293
         INITIALISIERUNG:
STEUERANWEISUNG JE SEITE:
        BREITSCHRIFT EIN:27,87,"1"
        BREITSCHRIFT AUS:27,87,"0"
      UNTERSTREICHEN EIN:27,45,"1"
      UNTERSTREICHEN AUS:27,45,"0"
                 NLQ EIN:27,73,51
                 NLQ AUS:27,73,49
          HOCHSCHRIFT EIN:27,83,2
          HOCHSCHRIFT AUS:27,84
          KOMPRIMIERT EIN:15
          KOMPRIMIERT AUS:18
            ELITE SCHRIFT:27,58
             PICA SCHRIFT:18
            ENDE AUSDRUCK:
------------------------------------------------------------
```

Printer output to file **E2 B4**

”Printer output”,”Printer output to file”
(F4→D)

You are asked for the name of the file for the printer output. Drive identifier and path commands can be entered.

The file is opened in APPEND mode so that all output is written into the same file. This file is only closed when the printer menu is left. If you want to **newly** create a file with the same name, you must first delete the old file in the DOS level because otherwise the output is appended to the end of the file.

☞ **Note** All the printer control characters are written into this file.

Output in a file only makes sense for example if you want to process the datapoint list with another editor. You can also use parts of the PRO → UZ250 documentation in other documentation systems.

☞ **Note** The individual IL blocks are not printed with PRO → UZ250. The IL as generated by PRO → UZ250 has a special format and contains control characters which are eliminated again when read into Dolog AKF → A120. For this reason the IL blocks should be printed in Dolog AKF using the corresponding functions.

5.6 Display on the Screen E1 B1

This function gives you a quick overview of the scope and price of a configured submaster. In order to determine the prices, the prices of the parts of the indivdual components musts have been entered in the menu ”Edit library”. You can work with different library files.

Display system configuration E3 B7

”Display on the screen”,”Display system configuration”
(F5→F1)

You can display the system configuration in the form of a diagram on the screen. For the master KOS, all the connected outstations are displayed in a branch downwards.

Arrows (↓) at the left edge of the screen show whether further outstations exist upwards or downwards.

Arrows (← →) show whether further KOS modules can be scrolled to the left or right.

You can shift the diagram to the right, left, upwards or downwards with the cursor keys.

You return to the ”left, upper corner” with <Home>.

Display bill of materials **E3 B8**

”Display on the screen”,”Display bill of materials”
(F5→F2)

After starting this menu, a window listing all the existing libraries in alphabetic order appears. The library can be selected with <↑> and <↓>. The lines are scrolled at the start and end of the window if more libraries exist than can be shown in the window.

The bill of materials is composed from the configured modules and subracks. All the positions of the library in which a number of parts was entered are also included.

Caution If a new bill of materials is to be made, remember that the current settings with regard to the optional components of a library are used to create the bill of materials.

5.7 Bottom-Up Configuration Import E1B1

The menues ”Project data” and ”Submaster configuration” must first be processed.

For the project data, first enter the name of the system for which the bottom up configuration is to be made. Of course the files U???-???.KOM of the individual outstations must have been created.

The number of master and slave KOS needed for the submaster configuration and the lines at which they work is defined. You then return to the main menu.

The outstation data is then read in with the function <F7> ”Bottom up configuration import”. After calling the function, the files (.KOM) of the outstations which were configured for the lines defined in the submaster configuration are read from the system directory.

During reading, there is a plausibility check with regard to the SEAB parameters and the object number areas. All the outstations driven on one line must have the same SEAB parameters. The object numbers and the outstation addresses must be unique in the subsystem.

If there is an error, the corresponding remark is output on the screen and the import is aborted. The settings for the outstations must first be corrected before the import to PRO-UZ250 can be correctly carried out.

Once the import has been correctly made, the menues ”Outstation list”, ”Data monitoring direction” and ”Data control direction” are filled in. The SEAB parameters are automatically accepted for parametrization of the master KOS.

The following settings must be made for the master KOS in the menu ”Data monitoring direction” of the KOS parametrization (E6 B4):

1. terminal block
2. subaddress offset 128 $_{DEZ}$ (80_{HEX}) for relocated counted measurands
3. subaddresses for boundary messages

The changes from points 2 to 3 must be made since PRO-UZ250 assigns increasing A1 bytes (subaddresses) to all data.

Chapter 6
IL-Blocks and Macros

The IL blocks, and the macros that are used to build them, are described in this chapter.

6.1 Overview

Warning An IL generated with PRO → UZ250 is extended with user PLC functions following the rules of Dolog AKF → A250. If the blocks generated by PRO → UZ250 are changed, no guarantee can be made that these modified blocks will function correctly.

Note Definition of interface Chapter. 4.1 Part III.

6.2 List of the AKF blocks used

Organization block

OB1	Block management

Program blocks

PB 1	SFB 400 call for message assignment
PB 2	SFB 394 call and command conversion
PB 3	Convert commands 2*1of4 in binary format 1...1024
PB 4	Enter data in data model (SFB 394)
PB 5	Decode organization command, GI and CM relocation
PB 6	Decode organization command, delete activation bit
PB 7	Evaluate organization signal ”KOS/IL link” present
PB 8	Check module failure information
PB 9	Get messages from internal processing
PB 10	Generate signal ”Data from data model” for internal processing
PB 11	Determine module failure signals
PB 12	Transfer module failure signals
PB 13	Recode commands binary format to 2*1of4 and generate Modnet-1/ message

Function blocks

FB 1	Convert commands (2*1of4) to binary format
FB 2	Convert commands (2*1of4) to binary format
FB 3	Convert binary format to commands (2*1of4)
FB 4	Convert binary format to commands (2*1of4)
FB 5	Enter command in transfer block

6.3 List of the Markers Used under AKF

The markers identified with * may never be used in blocks other than those for which they are intended.

Merker bit

M1.1	Auxiliary marker
M1.2	Auxiliary marker
* M2.1	general polling
* M2.2	Relocate counted measurands
* M2.3	Delete activation bit
* M2.4	Generate ”data from data model”

Merker byte

MB1...20	Auxiliary marker

Merker words

MW 1...10	Auxiliary marker
* MW11...15	System information 0...4
* MW16...20	System information 0...4 old state

6.4 Standard Function Blocks in Telecontrol Engineering

Table 4 Standard funtion blocks in telecontrol engineering

Package name	SFB no.	SFB name	Function
SFB_UZ1	SFB396	UZ_AEND	Recognize change bit
”	SFB397	UZ_AZI	AZI calculation
”	SFB398	UZ_SCHW	Monitor pulse threshold
”	SFB399	UZ_ANV	Old/new comparison for signals
SFB_UZ2	SFB394	UZ_UTMF	Convert Modnet 1/F message to marker word
”	SFB395	UZ_UMTF	Convert marker word to Modnet 1/F message
”	SFB400	UZ_V250	Message distribution in UZ250
SFB_U1	SFB401	U_KOSSTA	Read KOS 140/141 status field
”	SFB402	U_DEZSTA	Read DEZ161 status field

Package SFB_UZ1 is used in UZ250 and UZ251.
Package SFB_UZ2 is used in UZ250.
Package SFB_U1 is used in UZ250, UZ251 and U250.

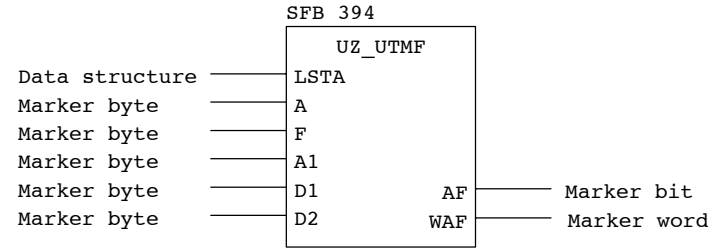
SFB 394 UZ_UTMF Convert Message to Marker Word

1 Function

The standard function block is used to convert a message into a marker word.

