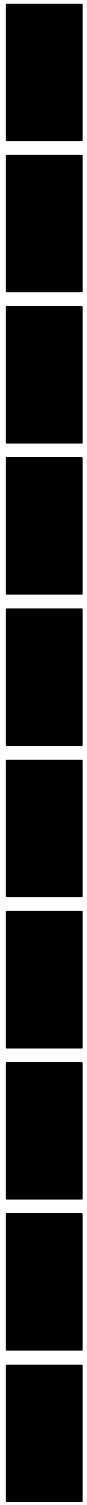
PRO → UZ120

User Manual
A91M.12-704 851.00-0395

PRO → UZ120
Type: PRO-UZ12
Version 4.1

User Instructions
DOK-704 852.00-0395



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
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Addresses
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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
ALU	ALU 200/201
A-byte	Address byte in Modnet 1F
A1-byte	Subaddress byte in Modnet 1F
APS	Automatic Polling Service
IL	Instruction list
BGT	Subrack
D1-, D2-, D3-, D4-byte	1st - 4th data byte in Modnet 1F
I/O module	Input/output module
F-byte	Function byte in Modnet 1F
GP	General polling
SP	Short polling
KOS	KOS 202
LM	Long message
NLQ	Near Letter Quality
PV-Number	Process variable number
UST	Outstation
UZ	Submaster

Objectives

This description is intended for configurers of Geadat UZ120 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 UZ120 master station with PRO → UZ120.

Part IV This part describes how to parameterize the KOS 202 with PRO → UZ120.

Part V File Structures.

Part VI contains the index.

Part VII contains the user comments and the list of addresses.

Relevant documentation

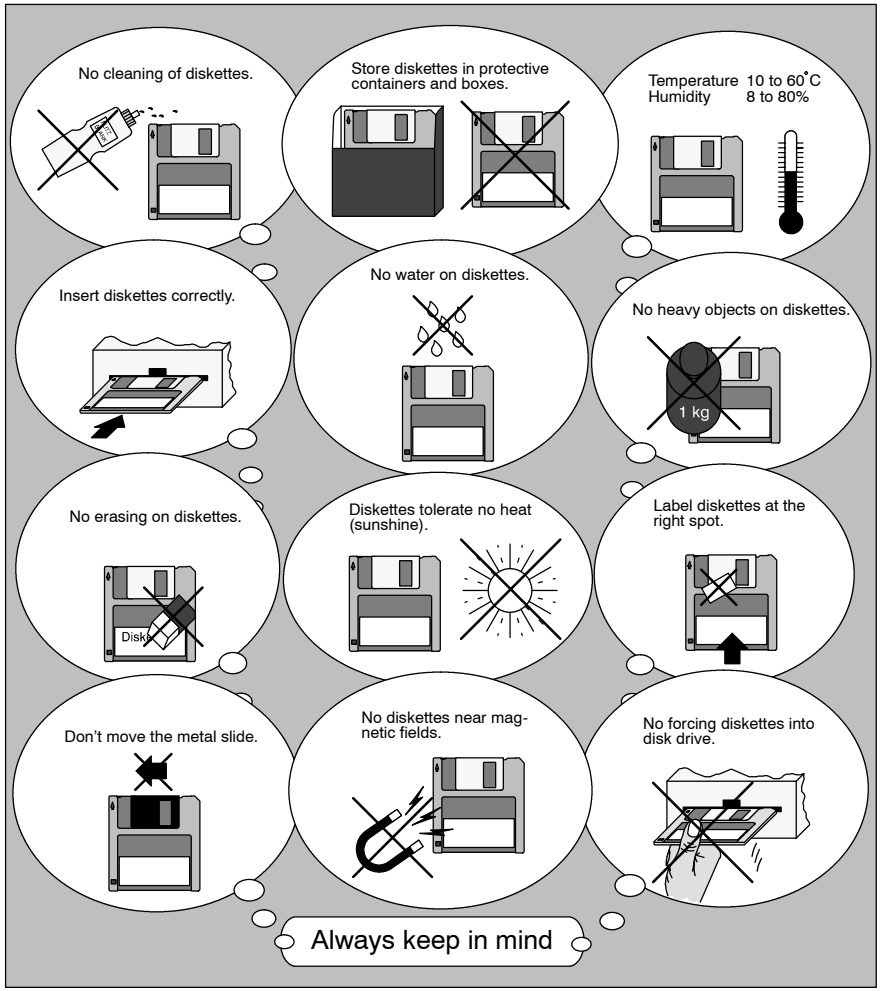
Geadat U120 User Manual
Dolog AKF → A120 User Manual
Dolog AKF → A120 / A250 User Manual

Validity

This description is valid for the:

Software	PRO → UZ120, Version 4.1	
	Dolog AKF → A120, Version 5.0 and higher	
Basic software versions	ALU 200	702 996.00
	ALU 201	702 998.00
KOS 202 firmware	FPM 022	277 783.05
package containing	FWM 003	276 647.05
	FWM 004	276 648.04
	FWM 005	276 649.05
	FWM 006	277 747.04
	FWM 051	277 703.04
	FWM 052	261 545.01

