4.10 Extensions

You may enhance and thus customize the OS 525 functions by connecting external devices and extending the hardware.

4.10.1 Installing Extension Modules, Slot Assignments

Provided that there are enough free slots for modules on the base unit bus module, the modular structure of the OS 525 permits the OS 525 base model to be modified or upgraded.

The PC RI45 has 5 vacant slots.

The following modules can be used:

- Local bus interface N–AT
- Bus interface SINEC L2 (CP5412 A1)
- Terminal bus interface SINEC H1 (CP1413)
- Signal module (SBG)
- Graphic interface HIGRAF 2
- Radiotransmission clock FU–AT
- SCSI controller for connection of a MOD
- Monitoring module SAVE–Card (always at slot 6)

The following table shows you the possible slot assignments. Refer to Fig. 4.22 for the slot positions.

Slot 1	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6
N–AT	FU–AT	CP1413	HIGRAF 2	SCSI	SAVE–Card
CP5412	SBG		SBG	SBG	

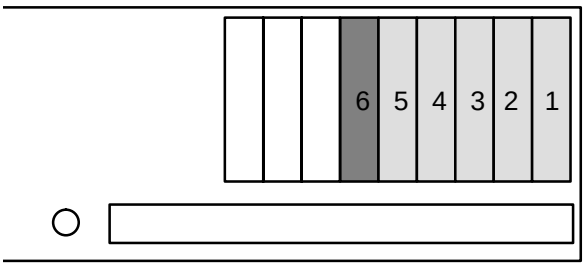


Fig. 4.22 Slot positions of the PC RI45

Please observe the following instructions before you unpack one of these modules or install them in the base unit:

As the electronic components on the printed circuit boards are very sensitive to static electricity, certain precautions must be taken when they are handled. These measures are specified in the ”Guidelines for Handling Electrostatically Sensitive Devices”.

Static–sensitive components are identified by the following label:

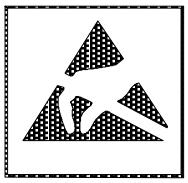


Fig. 4.23 Warning label for static–sensitive components

Removing and installing components are described in the SIMATIC PC RI45 Manual.

4.10.2 Installing the HIGRAPH 2 Graphics Interface

The supplementing of a host with an input channel means that it is also necessary to insert the HIGRAF 2 graphics interface. Insert the module into slot 4 (see Section 4.10.1 for slot assignments).

(For information on the internal VGA, please refer to the Technical Description SIMATIC PC RI45.)

Settings required on the HIGRAPH 2 module

The S1 DIL switch on the graphics interface module is used for module identification. Only this switch need to be set on the module.

Fig. 4.6 shows the location of the S1 witch.
The functions of the individual switches S1_1 through S1_8 are described in Section 4.6.

Software configuration

Perform the concerned settings with OS–SET after HIGRAPH 2 installing (see Section 3).

4.10.3 Installing the N–AT Local Bus Interface

The N–AT module is inserted in slot 1 (see Section 4.10.1 for slot assignments).

Jumper and switch settings

For jumper and switch setting cf. Section 2.1.

Software configuration

Perform the concerned settings with OS–SET after N–AT installing (see Section 3).

4.10.4 Installing the Signal Module

The signal module is inserted in a free AT slot.

Slot 2, 4 or 5 depending on configuration (see Section 4.10.1 for slot assignments).

Jumper and switch settings

The functions of the jumpers and switches is described in Section 4.7.2 (signal module).

Software configuration

Perform the concerned settings with OS–SET after the signal module installing (see Section 3).

4.10.5 Installation of Radio–Controlled Clock FU–AT

The FU–AT module is inserted in slot 2 (see Section 4.10.1 for slot assignments).

☞ As the FU–AT module is a piggyback module the terminal bus interface SINEC H1 (CP1413) has to be inserted in slot 3.

Switch and jumper and switch settings for OS 525

The switch and jumper settings of the FU–AT as well as their functions for OS 525 are described in Section 4.12.2.
Set all switches and jumpers of the FU–AT **before** inserting the module as appropriate for use in the OS 525 base unit.

Antenna installation

The BNC socket for the antenna connection is located on the front panel of the radio–controlled clock module FU–AT (see Fig. 4.23).

Following installation of the radiotransmission clock module, this BNC socket on the rear panel of the basic unit points to the outside.

Connect the supplied antenna to this socket with the base unit switched off.

The following points must be observed:

- The supplied antenna (for internal installation, not weatherproof) has a 10–m cable.
- The antenna must be installed perpendicular to the propagation direction of the transmitter. The arrow on the antenna housing must be pointed to the location of the transmitter (Frankfurt/Main).
- Display units and TV sets may interfere with reception! It may therefore be necessary to install the antenna at least 5 m away from sources of interference.
- Reinforced concrete structures as well as ferromagnetic screens (e.g. corrugated iron roofs) are largely impervious to RF.
  It may be advisable to install the antenna outdoors in such cases. Weatherproof outdoor antennas are then required, however. The use of an indirect lightning protector is advisable if the antenna is fitted outdoors.
  A ”indirect lightning protection” is recommended in case of an outdoor antenna.

Software configuration

Perform the concerned settings with OS–SET after FU–AT installing (cf. Section 3).

4.10.6 Installing Magneto–Optic Drive and SCSI Controller

The retrofitting of a MOD means that it is also necessary to install the SCSI controller (AHA–1542CP).

The following MOD is used: SMO F531

4.10.6.1 Installing of MO Drive

An MO drive requires an FP slot on the device front.