2 Display

2.1 Function Block Symbol



2.2 Block Structure

Formal-operand	Ident.	Meaning
LSTA	DB addr.	Data block LSTA
A	Byte addr.	Address byte Modnet-1F
F	Byte addr.	Function byte Modnet-1F
A1	Byte addr.	Subaddress byte Modnet-1F
D1	Byte addr.	Data byte 1 Modnet-1F
D2	Byte addr.	Data byte 2 Modnet-1F
AF	Bit addr.	Error status
WAF	Word addr.	Error number

3 Configuration

3.1 Processing by the SFB

The SFB uses the transferred A, F and A1 bytes to determine the marker word in which the data is to be stored using the list LSTA (generated by PRO-UZ250). If it is necessary to search in the list, this is done with a binary search (halved intervals). This requires that the A1 bytes are in increasing order according to A and F byte.
The D1 and D2 bytes are copied to the corresponding word and the receiving bit, which is also determined from the list, is set to 1. If a message could not be converted, the corresponding error bit is set in the WAF.

3.2 WAF Error Word

1550: Station address (A byte) not configured
1551: F byte not configured
1552: A1 byte not configured

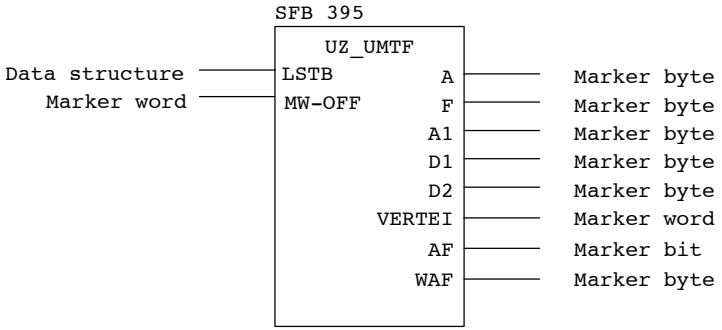
SFB 395 UZ_UMTF Convert Marker Word to Message

1 Function

The standard function block is used to convert a marker word into a message.

2 Display

2.1 Function Block Symbol



2.2 Block structure

Formal-operand	Ident.	Meaning
LSTB	DB addr.	Data block list LSTB
MW-OFF	VIA addr.	Offset for MW1 (from list LSTB)
A	Byte addr.	Address byte Modnet-1F
F	Byte addr.	Function byte Modnet-1F
A1	Byte addr.	Subaddress byte Modnet-1F
D1	Byte addr.	Data byte 1 Modnet-1F
D2	Byte addr.	Data byte 2 Modnet-1F
VERTEI	Wort addr.	Assignment distribution list
AF	Bit addr.	Error status
WAF	Wort addr.	Error number

3 Configuration

3.1 Processing by the SFB

The message incl. the assignment distribution list is determined and output using the list LSTB (generated by PRO-UZ250). If it is necessary to search in the list, this is done with a binary search (halved intervals). This requires that the MW_OFF addresses be in increasing order.
If the transferred word is not contained in the list LSTB, an error is displayed in the WAF.

3.2 WAF Error word

1553: Offset marker word not configured

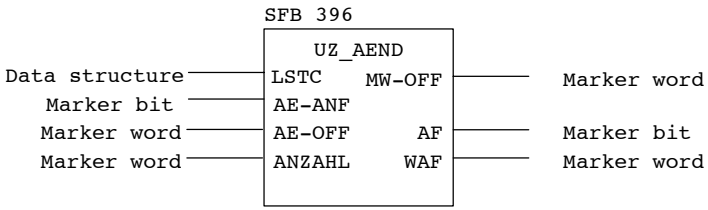
SFB 396 UZ_AEND Recognize Change Bit

1 Function

The standard function block is used to recognize the change bits.

2 Display

2.1 Function Block Symbol



2.2 Block Structure

Formal-operand	Ident.	Meaning
LSTC	DB addr.	Data block list LSTC
AE-ANF	Bit addr.	Start of change bit area
AE-OFF	Wort addr.	Offset of 1st change bit
ANZAHL	Wort addr.	Number of change bits
MW-OFF	VIA addr.	Offset for MW1 (from list LSTC)
AF	Bit addr.	Error status
WAF	Wort addr.	Error number

3 Configuration

3.1 Processing by the SFB

The SFB checks the change bit area, always starting at the beginning. If a bit is set to 1, the SFB determines the marker word offset of the changed data from the list LSTC (generated by PRO-UZ250) and outputs it. The set bit is deleted. List LSTC contains the offset for MW1 for each change bit of the change bit area.

3.2 WAF Error word

1554: No change bit set

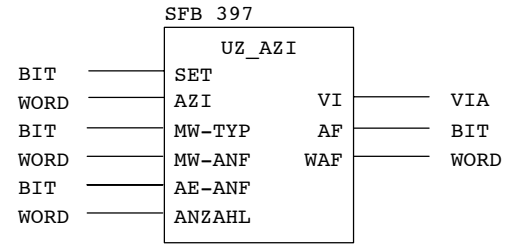
SFB 397 UZ_AZI AZI-Calculation

1 Function

If the AZI boundary value (AZI= deviation time integral) is parametrized larger than 0, the measured value range (1st measured value to number of measured values) is monitored with the AZI method. If the limit is exceeded, the corresponding change bit is set.
The time difference is calculated with the system time of the A250.

2 Display

2.1 Function Block Symbol



2.2 Block Structure

Formal-operand	Ident.	Meaning
SET	Bit addr.	= 1, set all change bits and set old values = new values = 0, AZI calculation
AZI	Word addr.	AZI limit (explanation see below)
MW-TYP	Bit addr.	Measured value type (8-bit, 16-bit) = 0 für 8-bit ohne VZ = 1 für 16-bit mit VZ
MW-ANF	Word addr.	Address of 1st measured value word Measured value word = one 16-bit measured value or two 8-bit measured values
AE-ANF	Bit addr.	Address of 1st change bit one change bit per measured value word
ANZAHL	Wort addr.	Number of measured value words
VI	VIA addr.	Organization information
AF	Bit addr.	Error status
WAF	Word addr.	Error number

3 Configuration

3.1 Explanations about the AZI

Unit: thousandth * seconds

Range: 0...2000

The thousandth value refers to the maximum measured value of 32,000 for 16-bit with sign or 250 for 8-bit without sign.
If a boundary violation of 100% (measured value changes from 0 to 32,000) is recognized after one second, the AZI boundary value is calculated as follows:

AZI = 1000 thousandth * 1 = 1000

3.2 Processing

AZI(curr.) = AZI(old) + [MW(curr.) – MW(old)] * [Zeit(curr.) – Zeit(old)]

If the absolute value of AZI(akt) $\geq$ AZI boundary value,
then change bit = 1 and AZI(curr.) = 0
and MW(old) = MW(curr.)

3.3 WAF Error Word

1480: Not enough store for organization information

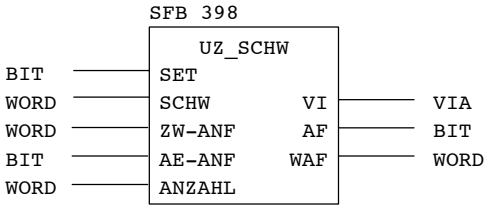
SFB 398 UZ_SCHW Monitor Pulse Threshold

1 Function

If the threshold is parametrized larger than 0, the counted measurand range (1st counted measurand to number of counted measurands) is monitored with the thresold. If the threshold value is exceeded, the corresponding change bit is set and the relative threshold value updated.