Handling 3 $^{1}/_{2}$” Diskettes



Handling 5 1/4" Diskettes

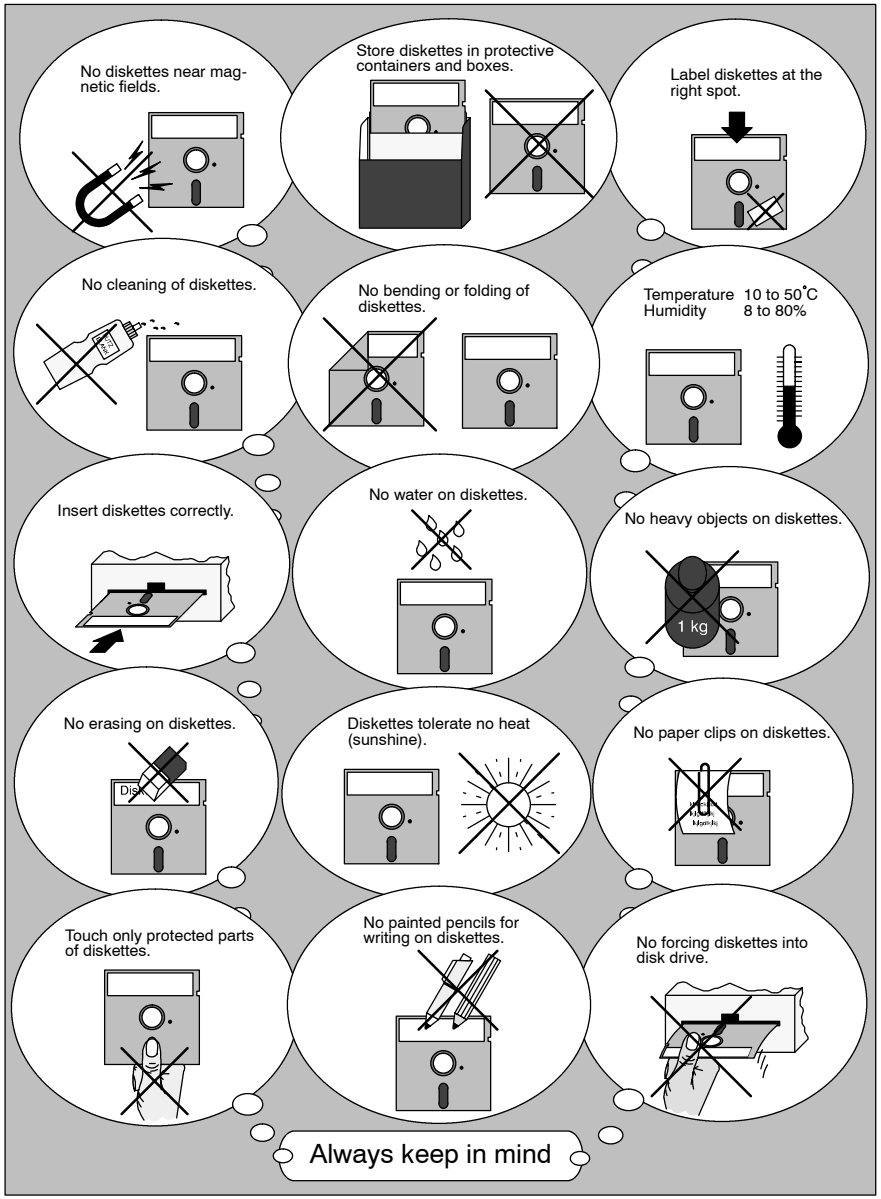


Table of Contents

Part I
How to proceed

Chapter 1
Check List

Step by step procedures for

- configuration
- parameterizing and programming
- system start-up

of a Geadat UZ120 outstation are defined here using check lists.

1.1 Checklist for parameterizing and configuring

Before you start the configuration of your UZ120 master station with the software package PRO → UZ120, 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 → UZ120 (Part III, chapter 1.2)
- ❒ Make sure that you have the right hardware environment (Part III, chapter 1.2)
- ❒ Install the configuration software PRO → UZ120
- ❒ Learn how to use the keyboard and the mouse (Part III, chapter 2.3 and 2.4)
- ❒ Start the configuration aid PRO - UZ120 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 from left to right (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).
- ❒ Leave the KOS parametrization and return to the PRO → UZ120 main menu.
- ❒ Activate the IL generation (Part III, chapter 5.4)
- ❒ Use the “PLC station settings and copying the ASCII-IL” function (Part III, chapter 5.4)
- ❒ Save your system to disk (Part III, chapter 5.3)
- ❒ Print the documentation (Part III, chapter 5.6)

1.2 Checklist for programming

When you have terminated configuration, you can begin programming the ALU.

- ❒ Leave the configuration software PRO → UZ120 and return to the PRO → FWT main menu
- ❒ Activate the function “Read in ASCII-IL” for AKF12 (Part II, chapter 1.3.1)
- ❒ Invoke Dolog AKF12 or AKF125 (Part II, chapter 1.3.2)
- ❒ Program the PLC in online mode (Part II, chapter 1.3.2)

or

- ❒ Create a PLC EPROM (Part II, chapter 1.3.2)

☞ **Note** At the first startup of an ALU 201 the basic software have to be loaded to the ALU.

1.3 Checklist for system startup

- ❒ Create a KOS firmware EPROM (Part IV, chapter 2.4.2)
- ❒ Create a KOS parameter EPROM (Part IV, chapter. 2.4.2)
- ❒ Plug in the KOS firmware and parameter EPROM
- ❒ Plug in the ALU EPROM or the EPROM board
- ❒ Verify that the switches and jumpers of each module are set correctly.
- ❒ Plug in modules and hard-wire

You can also parameterize and program the KOS and the ALU in online mode via PADT. In this case, the KOS has to be equiped with the firmware EPROM.

Please refer to the Geadat 120 User's Guide for more information on system startup.

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 1F
- PRO-UZ120 for submaster stations with Modnet 1F
- PRO-Z120 for master stations with Modnet 1F
- PRO-U121 for outstations with Modnet 1W (in preparation)

The 250-series contains the expert systems:

- PRO-U250 for outstations with Modnet 1F (in preparation)
- PRO-UZ250 for submaster stations with Modnet 1F (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 (not for ALU 200)
- 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.

1.4 Tele Tools

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

Teleview:

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

TEL001

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

TEL002

For Modnet 1W together with PC-AWD1

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\AKF12
D:\AKF125\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

The configuration, parametrization and programming of a Geadat UZ120 sub-master are described in this part.

Chapter 1
Introduction

1.1 Program package PRO → UZ120

The program package PRO-UZ120 consists of

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

1.2 System requirements

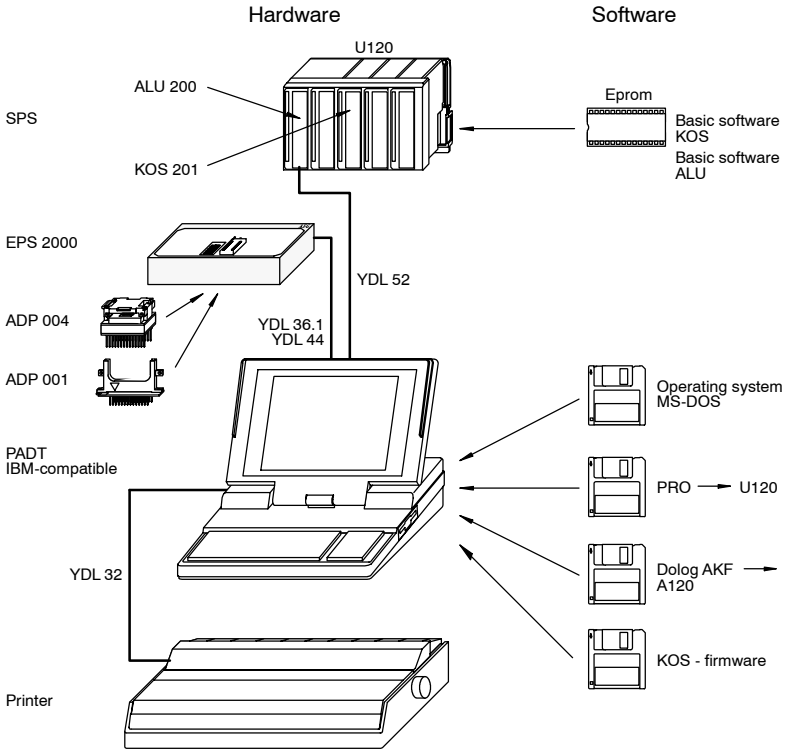


Figure 1 Components for configuration and programming

1.2.1 Hardware

PUTE IBM-compatible PCs with hard disk and 640 Kbyte main memory. A guarantee is only given for AEG 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 3.2, 3.3, 5.0
- Dolog AKF → A120 Version 5.0

1.3 Installation

Installation PRO → UZ120

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.