The relative threshold value is kept as internal organization information and does not appear externally.

2 Display

2.1 Function Block Symbol



2.2 Block Structure

Formal-operand	Ident.	Meaning
SET	Bit addr.	= 1, set all change bits and set old values = new values = 0, Monitor Pulse Threshold
SCHW	Word addr.	Number of pulses
ZW-ANF	Word addr.	Address of 1st counted measurand word
AE-ANF	Bit addr.	Address of 1st change bit
ANZAHL	Word addr.	Number of counted measurand words
VI	VIA addr.	Organization information
AF	Bit addr.	Error status
WAF	Word addr.	Error number

3 Configuration

3.1 WAF Error Word

1480: Not enough store for organization information

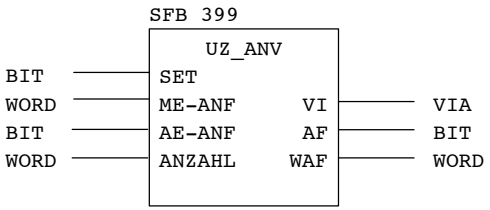
SFB 399 UZ_ANV Old/New Comparison for Signals

1 Function

A comparison is made between the old value signal area and the new value signal area. If they differ, the old value signal word is updated and the corresponding change bits are set.
The old value signal area is kept as internal organization information and does not appear externally.

2 Display

2.1 Function Block Symbol



2.2 Block Structure

Formal-operand	Ident.	Meaning
SET	Bit addr.	= 1, set all change bits and set old values = new values = 0, Old/New Comparison
ME-ANF	Wort addr.	Address of 1st signal word
AE-ANF	Bit addr.	Address of 1st change bit
ANZAHL	Wort addr.	Number of signal words
VI	VIA addr.	Organization information
AF	Bit addr.	Error status
WAF	Wort addr.	Error number

3 Configuration

3.1 WAF Error Word

1480: Not enough store for organization information

SFB 400 UZ_V250 Message Distribution in UZ250

1 Function

All the input enable bits (EF1...11) are interrogated, one after the other. The interrogation scan always has 11 inputs. In the first SFB run it starts with EF1, in the 2nd run with EF2, etc.

If an input is active (EF bit = 1), the corresponding input data structure USTE (for KOS 140) is processed. This structure is also valid for LAN input (LANE1, LANE2) and the input of the internal processing (INTE).

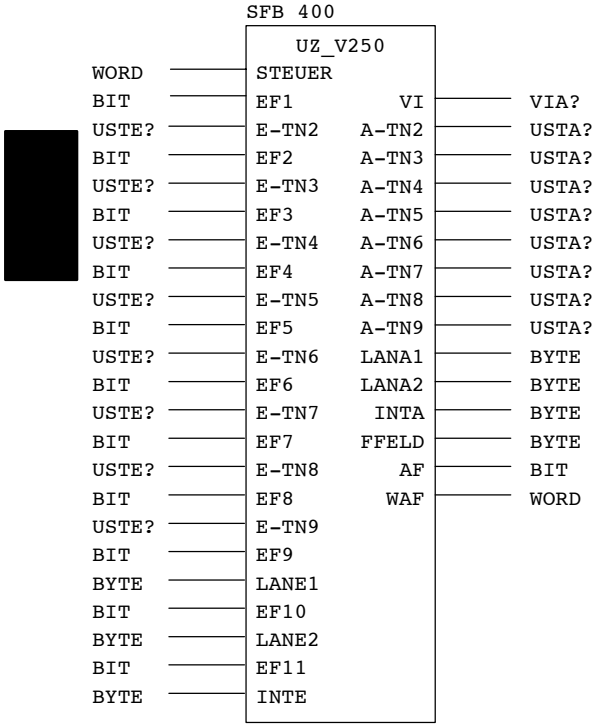
The data structure USTE (see PRO-UZ250 description) contains 8 blocks for a maximum of 8 messages and the transfer status.

If the transfer status is set (=1) and the number of blocks is > 0, all the blocks are interrogated one after the other to find out whether a message exists (bit 7 of task byte=1). If there is a message, it is copied into the corresponding output data structure USTA using the bit in the assignment distribution list if the output is free (see below, Output Handling). The bit in the assignment distribution list is deleted if the output is free or the telegram is rejected. Otherwise it is kept. The corresponding transfer status is set to free (=0) when all the bits of the assignment distribution list of all the input blocks have been deleted.

The SFB terminates when all the input is empty or the corresponding output is reserved.

2 Display

2.1 Function Block Symbol



2.2 Block Structure

Formal-operand	Ident.	Meaning
STEUER	Wort addr.	Control word : structure for assignment distribution list Bit = 0: do not cancel message , Bit = 1: cancel message
EF1...11	Bit addr.	Enable bit = 0 input/output inhibited 1 input/output active
E-TN2...9	DS addr.	Input data structure KOS140, TN = 2...9
LANE1...2	Byte addr.	Input: LAN1 - LAN2, USTE structure
INTE	Byte addr.	Input: internal processing, USTE structure (83 bytes)
A-TN2...9	DS addr.	Output data structure KOS140, TN = 2...9
LANA1...2	Byte addr.	Output: LAN1 - LAN2, USTA structure
INTA	Byte addr.	Output: internal processing, USTA structure (67 bytes)
VI	VIA addr.	Organization information
FFELD	Byte addr.	Error field: 8 bytes bus error + 128 bytes SA error
AF	Bit addr.	Error status
WAF	Wort addr.	Error number

3 Configuration

3.1 WAF Error Word

1555: at least one message stays in the input
1556: at least one message was rejected
These error numbers are also output if both errors occur.

3.2 Output Handling

Do not reject message: (control word, bit = 0 for node)

- KOS status and KOS status field are not interrogated.
- The messages are copied to the output field. If it is occupied, the messages stay in the input field.

Reject message: (control word, bit = 1 for node)

- For LANA1, LANA2, INTA.
- If output field occupied
- For USTA (before entry in output field)
- If KOS failed (KOSSM<node>.1 set)
- If link to master station failed (status field 4th byte bit 1 = 1)
- If buffer overflow (bit 7 of 4th byte of status field = 1) in AWD operation (status field 0 x 91 bit 1 = 1)

Reject message means:
Reject current message and set USTA transfer status = 0 (= reject messages in the output field).

☞ **Note** The control word (STEUER) indicates whether messages are rejected (bit = 1) or not rejected (bit = 0) if the output field is occupied. The value is the same as for the assignment distribution list. The bits of the control word should be defined so that messages to the slave KOS (signals) are not rejected. Messages to the master KOS (commands) should be rejected so that commands cannot be buffered. Messages to the internal interface (INTA) and both LAN interfaces (LANA 1 / 2) must be rejected if they are not read out. Organization messages are always transferred to the internal interface.

☞ **Note** For the structure of the error field (FFELD) see chapter 6.5.1 ”Converting Organization Signals”.

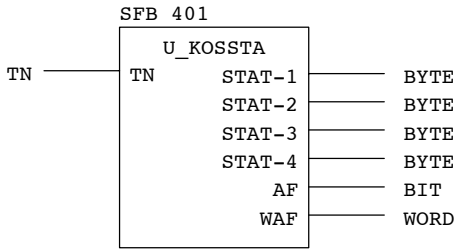
SFB 401 U_KOSSTA KOS140/141 Read Status Field

1 Function

The contents of the status field (1st subarea) of the KOS140 or KOS141 expert is read.
The slot is referenced by the node number in the equipment list.

2 Display

2.1 Function Block Symbol



2.2 Block Structure

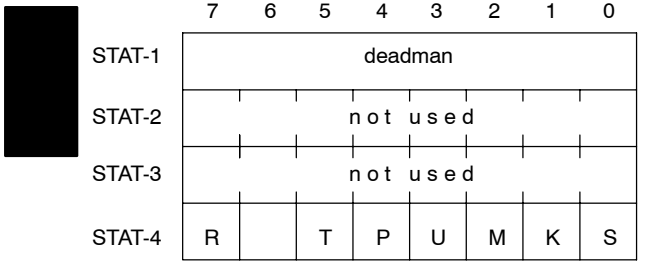
Formal-operand	Ident.	Meaning
TN	TN	Node number KOS 141/141
STAT-1	Byte addr.	Status field 1st byte (address 60hex)
STAT-2	Byte addr.	Status field 2nd byte
STAT-3	Byte addr.	Status field 3rd byte
STAT-4	Byte addr.	Status field 4th byte
AF	Bit addr.	Error status
WAF	Wort addr.	Error number

3 Configuration

3.1 WAF Error Word

Error number 61 – 90 from expert driver

Status field (1st subarea)



The deadman is counted up cyclically by the expert. It is used as a sign of life that the expert is functioning.

S = slot error

K = link to master station failed

M = minute pulse from DCF rec. missing

U = KOS has no valid time

P = KOS is not parametrized

T = node error

R = buffer overflow

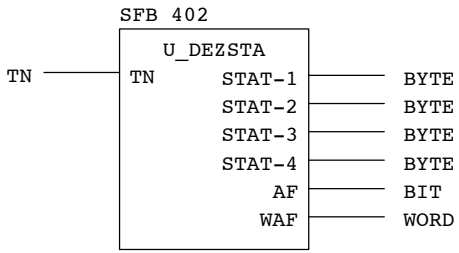
SFB 402 U_DEZSTA DEZ161 Read Status Field

1 Function

The contents of the status field (1st subarea) of the expert DEZ161 are read.
The slot is referenced by the node number in the equipment list.

2 Display

2.1 Function Block Symbol



2.2 Block structure

Formal-operand	Ident.	Meaning
TN	TN	Node number KOS 140/141
STAT-1	Byte addr.	Status field 1st byte (address 60 hex)
STAT-2	Byte addr.	Status field 2nd byte
STAT-3	Byte addr.	Status field 3rd byte
STAT-4	Byte addr.	Status field 4th byte
AF	Bit addr.	Error status
WAF	Wort addr.	Error number

3 Configuration

3.1 WAF Error Word

Error numbers 61 - 90 from expert driver.

During operation, WAF = 66 (I/O operation from another task active) can sporadically occur.

Status field (1st subarea):

	7	6	5	4	3	2	1	0	Bit
STAT-1	Deadmann								The deadman is counted up cyclically by the expert. It is used as a sign of life that the expert is functioning.
STAT-2	UB	TE		A			FP	FW	
STAT-3	not used								UB = UB failure TE = Normal time failure A = Master deadman FP = Missing parameter FW = Firmware error TU = Time invalid S = slot error T = Node number error P = Parameter invalid PF = Receiving buffer overflow
STAT-4		TU			S	T	P	PF	

6.5 Internal Data Model UZ250

Marker words are defined for storing data to or from the internal processing.

For the input and output direction each:

Signals	256 words
8-bit measured values	128 words
Counted measurands	256 words
Transient information	256 words
16-bit measured values	256 words
Setpoint values	256 words

A configured offset for the marker word area can be defined for each data type (separately for input and output direction). A receiving and a sending bit is assigned to each marker word. An offset can be defined for these marker bits in input and output direction. The marker bits are assigned without gaps.
The priorities in the above list correspond to the assignment of the marker bits.

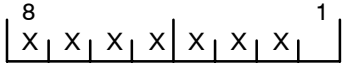
There is a marker word into which the command is entered coded in binary for commands to the internal processing. If a command was processed by the user IL, the word must be normed with 0 since there is no receiving bit for commands.
In the reverse direction (to the outstations via master), one word is reserved per station address into which the command from the user IL must also be entered coded in binary. If a command from the standard IL was processed, the marker word is set to 0. The offsets for the word area can be configured.

6.5.1 Converting Organization Signals

There is a marker area of 1160 bytes for storing the organization information from the outstations or the master KOS. This is defined as follows:

The first 8 marker bytes contain the line errors of the individual master KOS. Depending on the slot (2...9) at which the master KOS is configured, the corresponding byte is set if there is an error.
1st byte = KOS at slot 2, 2nd byte = KOS at slot 3, etc.

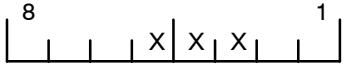
Bus error: (Master KOS) Bit no.



Bit no. 1: = 1
Serial bus assigned (error signal from KOS). Is only set for M5 operations. This bit is deleted with ”Serial bus is assigned to End” of the KOS and for each valid long message from this KOS.

One byte is defined per outstation address (0...126 and the global address 127) directly following this area.

SA error: (Master KOS) Bit no.



Bit no. 1: = 1
Station disturbance of an outstation (error signal from KOS). This bit is deleted with ”Station disturbance end” of the KOS and for each valid long message from this outstation.

Bit no. 2: = 1
KOS-ALU link disturbed (organization signal from the outstation)

Bit no. 6: = 1
No answer from outstation (error signal from KOS)

Bit no. 7: = 1
Acknowledgement of long message missing (error signal from KOS)

Bit no. 8: = 1
Station number incorrect (error signal from KOS)

Bits numbers 6/7/8 are not reset by the SFB. They must be normed in the user IL.

8 bytes are defined per outstation address (0...127 and the global address 127) directly following this area. The pc board failure signals are entered in these bytes from the individual outstations with subaddresses 1...4. The first two bytes contain SI A1 = 1, the 3rd and 4th bytes SI A1 = 2, etc.

Note Bus errors and SA errors other than bit no. 2 are set by SFB 400 (UZ-V250). Bit no. 2 in the SA error is set by the instruction list PB 7.

6.5.2 Transfer Blocks for Data from the Internal Processing

The transfer blocks are a marker byte area which has the same structure as the USTE field of a KOS. The offset of this area can be configured. In the example, we will assume an offset = 2000.

MB 2000 = transfer status
MB 2001 = number of blocks (max. 8)
MB 2002 = reserve
ab MB 2003 = 8 transfer blocks

(see chap. 4.1.2 ”Structure of the Transfer Blocks”)

MB 2003	...	MB 2012	1st block
MB 2013	...	MB 2022	2nd block
MB 2023	...	MB 2032	3rd block
MB 2033	...	MB 2042	4th block
MB 2043	...	MB 2052	5th block
MB 2053	...	MB 2062	6th block
MB 2063	...	MB 2072	7th block
MB 2073	...	MB 2082	8th block

The standard IL enters the data to the master stations in blocks 1, 2 and 3 (signals, measured values, counted measurands). The standard IL enters the data to the outstations in blocks 4, 5 and 6 (setpoint values).
The commands to the outstations are entered in the 7th block.

The 8th block is for the user IL. Organization commands such as general interrogations or relocation commands, for example, can be entered there. If a corresponding message is entered, the transfer status (MB 2000 in the example) must be set to 1. The number of blocks (MB 2001 in the example) must be set to 8. The constant 8C hex must be entered in the task byte (MB 2073 in the example). The bit corresponding to the node number of the master KOS must be set in the assignment distribution list (MB 2074 and MB 2075 in the example). See chap. 4.1.3 Figure 4 ”Assignment distribution list”.