1.4 New Features

1.4.1 With regard to PRO → UZ120, V 2.0

Control File

A control file was introducted in **Dolog AKF - A120 version 5.0** for the call by PRO-FWT. This version of the software package PRO... creates a corresponding file and thus controls the flow in the call "Read in ASCII-IL". The software package is no longer compatible with older AKF12 versons.

Clock Management in KOS Firmware

The message "Minute Pulse Missing" can be suppressed with parameters (Part IV, chapter 2.2.3).

The running reserve for time management can be set with parameters to 1, 26 and 50 hours (Part IV, chapter 2.2.3).

ALU Battery Status

The status of the ALU battery is transferred in the two most significant bits of the organization signal A1 = 0.

1.4.2 With regard to PRO → UZ120, V 3.0

Master-APS-Operation

The outstation can be connected with the public telephone network (Part IV, chapter 2.2.2).

FA6-less Operation

The FA6 organization signals and commands can be suppressed (Part III, chapter 5.2.2).

1.4.3 With regard to PRO → UZ120, V 4.0

- Revision of helptext PRO-UZ120
- Revision of firmware

Chapter 2
Overview And General Information

2.1 Summary of Features

PRO → UZ120 supports the user in the configuration and start-up of the Geadat UZ120 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
- Transfer of instruction list to Dolog AKF → A120
- Transfer of generated parameters to KOS 202 with EPROM or by transfer to KOS-RAM.
- System documentation by printing
  - the bill of materials
  - hardware configuration
  - submaster configuration
  - loading
  - KOS data
- Archiving on hard disk or diskette of the files entered and generated
- A bottom-up configuration with 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

IL-generation and transfer (Chap. LEERER MERKER)

- Start IL Generation (German)
- Start IL Generation (English)
- Create PLC Station And Copy ASCII-IL

Printer output (chapter 5.5)

- Print the bill of materials
- Print the hardware configuration
- Print the submaster configuration
- Print the loading
- 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

KOS 202 Parameter assignment (Part IV)

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:

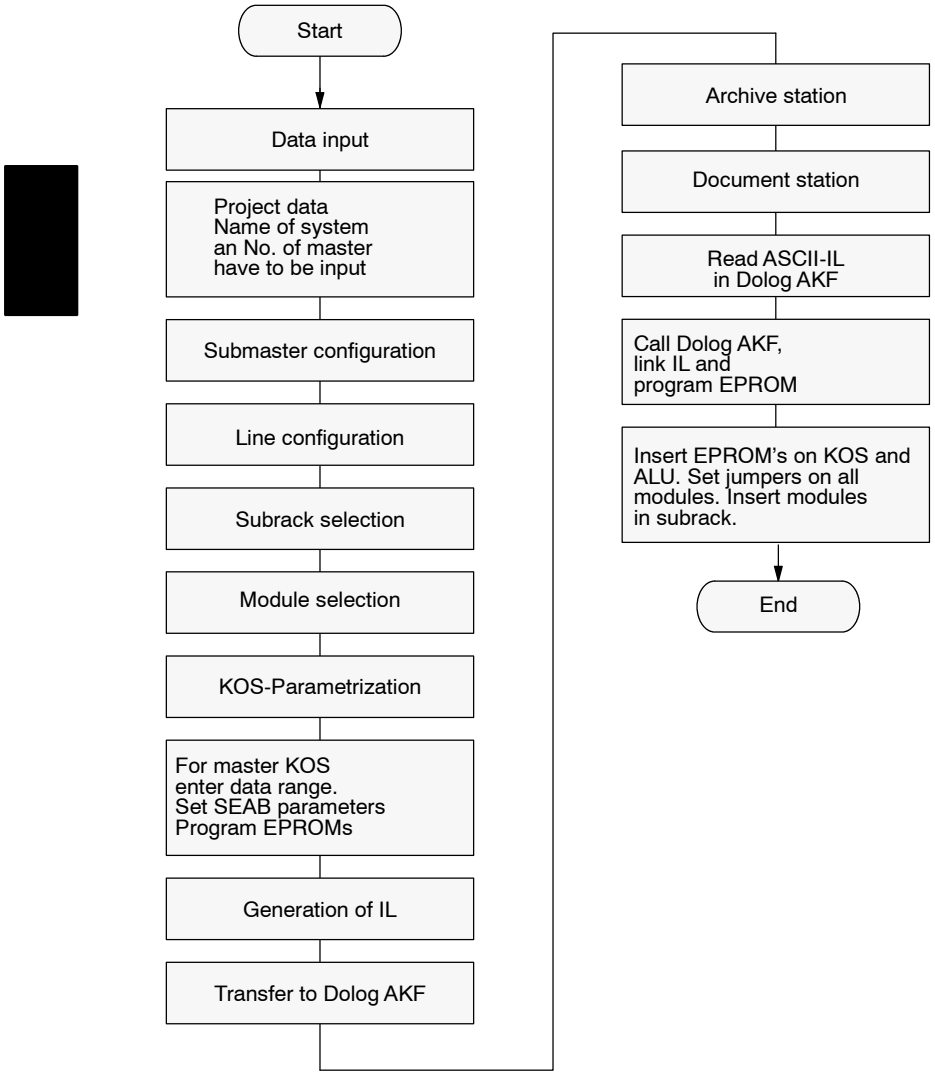
If an incorrect input is made when configuring with PRO → UZ120 or if a limit is exceeded, this is displayed on the screen with the corresponding output. In order to delete this remark window from the screen, press any key. You can then correct the input and continue with configuration.