Example:
General interrogation with address 127, master KOS node numbers 2 and 3

MB 2000 = 01 Hex
MB 2001 = 08 Hex
MB 2073 = 8C Hex
MB 2074 = 06 Hex (2nd and 3rd bits = 1)
MB 2075 = 00 Hex
MB 2076 = 7F Hex
MB 2077 = FB Hex
MB 2078 = 2F Hex
MB 2079 = 00 Hex
MB 2080 = 00 Hex
MB 2081 = 00 Hex
MB 2082 = FF Hex

6.6 Symbolic Addressing in the UZ250

Data to be transferred to and from the ”internal processing” contain the following symbols:

XXX_YYYY_AAA.SSS

XXX → IN = Data to internal processing (input)
OUT = Data from internal processing (output)
EB = Receiving bit
SB = Sending bit

YYYY → ME = Signals
WM = Transient information
MW8 = 8-bit measured values
MW11 = 11-bit measured values
ZW = Counted measurands
SW = Setpoint values

AAA → Station address

SSS → Subaddress

Example of signal 0 from outstation 1
IN_ME_001.000 Marker word in the data model
EB_ME_001.000 Receiving bit

Example of Counted measurand 5 from outstation 1
IN_ZW_001.005 Marker word in the data model
EB_ZW_001.005 Receiving bit

Example of setpoint 3 from master station [1)]
IN_SW_016.003 Marker word in the data model
EB_SW_016.003 Receiving bit

Example of signal 0 to master station [1)]
OUT_ME_016.000 Marker word in the data model
SB_ME_016.000 Sending bit

1) The internal processing has station address 16.

Example of setpoint 0 to outstation 1
OUT_SW_001.000 Marker word in the data model
SB_SW_001.000 Sending bit

Marker bytes for the internal processing and LAN 1, 2 contain the following symbols:

LAN1_E_TRANS	Transfer status	
LAN1_E_ANZAHL	Number of blocks	
LAN1_E_BL1_AUF	Task byte	1st block
LAN1_E_BL1_RVL	Assignment distribution list low	”
LAN1_E_BL1_RVH	Assignment distribution list high	”
LAN1_E_BL1_A	Station address	”
LAN1_E_BL1_F	Function byte	”
LAN1_E_BL1_A1	Subaddress	”
LAN1_E_BL1_D4	Data byte 4	”
LAN1_E_BL1_D3	Data byte 3	”
LAN1_E_BL1_D2	Data byte 2	”
LAN1_E_BL1_D1	Data byte 1	”
:		
:		
LAN1_E_BL8_AUF	Task byte	8th block [2]
LAN1_E_BL8_RVL	Assignment distribution list low	”
LAN1_E_BL8_RVH	Assignment distribution list high	”
LAN1_E_BL8_A	Station address	”
LAN1_E_BL8_F	Function byte	”
LAN1_E_BL8_A1	Subaddress	”
LAN1_E_BL8_D4	Data byte 4	”
LAN1_E_BL8_D3	Data byte 3	”
LAN1_E_BL8_D2	Data byte 2	”
LAN1_E_BL8_D1	Data byte 1	”

LAN2 (LAN2_E_TRANS etc.) and the internal processing (INT_E_TRANS etc.) have the same structure.

The same structure is also valid in the output direction. The _E_ is simply replaced with _A_ and the assignment distribution list (_RVL and _RVH) is omitted.

2) This block is kept free for user-specific messages.

Part IV
KOS 201 - Parameter assignment

Chapter 1
Handling

1.1 Structure of KOS Menues

Different parameter lists are generated and processed for the different KOS modes. The mode (master, transparent-slave or conversion-slave) of the particular KOS is transferred with the call of the parametrization program. The menues are structured or provided for selection in correspondence with the mode. The structure of the menues can be seen in the following overview.

Master KOS

Data input	SEAB parameters
Transfer	KOS parameters
EPROM menü	Data monitoring direction

Slave-KOS transparent mode:

Data input	SEAB parameters or APS parameter
Transfer	KOS parameters
EPROM menu	
Bottom-up configuration export	

Slave-KOS conversion mode:

Data input	SEAB parameters or APS parameters
Transfer	KOS parameters
EPROM menu	Enter signal prompting
Display conversion lists	
Bottom-up configuration export	

If the AWD 001 was entered as an optional module for a slave-KOS, the menu "APS parameters" is provided for processing instead of the menu "SEAB parameters".

1.2 Special Features

1.2.1 Autosave

The KOS parameter assignment has no archiving function. The parameters are automatically stored when you leave the KOS main menu. This autosave always occurs unless a parameter EPROM was read in or parameters were read in online from a KOS (see chapters 1.2.2 and 1.2.3).

1.2.2 KOS Parameter List

In the ”Transfer” menu, the parameters of all the KOS modules of a submaster are read in online. After reading, the menues are automatically adapted to the mode of the KOS read in, i.e. you can call the parameter assignment for a master KOS and nevertheless read in the parameters of a slave KOS at another slot in order to check them.

Caution After such a transfer, the parameters are not stored when you leave the KOS parameter assignment since this could possibly destroy the submaster and line configurations. Therefore you should never enter changes to the individual menues and then read in the parameters of a KOS. The changes are not stored.

1.2.3 Read in Parameter EPROM

In the EPROM menu, the parameter EPROMs of any KOS modules of a submaster can be read in. After reading, the menues are automatically adapted to the mode of the KOS-EPROMs read.

Caution After reading in parameter EPROMs, the parameters are not stored when you leave the KOS parameter assignment since this could possibly destroy the submaster and line configurations. Therefore you should never enter changes to the individual menues and then read in a parameter EPROM. The changes are not stored.

Chapter 2
Operating

2.1 KOS main menu E4 B5

The main menu appears after you call KOS parameterization. You can change to the submenus via the function keys <F1> - <F4>.

- <F1> Data input
- <F2> Transfer
- <F3> EPROM menu
- <F4> display conversion lists

The conversion lists can only be displayed for a slave KOS in conversion mode.

2.2 Data entry E5 B1

From this menu, you can call the different submenus. Different submenus are provided for selection, depending on the KOS mode.

2.2.1 SEAB parameter E6 B1

”Data input”,”SEAB parameter”
(F1→F1)

First the baud rate is interrogated. The standard setting is 600 baud. Another baud rate can be selected by toggling with <Cr>. (200, 300, 600, 1200, 2400, 4800, 9600)

The subsequent times are entered in tbits. Values between 1 and 255 or 60 and 65635 are possible.

Note If the KOS is driven together with a UEM 001, it is imperative that you work with M5 synchronization and the following times are valid:

Table 5 SEAB parameter

Function	Parameter (standard values)		
Baudrate	600 Bd	1200 Bd	
Lead time	15 tBit	30 tBit	
Trailer time	4 tBit	4 tBit	
Pause time	16 tBit	26 tBit	
Call repeat LM	2	2	Only valid for the master KOS; meaningless for a slave KOS
Call repeat SM	2	2	
Transmission repeat LM	0	0	
Quit LT	60 tBit	84 tBit	
M5 Lead time	20 tBit	35 tBit	
M5 Trailer time	20 tBit	30 tBit	

Caution **If the standard values are changed, data could be lost if the parameter assignment is not correct for the system.**

2.2.2 APS Parameter E6 B2

APS parametrization of the slave KOS

”Data input”,”APS parameter”
(F1→F1)

If communications with the master station (at the moment only Z300M) is to use the public telephone network, the KOS 140 must be equipped with the interface module AWD 001. A postal modem (MDB 1200) is also necessary for coupling with the network.