YES-NO Box

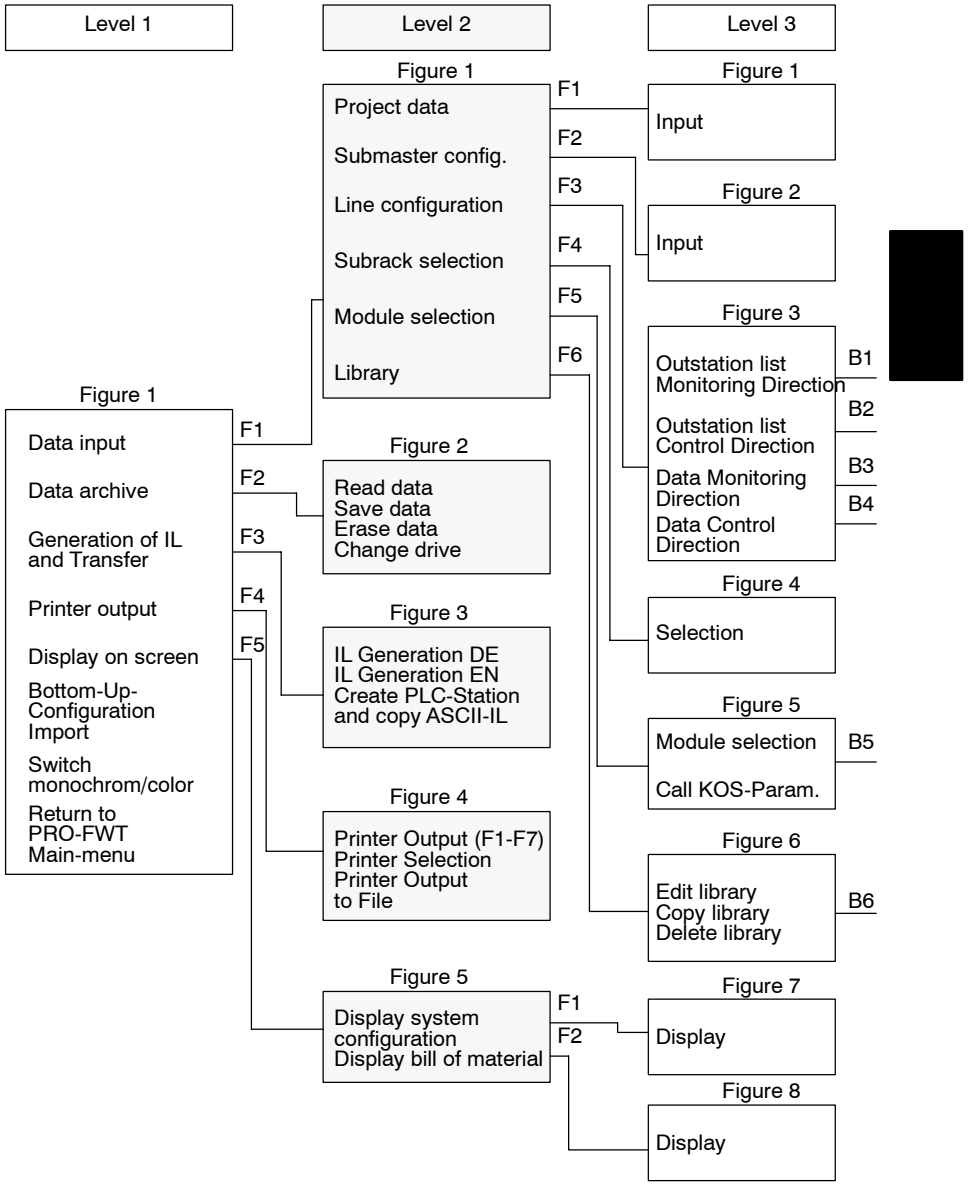
In a YES-NO box, only <Y> or <N> may be entered or the corresponding field can be clicked with the mouse cursor. Some of the functions can be aborted with <Esc> if entry is not compulsory for the system.