Note When entering the APS parameters, each KOS of a submaster is handled like a single outstation.

All the parameters necessary for the outstation are interrogated in this menu. The link is established with two lines, where these can be one master station with two lines or two different master stations. Of course it is also possible to work with only one line.

First press <Cr> in order to activate the line editor for the input fields. The input is also termianted with <Cr>. The input and toggle fields are selected with the cursor keys.

Password:
The password comprises max. 15 characters (letters, numbers or special characters) except for the slash (”/”). Capital letters and small letters are distinguished.

Calling number:
The calling number for the outstation and the master station has max. 15 characters. The area code and calling number are entered without a gap. A calling number is not necessary for the second master station.

Dialling:
You can choose pulse selection or tone selection by toggling.

Type of connection:
You can choose one of 6 different types of connection:

- main terminal
- extension T1 → without telephone line
- extension T2 → telephone line with 0
- extension T3 → telephone line with 0 + waiting period
- extension T4 → telephone line with grounding
- extension T5 → telephone line with grounding + waiting period

Extension T1 is only possible if the master station and the outstation are connected to the same network of extensions. The postal modem does not wait for the dialling tone for the telephone line with extensions T3 and T5, but continues dialling after a defined waiting period.

Delay in call acceptance:
You can set how long to delay call acceptance. Times between 0 and 30 seconds can be parametrized.

Number of dialling attempts:
You can set how often the outstation should attempt to dial if no connection can be made. From 0 to 255 repetitions are possible.

Repeat attempt to dial after how many minutes:
You can also define the time intervals for these repetitions. Settings from 0 to 255 minutes are possible.

Select 2nd calling number for master stations:
If the outstation cannot establish a connection for the master station with the 1st calling number, an attempt to establish the connection is made with the 2nd calling number.

APS Parametrization of the master KOS

If communications with the outstsations are to use the public telephone network, the KOS 140 must be equipped with the interface module AWD 001.
A postal modem (MDB 1200) is also necessary for coupling to the telephone network.

Read in Telephone Number E6 B2

”Data Input”, ”Automatic Polling”, ”Read in Telephone Number”
(F1→F1→F1)

A file for configuring the master KOS was already created during configuration of the outstations with PRO-Uxx.
Since the user defines the name of this file and furthermore several files can exist, this cannot be read in automatically.
After the function has been called, a window providing all the existing files is displayed.

Edit Telephone Number E7 B2

”Data Input”, ”Automatic Polling”, ”Edit Telephone Number”
(F1→F1→F2)

The data read in with <F1> can be edited and extended in this menu.
If no file was provided with PRO-Uxx, the master KOS parameters can be entered again completely.

Password:
The password comprises max. 15 characters (letters, numbers or special characters). The slash (”/”), however, is not permitted. Capital and small letters are distinguished.

Calling Number:
The calling number for the outstation and master station has a maximum of 15 digits. The area code and calling number are entered one after the other without a gap.

Dialling:
You can choose pulse selection or tone selection by toggling.

Type of Connection:
You can select one of 6 different types of connection.

- ❒ main terminal
- ❒ extension T1 → without telephone line
- ❒ extension T2 → telephone line with 0
- ❒ extension T3 → telephone line with 0 + waiting period
- ❒ extension T4 → telephone line with grounding
- ❒ extension T5 → telephone line with grounding + waiting period

Extension T1 is only possible if the master station and outstations are connected to the same extension network.
For extensions T3 and T5, the postal modem does not wait for the dialling tone in the telephone line but continues dialling after a defined waiting period.

Abort after ? Short Responses:
0 → The connection to the outstation is aborted by a message from an instruction list to be implemented by the user.
1-255 → The master KOS automatically aborts the connection after n short responses from an outstation.

Delay in call acceptance:
You can set how long to delay call acceptance. Times between 0 and 30 seconds can be parametrized.

Operating:
CURSOR ↑/↓ : Change line.
PGUP/PGDN : Select outstation number if the cursor is in the last line.
RETURN : Complete input line or toggle
F9 oder Esc : Return to the previous level Ebene.

Mouse Operation:
The columns and lines are clicked with the mouse cursor.
Left mouse key = click
Right mouse key = ESC

AWD Polling List E7 B1

"Data input","Automatic polling","AWD polling list"
(F1→F1→F3)

In addition to selective establishment of a connection by a corresponding instruction list to be created by the user, the connection can be established automatically by the master KOS of the submaster. The polling job list must be filled in for this.

Up to 1024 jobs can be configured per master KOS. Several entries can be made for one outstation. The lines must be filled in without gaps.

Examples:
(SL = Standardize list)

SL	Su	Sa	Fr	Th	We	Tu	Mo	Hour	Minute	OS Addr
			X				X	12	30	005
X	X							00	00	005
					X			12	30	010
			X					17	00	010
X	X							00	00	010

A connection should be established to OS No. 5 Mondays and Fridays at 12:30.
A connection should be established to OS No. 10 Wednesdays at 12:30 and Fridays at 17:00.
On Sundays at 0:00 polling jobs which have not been completed are to be deleted for both stations.

The file with the telephone numbers for the master KOS was already created when the outstations were configured. Since the name of this file is defined by the user and several files can exist, it cannot be read in automatically. A window which displays all the files which exist for selection is called with <F1>.

When leaving the menu, the entries are sorted according to OS addr., hour, minute and day of the week.
The following checks are also made when leaving the menu:

- whether data was configured in monitoring direction for the entered UST addresses (line configuration E3 B3)
- whether a telephone number was configured in the telephone number list for the entered OS addresses.

Operating:
You can switch to the next column with <Tab> and to the previous column with <Shift+Tab>. You can change lines with cursor UP/DOWN.
The days of the week are marked by toggling with RETURN or <X>.
A line can be marked for copying with <Alt+M>.
The marked line can be copied as often as needed with <Alt+C>.

Mouse Operating:
The columns and lines are clicked with the mouse cursor.
The days of the week are marked by clicking the same field twice.
The copy function is carried out by clicking the fields Alt+M and Alt+C.

2.2.3 KOS Parameters E6 B3

”Data input”,”KOS parameters”
(F1 → F2)

Different KOS parameters are interrogated for the master and slave KOS. The structure of the menu depends on the KOS mode.

Own station number:
One’s own station address is entered here for a slave KOS. It must be unique within the range of the submaster, i.e. no other slave KOS or outstation may have this address. Addrsses 0...126 of the Modnet 1/F log are permitted.

Ring buffer will be read only after GP:
You can configure whether the ring buffer should be read out after a short call or only after a previous general polling. This setting is only necessary for a slave KOS.

Number of system information
The number of system information (module failure) depends on the number of configured subracks. PRO-UZ250 enters the number defined by the configuration as a default value when the KOS parameter file is generated for the first time.

Number = number of subracks + 1 (global VM A1 = 0)

If Dolog AKF increases the number of subracks with a user modification, it is possible to increase the number of system information to be transferred from the KOS accordingly.
If the KOS file was already generated, the last entry is always displayed.

Send system information after GP:
You can set whether organization signals such as module failure should be transferred if there is a general polling.

Polling cycle check time:

A monitoring time (base 10 msec) for the polling scan can be defined for the slave KOS. The slave KOS must be polled with its own address by the master station within the parametrized time. If this is not the case, the 2nd bit is set in the system marker byte of the KOS in order to inform the ALU that the SEAB communications to the master station are disturbed. Entering a 0 means that there is no monitoring. The default setting is the maximum value of 65535 * 10 msec.