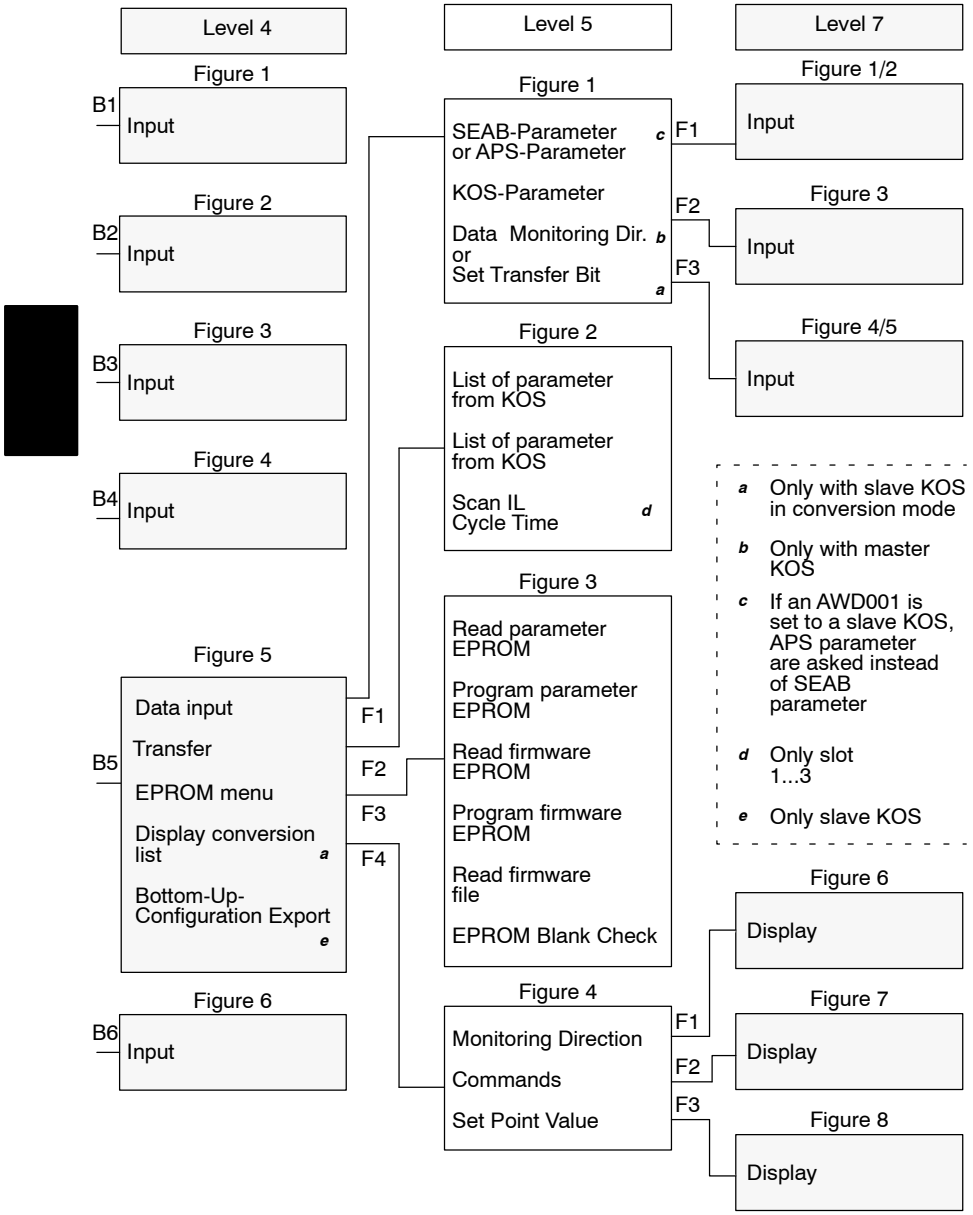
Chapter 3
Overview How To Work

3.1 Flow Chart



3.2 Tree Structure of the Menues



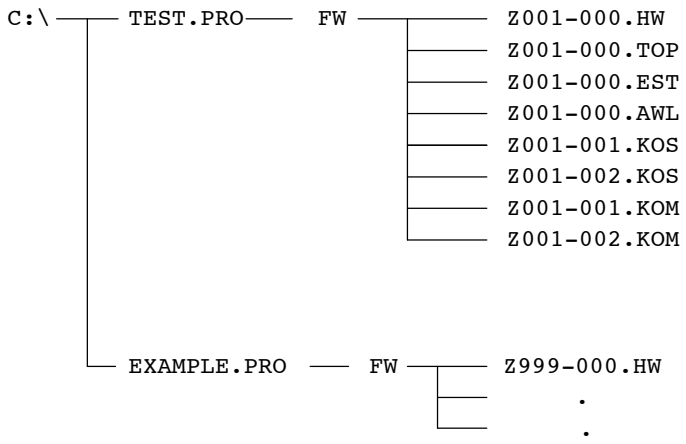

Level 4
Level 5
Level 7
Figure 1
B1
Input
Figure 2
B2
Input
Figure 3
B3
Input
Figure 4
B4
Input
Figure 5
B5
Data input
Transfer
EPROM menu
Display conversion list a
Bottom-Up-Configuration Export e
Figure 6
B6
Input
Figure 1
SEAB-Parameter or APS-Parameter c
KOS-Parameter
Data Monitoring Dir. or Set Transfer Bit b a
F1
F2
F3
Figure 2
List of parameter from KOS
List of parameter from KOS
Scan IL Cycle Time d
Figure 3
Read parameter EPROM
Program parameter EPROM
Read firmware EPROM
Program firmware EPROM
Read firmware file
EPROM Blank Check
Figure 4
Monitoring Direction
Commands
Set Point Value
F1
F2
F3
Figure 1/2
Input
Figure 3
Input
Figure 4/5
Input
a Only with slave KOS in conversion mode
b Only with master KOS
c If an AWD001 is set to a slave KOS, APS parameter are asked instead of SEAB parameter
d Only slot 1...3
e Only slave KOS
Figure 6
Display
Figure 7
Display
Figure 8
Display

3.3 Directory Structure

The subdirectory PRO-UZ12 is set up in the directory PRO-FWT during installation. The subdirectory contain the PRO-UZ120 EXE-files and the program SETFARBE.EXE with which you can change the colors of PRO-UZ120. The files with color settings, printer driver and system information are stored there, too.

The subdirectory\PRO-FWT\PRO-UZ12 contain one more subdiectory TEXTE with the text files, the library, the AKF set up files and the KOS firmware files.

The files set up by PRO-UZ120 are stored as follows:



Explanations about Zxxx-yyy.HW etc.

xxx Master station no. (001 ... 127)

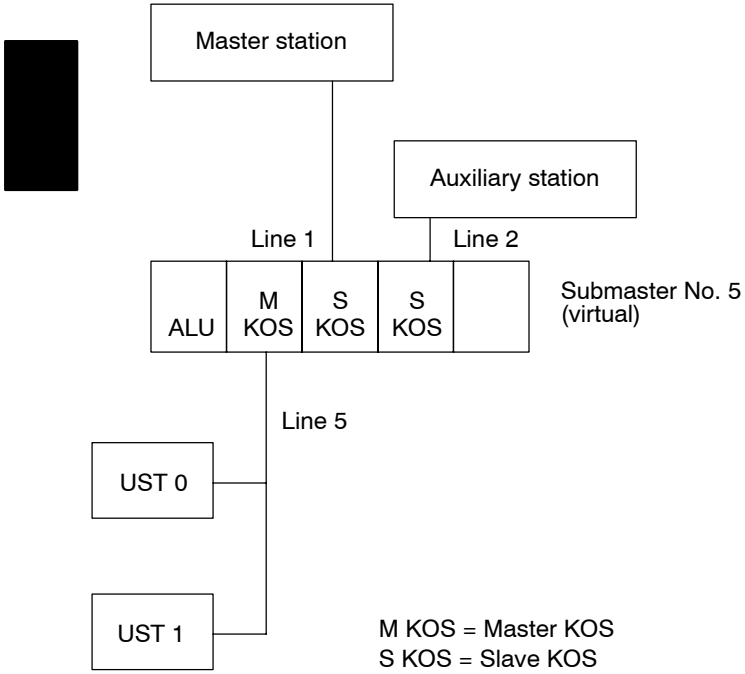
yyy Line number (001 ... 999). The number 000 is used for files which contain the data for the whole master station and which are not assigned to a certain line.

Chapter 4
Configuration

4.1 Definition of the Interfaces

The submaster is interfaced to the master stations and outstations using KOS 202. It is the link between ALU 200/201 and the serial bus SEAB-1F.

Up to 15 KOS modules can be used, depending on the configuration.



The KOS 202 is treated like an I/O module. There are 32 bytes in each direction for communications with the ALU 200/201. The ALU 200/201 accepts messages from the KOS in the EB (input byte) area and passes them on to the AB (output byte) area of another KOS with a parametrizable pointer. The data exchange can occur simultaneously in several KOS modules in monitoring direction. In control direction, it is also possible to pass messages from different slave KOS to one master KOS.

4.1.1 Output-Byte:

AB x.1	=	status byte
AB x.2	=	reset byte
AB x.3 to AB x.5	=	not defined
AB x.6 to AB x.7	=	distribution pointer
AB x.8	=	task byte
AB x.9	=	message length
AB x.10	=	A-byte
AB x.11	=	F-byte
AB x.12	=	A1-byte
AB x.13	=	D4-byte
AB x.14	=	D3-byte
AB x.15	=	D2-byte
AB x.16	=	D1-byte
AB x.32	=	acknowledge message counter

4.1.2 Input-Byte:

EB x.1	=	status byte
EB x.2 to EB x.5	=	error status bytes
EB x.6 to EB x.7	=	distribution pointer
EB x.8	=	task byte
EB x.9	=	message length
EB x.10	=	A-byte
EB x.11	=	F-byte
EB x.12	=	A1-byte
EB x.13	=	D4-byte
EB x.14	=	D3-byte
EB x.15	=	D2-byte
EB x.16	=	D1-byte
EB x.32	=	message counter

☞ **Note** In signals, the D1 and D2 bytes are exchanged and the bits are mirrored in order to permit word-by-word processing in the IL. i.e. with the instructions

```
LBW EB x.15
DBB ANZ 2
TBW A x.1
DBB ANZ 16
```

the 16 signals can be output directly to an output module.

Organization signals are not affected.

4.1.3 Interface for Internal Input/Output

All the messages transferred from the outstations via the master KOS can be processed internally in the submaster. The 16th bit must be set for parametrization in the terminal block of the messages. If only the internal bit is set in a message, it remains in the submaster and is not transferred to a slave KOS (master station).

Data from a master station which is only to be processed in the submaster must be sent with the station address of the relevant slave KOS. The pointer to the internal processing is always assigned to one's own station address. This special case can only be implemented in a slave KOS in transparent mode.

In order to simplify handling of the internal processing for the user, PRO-UZ120 automatically links an internal transfer interface into the IL and interrogates it cyclically. The following marker bytes are used here:

MB 28	Task byte
MB 29	Message length
MB 30	A-byte
MB 31	F-byte
MB 32	A1-byte
MB 33	D4-byte
MB 34	D3-byte
MB 35	D2-byte
MB 36	D1-byte

If the task byte is not equal to 0, there is a message for the internal procesing in the transfer field.

When transferring data of the internal processing to a master KOS (outstation) or slave KOS (master station), the marker bytes MB 46 to MB 56 must be assigned. The terminal block is entered in MB 46/47, the task byte in MB 48 is set to 1 and the message and message length are entered in the remaining bytes. A 5 is entered for the message length for 2D messages and a 7 for 4D messages. As soon as the automatically generated IL has fetched and passed on the message, the task byte sets it to 0 and only then may the user IL enter a new message in the marker byte area.

MB 46	Terminal block LOW-byte
MB 47	Terminal block HIGH-byte
MB 48	Task byte
MB 49	Message length
MB 50	A-byte
MB 51	F-byte
MB 52	A1-byte
MB 53	D4-byte
MB 54	D3-byte
MB 55	D2-byte
MB 56	D1-byte

The bit corresponding to the slot of the KOS at which the message is to be transferred is set to 1 in the terminal block. 1st bit for KOS slot 1, 2nd bit for KOS slot 2, etc.

It is possible to transfer one message to several KOS by setting the corresponding bits in the terminal block at the same time.

The standard IL, however, only enables the internal interface by resetting MB 48 once the message has been passed on to all the KOS defined by the terminal block. The standard IL automatically deletes KOS modules which are reported to have failed so that the interface is not blocked.

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 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 2048 commands. These limits always refer to a slave KOS.

- A maximum of 7000 messages can be configured per master KOS in monitoring direction.

- The number of communications modules is limited to 15 (corresponding to slots 1 ... 15).

4.4 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 mdoe, 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 4.5).
- Organization commands are newly defined (see chapter 4.6).

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.

4.5 Organization Signals

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

4.6 Organization Instructions

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

4.7 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 (MB 46...MB 56) should always be used in the IL
(see Part III, chapter 4.1.3).

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
L = message length

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
L = message length

Chapter 5
Handling

Configurating, parameter assignment and programming with PRO → UZ120 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 1 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 → UZ120 E1 B1

PRO → UZ120 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 → UZ120 appears after pressing any key and you can begin configuration.

PRO → UZ120 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:
You can choose the order of the slave and master KOS, i.e. first all the slave and then all the master KOS are equipped or vice versa. If the number of the KOS type entered directly next to ALU or DNP is changed, the BGT equipment mounting is shifted.

ALU type:
You can toggle ALU types ALU 200 and ALU 201. For the setting ALU 201, the power supply module DNP 205 is automatically taken into consideration when the slots are allocated.

Number of master KOS:
You can define the number of master KOS here. A maximum of 14 master KOS is possible since at least one slave KOS must be entered. In automatic equipment mounting, the master KOS is entered directly next to ALU 200 or power supply module DNP 205 in the subrack.

A master KOS polls the outstations allocated to it in the menu ”Outstation list monitoring direction”.

Number of slave KOS transparent mode:
You can define the number of slave KOS with transparent mode here. A maximum of 14 slave KOS is possible since at least one master KOS must be entered.

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. A slave KOS in transparent mode can pass on a maximum of 7000 messages in monitoring direction. The limits of the SEAB–1F log are valid in control direction.

Number of slave-KOS conversion mode:
You can define the number of slave KOS for conversion mode here. A maximum of 14 slave KOS is possible since at least one master KOS must be entered.

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 station address is entered for the KOS parameters of the relevant slave KOS. The limits of the SEAB-1F log are valid for the number of possible messages. However, commands are an exception since only 2048 commands can be converted due to the capacity of the parameter EPROM.

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, but in a signal message. The signal message has the following structure:

A-byte: address of the relevant slave KOS in the submaster
F-byte: 8AH
A1-byte: 0
D1-byte: contents of error byte 1 from layer 2 of master KOS
- 1st bit: start of station disturbance
- 2nd bit: end of station disturbance
- 3rd bit: serial bus reserves start
- 4th bit: serial bus reserves end

D2-byte: address of the disturbed outstation

☞ **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 interrogations) 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.

Line Number Entry
You can call the input window for the line number with <F1>. Each KOS module must be allocated a line number between 1 and 999. The line number is needed to distinguish the individual KOS paramter files.

The allocated slots are marked with an asterisk (*).

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.

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

The individual station numbers can be selected with the cursor keys.

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. One screen page is displayed per line. Only outstations which were already allocated to a master KOS 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 individual station numbers can be selected with the cursor keys.

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.

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”

This menu can only be called for slave KOS in conversion mode. The number of commands and setpoint values to be converted by the particular KOS is entered per outstation. 256 setpoint values and 2048 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. 2048 command telegrams per slave KOS

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

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.

You can set whether or not a bus extension cable should be used with <→> or <←>.

☞ **Note** If a bus extension cable and 2 or 3 subracksare used, the slot distribution is not continuous. Gaps occur in the addressing. Because of the distribution pointer (1...15) a addressing without gaps is premised. Therefor the bus extention cable can only be used with 4 subracks.

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 subracks are displayed as graphics according to the settings in the menu “Subrack selection” and the entries in the menus “System configuration” and “Station configuration”. Because not all subracks fit in one row, they are displayed in two seperate rows on the screen.

However, this does not mean that a bus extension cable must be used. If you configure a bus extension cable, it will be displayed as a connection between the upper and middle subrack.

The 3rd top hat rail should enable the user to configure additional power supplies or interface relays etc. No I/O modules may be entered there because the ALU can only address a maximum of 4 subracks with 18 I/O slots.

There is a window with the I/O modules, the communications processor module and the power supply on the left side of the screen.

The Helptext for the selected module to the left in the window can be called with <H>.

The individual modules are selected with <↑> and <↓>, the subrack slot is selected with <←> and <→>. An arrow indicates the current position.

The set module is entered in the selected subrack slot with <Cr>.

The module can be deleted from the marked slot with <Del>.

⚠ **Caution Only the NUL modules and the power supply modules should be entered since changing the ALU or KOS modules also changes or deletes the entries in the menues ”Submaster configuration” and ”Line configuration”.**

There is a plausibility check whether this entry is valid. If it is invalid, there is a remark and the entry is not made.

The power load of the 5V and 24V power supplies are also monitored. If, for example, the maximum load of 700 mA of the 5V power supply is exceeded by the ALU 200, there is a remark. In this case you can only use the ALU 201 together with the power supply module DNP 205 (max. 2 A).

The actual function of this menu is to select the optional modules for the KOS using the ZOOM function and to call the KOS parametrization.