Reset receiving buffer after ? seconds: (slave)
Reset sending buffer after ? seconds: (master)
If the connection to an outstation or master station is interrupted for a longer period of time, you must make sure that no ”old” commands and setpoint values are stored in the submaster and output at the end of the interruption. On the other hand, the buffer should not be deleted after every short interruption. Therefore a configurable ”minimum interruption time” was introduced, i.e. an interruption must last at least this time interval before the buffer is deleted. The time can be defined between 0 and 3600 seconds. Entering a 0 means that there is no deletion. The default value is 10 seconds.

Suppress message ”Minute Pulse Missing”:
The message ”Minute Pulse Missing” is sent with DCF 77E once 10 minutes after the last valid minute pulse. Each valid clock signal resets the ”error counter” in the KOS firmware, so that at least 10 faulty or missing clock messages in sequence must exist to activate the transfer of the corresponding signal. The transfer of this signal can also be suppressed with a software switch.

Define running reserve in hours:
If the KOS firmware can no longer synchronize the internal clock because either no valid minute pulse arrived via DCF 77E or no clock telegram arrived from the master station, the corresponding message is sent to the master station after a parametrizable time. The internal time management is stopped after this time and realtime signals are stored in the ring buffer with the fine time FFFFH. Other data types are no longer entered in the ring buffer.

You can toggle between the settings 1, 5, 26 and 50 hours.

☞ **Note** When synchronizing with DCF 77E, it is possible that the internal clock can no longer be synchronized with a power reserve of 26 hours if the DCF signal failed for longer than 10 hours. The synchronization is only possible after expiration of 26 hours. It is not possible to select 50 hours of power reserve for DCF 77E.

Suppress transfer of internal errors:
This is only interrogated for a master KOS. Since usually only the first 4 bits in error byte 1 are of interest in internal KOS errors, the transfer of the remaining 4 bits and of error byte 2 can be suppressed, i.e. errors defined in the 5th to 8th bits or in error byte 2 are not transferred to the IL and therefore not to the slave KOS.

Definition of error byte 1:
1st bit: start of master station disturbance
2nd bit: end of master station disturbance
3rd bit: start of serial bus busy
4th bit: end of serial bus busy
5th bit: receiving buffer overflow, data loss
6th bit: error longitudinal parity
7th bit: error vertical parity
8th bit: waiting period for answer from outstation exceeded

Definition of error byte 2:
1st bit: missing acknowledgement of long message from outstation
2nd bit: station number wrong
3rd bit: M5 error, M5 disappears prematurely
4th bit: M5 error, M5 waiting too long
5th bit: no answer from outstation
6th bit: receipt interrupt missing, no message received
7th bit: undefined
8th bit: undefined

When starting up operations in a system, these signals can contain important information about the cause of the disturbance if there is an error. Therefore, it should be possible two pass them to the IL. The corresponding EBs (x.4 and x.5) can be displayed in Dolog AKF → A250 with the ”online” function.

2.2.4 Data Monitoring Direction E6 B4

”Data input”,”Data monitoring direction”
(F1→F3)

This is only interroged for a master KOS.

All the messages in the monitoring direction are listed sorted according to outstation number and subaddress. Since PRO-UZ250 assigns the A1 byte (subaddresses) without gaps starting with 0 when these lists are created, you can change the A1 bytes in this menu if required. However, there is a rule that the A1 bytes should be assigned in increasing order. Gaps are permitted.

	correct	incorrect
0 signal	0	0
0 signal	1	1
0 signal	32	33
0 signal	33	32

In addition, a terminal block for the instruction list is interrogated for each message. This block is a 16-bit pointer which points to a KOS slot for each bit. The 16th bit is intended to be a pointer to the internal processing (customer’s IL).

With this pointer you can determine the slave KOS to which the messages should be passed. It is possible to pass a message to several slave KOS.

Organization signals are not given an individual pointer. All the organization signals are passed to all the configured slave KOS. The selection is made by the slave KOS using the list which was defined in the menu ”Outstation list control direction”.

You can set the bits of the pointer field in the lower part of the screen for each message. The setting is valid for the particular message selected. You can switch to the pointer field with <TAB>.

Since only one coarse time message is sent from each outstation, the terminal blocks for the realtime signals and the course time message of an outstation may not have different settings.

You can set whether the slot references of the KOS modules or the line numbers should be faded in with <ALT>+>L>.

Since a selected setting is often valid for several messages, they can be passed to copying storage with <ALT>+<M> and be allocated any number of messages with <Alt>+<C> without the pointer field having to be selected.

The previous or next message can be selected with <↑> and <↓>.

You can page forwards and backwards in the message list with <PgUp> and <PgDn>.

2.2.5 Set Transfer Bit E6 B5

”Data input”,”Set Transfer Bit”
(F1 → F3)

This menu is only offered for processing with a slave KOS in conversion mode.

All the messages in monitoring direction are listed sorted according to data type. You can select whether a signal prompting bit should be set per message if there is a change, so that the message is tranasferred with the next short call.

You can toggle between ”yes” and ”no” with <Cr>. The default value for all the messages except for counted measurands is ”yes”.

The length of the message list and the line in which you are at the moment is displayed at the lower right of the image.

2.3 Transfer E5 B2

The KOS parameter is transferred to the KOS 140 with the corresponding function in Dolog AKF.
PRO-UZ250 simply provides the control files for loading and reading as well as the data files in an expert station.

Warning If new KOS parameters are loaded into a submaster which is already in operation, you must make sure that no message is being transferred. (Stop the PC* , interrupt the telecontrol link).

Generate AKF station for KOS parametrization E5 B4

”Transfer”,”Generate AKF station for KOS parametrization”
(F2→F1)

The expert station (directory) for the particular KOS is generated. The control files for loading and reading the KOS parameters are stored there. The expert station is installed below the current system directory. The directory name has the same structure as the KOS files plus the extension .KFL for KosFernLaden (see also user manual Part III, chap. 3.3). If the indivdiual expert stations were generated by PRO-UZ250 one after the other, they can be transferred to the indivdual KOS modules under Dolog AKF using the function ”Load - Expert data - Load expert data”.
If joker characters are used when defining the expert station, all the available stations are offered for selection.

Examplel: C:\Plant.PRO\FW*.KFL

Before there is a load, Dolog AKF checks whether the definitions for the version and node numbers agree with those in the control file. This prevents incorrect parametrization of a KOS.

Caution A load is only possible under AKF if there is a valid equipment list in the ALU 15x.

Read in AKF station with KOS parametrization E5 B4

”Transfer”,”Read in AKF station with KOS parametrization”
(F2→F2)

This function displays the KOS parameters read back with Dolog AKF under PRO-U250. The data is not transferred to the current configuration. PRO-UZ250 automatically adjusts itself to the parameters read back (master, U-slave, T-slave).
In order to enable redisplay with a ”dummy station”, the telecontrol station including the path can be defined. The current telecontrol station is always displayed as a default.

Example: Plant = NONAME
Submaster no. = 1
KOS node number = 5

Default = C:\NONAME.PRO\FW\Z001-005.KFL

changed in C:\BEISPIEL.PRO\FW\Z001-005.KFL

The parameters of KOS node number 5 are now displayed in submaster 1 of plant BEISPIEL.

Caution Dolog AKF needs a valid control file (_RCV) for reading back. It is therefore only possible to read back into a telecontrol station set up by PRO-UZ250.

2.4 EPROM Menu

The firmware and parameter Eprom are programmed with this menu.

You can only program with the EPROM programming station EPS 2000. The link uses the serial interface COM1.

The EPROMs used are of type 27C256.

Since there are different firmware versions, these are provided in the form of INTEL HEX files on diskette and you can decide with which firmware the KOS should be driven. The firmware files are stored in the subdirectory "\PRO-FWT\PRO-UZ25\TEXTE" by the installation routine.