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 can be toggled with <Z>. Only the UEM 001 can be selected for the master KOS. The APS 001 can also be selected for the slave KOS. If the APS 001 is selected, the postal modem MDB 1200–5 is entered on the 3rd top hat rail.

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

”Data input”,”Library”, ”Library change”
(F1→F8)

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 → UZ120, a library (PRO-UZ120.BIB) is provided which contains all the necessary hardware and software components for the UZ120. 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 - 11 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 12 - 98 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 99 - 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>.

”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 → UZ120 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 → UZ120 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.

”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 → UZ120 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 IL-generation and transfer E1 B1

Start IL-generation (German) E2 B3

”IL-generation and transfer”, ”Start IL-generation (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.

Start IL-generation (English) **E2 B3**

”IL-generation and transfer”, ”Start IL-generation (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 → A120 and vice versa.

Create PLC station and copy the ASCII-IL **E2 B3**

”Generation of IL and Transfer”,”Create PLC station and copy ASCII-IL”
(F3→F3)

The IL generated by PRO → UZ120 is transferred to Dolog AKF → A120.

Step 1 PRO → UZ120 sets up the AKF station directory ”Zxxx” in the system subdirectory ”ANLAGE.PRO”.

Step 2 PRO → UZ120 creates the equipment list and writes it to the station directory.

Step 3 The file Zxxx-000.AWL is now copied to the station directory under the name PRO.AWL.

Step 4 The AKF control file ”AKF12-CMD” is set up and stored in the directory ”PRO-FWT”.

Warning If you again transfer a station to Dolog AKF → A120, remember that the PBs or FBs generated by PRO → UZ120 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.

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 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 → UZ120. 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 → UZ120 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 → UZ120:

- ❒ 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

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 → UZ120 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:

```
-------------------------------------------------------------------
             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:
                    PORT:
 DRU.CHECK [0=AUS 1=EIN]:1
-------------------------------------------------------------------
```

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 → UZ120 documentation in other documentation systems.

☞ **Note** The individual IL blocks are not printed with PRO → UZ120. The IL as generated by PRO → UZ120 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-UZ120 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 (E5 B3):

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-UZ120 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 → UZ120 is extended with user PLC functions following the rules of Dolog AKF → A120. If the blocks generated by PRO → UZ120 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 100	Initialization; call; detect module failure
PB 101	Transfer messgaes from KOS slot 1
.	.
.	.
PB 115	Transfer messages from KOS slot 15
PB 116	Input internal processing
PB 117	Transfer organization signals to slave KOS slot 1
.	.
.	.
PB 131	Transfer organization signals to slave KOS slot 15
PB 132	Detect module failure

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.

Marker bit

* M 1.1	to	M 1.15	Organization signal A1=0 to KOS 1 to 15
M 1.18			Edge recognition 1st IL scan
M 1.19			1 = 1st IL scan
* M 2.1	to	M 2.15	Organization signal A1=1 to KOS 1 to 15
* M 2.17	to	M 2.31	Reserved for org. signal A1=2 to KOS 1 to 15
* M 3.1	to	M 3.15	Edge recognition for task byte
* M 5.1	to	M 5.2	Reset marker for slave-KOS failure

Marker byte

* MB 1	to	MB 15	Counter for 0-scans between org. signal A1=0 and A1=1
MB 16			Counter for failed blocks
MB 28	to	MB 36	Internal Processing
MB 46	to	MB 56	Internal Processing

Marker words

* MW 1	Counter for master KOS
* MW 2	Counter for slave KOS
* MW 3	Pointer from which master KOS messages are transferred
* MW 4	Pointer from which slave KOS messages are transferred
* MW 5	System information A1=0
* MW 6	System information A1=1
MW 7	Temporary marker
MW 8	Temporary marker

Definition of the KOS system marker byte

Syntax: SMB x.1
↑— KOS slot

1st bit = KOS at wrong slot
2nd bit = SEAB communications disturbed
3rd bit = minute pulse missing
4th bit = time invalid
5th bit = KOS not parametrized
6th bit = not defined
7th bit = not defined
8th bit = not defined

The system marker SM x.1 (node disturbed) is set as soon as SMB x.1 is not equal to 0.

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> - <F7>.

- <F1> Data input
- <F2> Transfer
- <F3> EPROM menu
- <F4> display conversion lists
- <F7> Bottom Up configuration export

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. For the standard setting see Chap. LEERER MERKER.

Note If the KOS is driven together with a UEM 001, the following times are valid:

Table 2 SEAB parameter

Baudrate	600	Bd	1200	Bd	
Lead time	15	tBit	30	tBit	
Trailer time	4	tBit	4	tBit	
Pause time	16	tBit	26	tBit	
Aufrufwiederh. LT	2		2		*
Aufrufwiederh. KT	2		2		*
Sendewiederh. LT	0		0		*
Quit LT	60	tBit	84	tBit	
M5 Lead time	20	tBit	35	tBit	
M5 Trailer time	20	tBit	30	tBit	

The parameters marked with * are only valid for the master KOS. They are meaningless for a slave KOS.

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

Warning Use always M5-Synchronisation when using the UEM001.

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 202 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 202 must be equipped with the interface module AWD 001.
A postal modem (MDB 1200) is also necessary for coupling to the telephone network.

”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.

”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

”Data Input”,”Automatic Polling”,”Polling Job 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	UST 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 UST No. 5 Mondays and Fridays at 12:30.
A connection should be established to UST 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.

When leaving the menu, the entries are sorted according to UST 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 UST 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 SEAB-1F log are permitted.

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

Monitor polling scan:

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.

Transfer module failure n of 18:

For a slave KOS, you can configure whether the organization signals
A1 = 1 (slot 1...16) and A1 -= 2 (slots 17 and 18) are to be transferred.

Delete receiving buffer after ? seconds: **(slave)**
Delete 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 signal ”minute pulse missing”:
The signal ”start of 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, 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 → A120 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-UZ120 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 Enter Signal Prompting E6 B5

”Data input”,”Enter signal prompting”
(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.

Parameter lists from KOS

”Transfer”,”Paramter lists from KOS”
(F2→F1)

The slot reference of KOS from which the parameters are to be read in is interrogated. Any KOS can be read in.

Before the data is transferred from the KOS to the PADT, there is another interrogation whether this function should really be carried out. Confirmation with <Y> starts the transfer.

The KOS firmware part number including the modification index is displayed once the transfer has been ended. The parameters are displayed in the corresponding menues. Parameter assignment is adapted to the the mode of the particular KOS read in.

Caution If parameters are read in from a KOS, these are not stored with the autosave function when leaving the KOS parameter assignment (see chapter 1).

Parameter List to KOS

”Transfer”,”Parameter lists to KOS”
(F2 →F2)

Before the data are transferred from the PUTE to the KOS, there is another query whether this function should really be carried out. A confirmation with <J> starts the transfer.

The current date is passed to the parameter RAM of the KOS during the data transport. In this way you can always determine the last time that the data were transferred to the KOS-RAM.

A comment on the screen shows whether the data transfer is still running or whether it is terminated. The corresponding message appears on the screen if there is an error.

Scan IL Cycle time

”Transfer”,”Scan IL Cycle time”
(F2→F3)

This KOS firmware determines the current IL cycle time. It also notes the longest IL cycle since the start of the outstation. These two cycle times can be interrogated and displayed online. However, this interrogation is only possible for KOS modules in master station subracks (slots 1...3).

2.4 EPROM Menu

2.4.1 EPROM 27C256

2.4.1.1 Inserting the EPROMs

With this EPROM (27C256 SMD), an adaptor ADP 004 must be inserted between the Textool socket and the EPROM.

To insert the adaptor, carry out steps Schritt 1 to Schritt 6 (see also Figure 2). To insert the EPROMs, follow Schritt 1 to Schritt 5 (see also Figure 3).

Schritt 1 Turn the lever of the Textool socket upwards.

Schritt 2 Set the adaptor to the Textool socket (hinged side flush to the bottom).

Schritt 3 Press the lever downwards.

Now that the adaptor is inserted, you can place the EPROM in the adaptor.

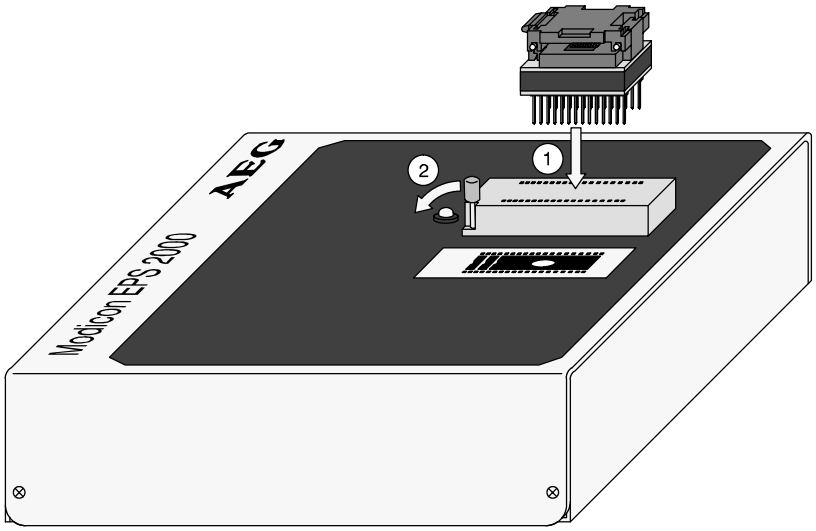


Figure 2 Insert Adaptor ADP 004

Schritt 4 Open the adaptor ADP 004. Press the opener upwards and lift the cover (see also Figure 3, ① + ②).

Schritt 5 Insert the EPROM in the adaptor (see also Figure 3, ③). The long contact strip on the underside of the EPROMs must be adjacent to the marking in the adaptor.

Schritt 6 Close the adaptor.

The EPROM is now inserted and ready for the tranmission.

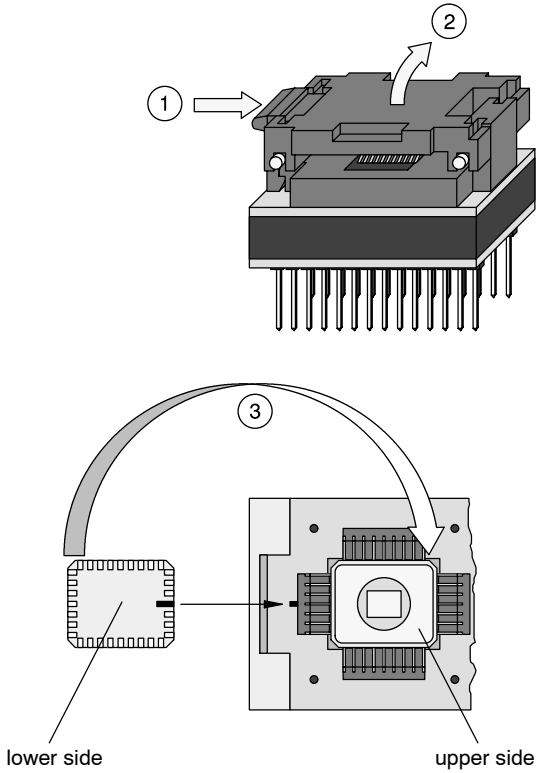


Figure 3 Insert EPROM 27C256 SMD in the Adaptor

2.4.1.2 Removal of the EPROMs

To remove the EPROMs, you must take the following steps:

Warning The EPROM may not be removed as long as the LED on the EPS 2000 is blinking.

Schritt 1 Open the adaptor ADP 004.

Schritt 2 Remove the EPROM from the adaptor.

Schritt 3 Close the adaptor ADP 004.

Schritt 4 Turn the lever of the Textool socket upwards.

Schritt 5 Remove the adaptor.

2.4.2 KOS Firmware and Parameter EPROM

The firmware and parameter EPROM are programmed with this menu.

Only the EPROM programming station EPS 2000 can be used. The connection is made with the serial interface COM1.

The different firmware versions are supplied on diskette in the form of INTEL-HEX files. You can decide with which firmware the KOS should be operated. The firmware files are stored by an installation routine on the diskette in the subdirectory ”PRO-FWT\PRO-Z120\TEXTE”.

Read in parameter-lists

”EPROM menu”, ”Read in parameter-lists”
(F3→F1)

The area where the parameter-lists are stored is read in. It is variable in length and depends on the number of parameterized messages.

The read in data is transformed, and is displayed in the corresponding menus of “Data entry”.

Caution If a parameter EPROM was read in, these parameters are not stored with the autosave function when you leave the KOS parameter assignment (see chapter 1)

Programming parameter-lists

”EPROM menu”, ”Programming parameter-lists”
(F3→F2)

The parameters are stored in EPROM, starting with address 0.

Read in firmware EPROM

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

The contents of the firmware EPROM (from address 0000H to 7FFFH) is read into memory and can be copied afterwards.

Programming firmware EPROM

”EPROM menu”, ”Programming firmware EPROM”
(F3→F4)

You have read a firmware EPROM or a firmware file into the memory. The contents of the memory will now be written to an empty EPROM (from address 0000H to 7FFFH).

Caution Remove the backup battery from the KOS before changing an FW-EPROM.

Read in firmware file

”EPROM menu”, ”Read in 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 <F>. After the file is read in, the part number and the index of this firmware is displayed on the screen.

The selection is made with <↓> or <↑>. The marked file is read into memory with <Cr>. <F9> or <Esc> aborts the function.

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.

Deletion test

”EPROM menu”,”Deletion test”
(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-UZ120 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
Dateistrukturen

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

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
   }
```

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.

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.

1.2 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

1.3 Example File U020-001.KOM:

```
PRO-U120
04.00
28.05.1992
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