Read Parameter EPROM

"EPROM menu","Read Parameter EPROM"
(F3→F1)

The parameter lists are read in. The data is converted and displayed in the correesponding submenues.

Caution If this function was called, the data is not archived when leaving the KOS parametrization routine.

Program Parameter EPROM

"EPROM menu","Program Parameter EPROM"
(F3→F2)

The parameters are programmed in the parameter EPROM.

Read Firmware Eprom

”EPROM menu”,”Read in firmware Eprom”
(F3→F3)

The firmware Eprom is read into user memory from addresses 0000H to 7FFFH and then copied.

Program Firmware Eprom

”EPROM menu”,”Program Firmware Eprom”
(F3→F4)

A firmware Eprom is generated with this function. The firmware must have been loaded into main memory with the function ”Read firmware” or ”Read firmware file”.

You can program in the range from 0H...8000H. Programming takes place in steps of 256 bytes.

Some firmware versions exceed 32 kbytes. Part of the firmware must therefore be programmed on a 2nd Eprom. PRO-UZ250 prompts insertion of a further empty Eprom when programming of the 1st Eprom has been completed.
In order to avoid errors, you should always program the two Eproms one after the other. This ensures that Eproms 1 and 2 are generated from the same source. If the KOS parameters are also to be programmed onto Eprom, they should also be programmed on firmware Eprom 2.

Caution When changing, always exchange both firmware Eproms.

Read Firmware File

”EPROM menu”, ”Read Firmware File”
(F3→F5)

All installed firmware files are displayed in a selection window. You can see a helptext for the firmware version marked with the arrow by pressing <F1>. After the file is read in, the part number and the index of this firmware is displayed on the screen.

CURSOR <↑>, <↓>	:	Select file
<Return>	:	Read file into user memory
<F9> oder<Esc>	:	Function is cancelled

Caution If you leave the EPROM menu, the firmware file is deleted from the memory. A corresponding note is displayed on the screen when you’re trying to leave the menu with <F9> or <Esc>. Now, you can leave the EPROM menu only by pressing <F9> or <Esc> again.

EPROM Blank Check

”EPROM menu”,”EPROM Blank Check”
(F3→F6)

You can check whether the EPROM to be programmed is empty with the function ”Deletion test”.

There is a check whether it was correctly plugged in before each access to the EPROM. If not, the corresponding remark appears on the screen.

Reading or programming an EPROM is done in steps of 256 bytes. The processed area is displayed on the screen. Only an area which is empty can be programmed.

2.5 Display Conversion Lists E5 B4

This menu is only offered for selection with a slave KOS in conversion mode.

You can look at the conversion lists which were defined by PRO-UZ250 separately for commands, setpoint values and data in monitoring direction.

The messages are listed in sorted order outstation by outstation. The address byte, data type and subaddress byte in the outstation (old) is displayed. The new converted subaddress byte is displayed in the last column.

The subaddress byte corresponds to the command number for commands.

Part V
File Structures

Chapter 1
File Structures

1.1 Bottom-Up File

The bottom-up file generated in the outstations has the name Uxxx-yyy.KOM. The same file can also be generated for the slave KOS of a substation. These are given the names Zxxx-yyy.KOM.

xxx = outstation or substation number
yyy = line number

The files are stored in the subdirectory of the particular system (e.g. `C:\ANLAGE1.PRO\FW\U000-001.KOM`)

The file for the bottom-up configuration has three parts with the following structure:

struct head	File header
struct comm	Communications data
struct pv	PV number list

1.2 Strukturen

1.2.1 Structure of file header

```
struct head
   {
    char tool[10];   (Text)Name of the tool (e.g. PRO-U120)
    char version[5]  (DEC) Version of the tool (e.g. 02.01)
    char date[10];   (DEC) Date of last file processing
   }
```

1.2.2 Structure of Communications File

```
struct  comm
 {
 char mode[1];       (DEC)1=master, 2=slave
 char baud[5];       (DEC)baud rate
 char lead[3];       (DEC)lead time
 char ovtr[3];       (DEC)trailer time
 char pause[3];      (DEC)pause time
 char rept_kt[3];    (DEC)call repetition KT
 char  rept_lt[3];   (DEC)call repetition LT
 char s_r_lt[3];     (DEC)send repetition LT
 char ackno[5];      (DEC)acknowledge long message
 char M5led[3];      (DEC)M5 lead time monitoring
 char M5trl[3];      (DEC)M5 trailer time monitoring
 char with_m5[1];    (DEC)0=with M5, 1=without M5
 char list[1];       (DEC)list: 1=SEAB-1F, 2=APS
 char pv_strt[5];    (DEC)start of object number range
 char pv_end[5];     (DEC)end of object number range
 char s_idnt[12];    (DEC)station identifier
 char new_strt[3];   (DEC)new inquiry if disturbed
                     outstation after n polling scans
 char multi_1[12];   (DEC)multicast command 1
 char multi_2[12];   (DEC)multicast command 2
 char multi_3[12];   (DEC)multicast command 3
```

```
 char multi_4[12];   (DEC)multicast command 4
 char multi_5[12];   (DEC)multicast command 5
 char multi_6[12];   (DEC)multicast command 6
 char multi_7[12];   (DEC)multicast command 7
 char multi_8[12];   (DEC)multicast command 8
 }
```

The parameters s_idnt, new_strt, multi_n were included in the file structure in preparation for MODNET-1W.

1.2.3 Structure of PV Number List:

```
struct pv
 {
  char pv_attr[2] (HEX)   PV attribute
  char kpv_cnr[4] (HEX)   PV counter number
  char a[2];      (HEX)   A-Byte SEAB-1F
  char f[2];      (HEX)   F-Byte SEAB-1F
  char a1[2];     (HEX)   A1-Byte SEAB-1F
 }
```

A combination of the A1 and D1 bytes and not just the A1 byte are stored here in commands. This pseudo-A1 byte always describes 16 commands.

0 = command 1 -16
1 = command 17-32
2 = command 33-48 etc.

The structure 'struct pv' is generated for each message and corresponds to one line in the file .KOM. The length of the file .KOM varies because of the variable number of data points. The last line contains only ZEROES as en d code.

1.3 List of the PV attributes:

128 Monitored informations
129 Real-time informations
130 Transient information
131 Measurand 11-bits with sign
132 Measurand 8-bits without sign
133 Counted measurand
134 Relocated counted measurand
135 Commands
136 Analog setpoint values
137 Digital setpoint values
138 System informations
139 System commands

1.4 Example File Z020-001.KOM

```
PRO-U250
04.00
28.06.1994
2
00600
015
005
016
-/-
-/-
-/-
00060
020
020
000
1
00301
00600
-/-
-/-
-/-
-/-
-/-
-/-
-/-
-/-
-/-
-/-
80012D140A00
80013D140A01
80014D140A02
85015D142A00
85015E142A01
85015F142A02
850160142A03
850161142A04
850162142A05
850163142A06
850164142A07
830165144A00
830166144A01
830167144A02
830168144A03
```

```
810169145A00
8A0179147A00
870189149B00
870199149B01
8901A914CB00
8901AA14CB01
8801AB14CB02
8801AC14CB03
000000000000
```

This is a file of an outstation. A file with the same structure is generated for the slave-KOS of a substation. Different A-bytes are entered in the file, however, in transparent mode of a substation. The files of a substation are identified by the leading Z in the file name (e.g. Z020-002.KOM).

Part VI
Index

Index

E

G

I

K

L

M

O

P

R

S