The power supply connection is already prepared in the basic unit. Loosen the connection of the power supply cable and connect the 4–pin plug to the power supply connection in the top right corner at the rear of the MO drive (Fig. 4.24).

Fig. 4.25 shows the pin assignments.

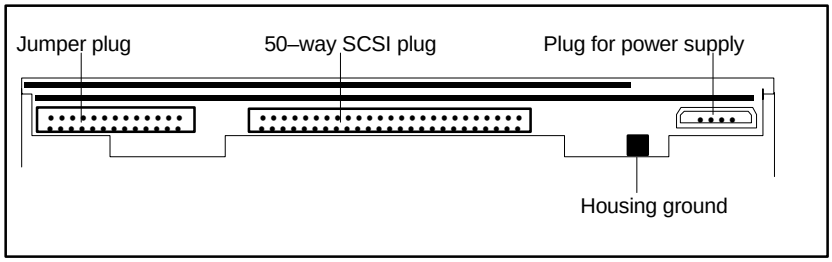


Fig. 4.24 Rear view of MO drive

Pin No.	Voltage
1	+ 12 V DC +/– 5 %
2	12 V DC (return line)
3	5 V DC (return line)
4	+ 5 V DC +/– 5 %

Fig. 4.25 Pin assignments of power supply plug

The 50–way ribbon cable with the two 50–way connectors (contained in retrofitting set) is used to connect the SCSI controller. The counterplug on the SCSI controller is located on the top edge of the module.

Jumper settings on MO drive

A connector with 10 plug pairs for plug–in jumpers is located at the top left corner on the rear of the MO drive (counted from left to right).

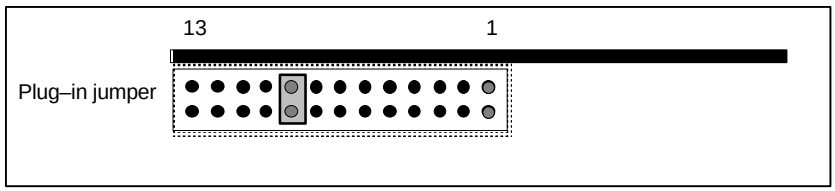


Fig. 4.26 Jumper plug on the rear of the internal MO drive

Jumper settings

Jumper setting for an internal drive:

only insert jumper 9 (termination)

☞ Refer to Section 4.8 for the settings in the SCSI set.

External MOD

The Sony RMO–S594 device type can be used as external MOD.

Settings

SCSI setting:

The SCSI–ID has to be set to 6 on the rear of the device.

RMO setting:

Set the function switch on the rear as shown Fig. 4.27.

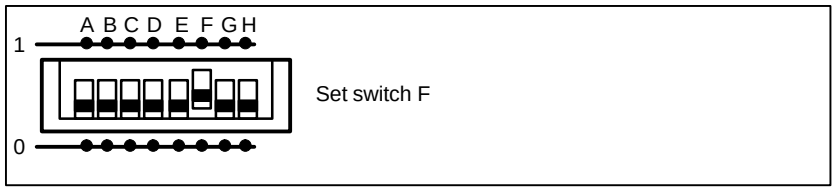


Fig. 4.27 Function switch on the rear of the external MO drive

Refer to the Instructions supplied with the device for more details.

4.10.6.2 Installation of SCSI Controller

The SCSI controller requires an AT slot on the bus module.
It is inserted in slot 5 (see Section 4.10.1).

Installation

Proceed as follows to install the SCSI controller:

- Dismount the module retainer.
- Remove the slot cover and store in a safe place (the cover must be fitted again to ensure correct cooling should you remove the module again).
- Insert the module into the provided slot.
- Screw the slot cover of the SCSI controller onto the rear panel of the housing.
- Connect the 50–way ribbon cable to the SCSI controller (the brown conductor of the ribbon cable belongs to pin 1 of the plug) and route it downwards and then to the side.
- Connect the counterplug to the SCSI plug of the MO drive (ensure correct polarity, brown conductor to pin 1 of plug).
- Re–install the module retainer.

Software configuration

Software configuration settings are required (cf. Section 4.11).

4.10.6.3 Settings in the System Configuration

You must still carry out settings in the system configuration following installation of the SCSI controller and MO drive (cf. Section 3).

4.10.6.4 Fitting of monitoring module SAVE–Card

Always insert the monitoring module into slot 6.
Please refer to the Manual or the Technical Description of the PC RI45 for fitting, driver installation and a description.

4.11 Technical Specifications

OS 525

Refer to the SIMATIC PC RI45 Manual
(Order No. C79000–G7084–C780) and the
Technical Description
(Order No. C79000–G7084–C781).

MO drive

Disk format	5.25 ”
Storage capacity	2.3 GB (512 Byte / Sector) 1.2 GB (512 Byte / Sector)
Data transfer	
(1024 Byte / Sector)	1.0 – 2.0 MB/s
(512 Byte / Sector)	0.94 – 1.8 MB/s
Power consumption	DC +5 V, 1.0 A DC +12 V, 0.6 A typ.
PC ambient temperature	$\leq$ 35 °C

N–AT module

Local bus interface	20–m local bus, input/output, redundant, wired–or, asymmetrical, isolated
Levels on 20–m local bus	
Input:	$\geq$ 2.0 V = High
	$\leq$ 0.8 V = Low
Output:	$\geq$ 2.7 V = High
	$\leq$ 0.7 V = Low
Data rate	40 kbits/s (self–contained local bus) 250 kbits/s (remote bus interface via inductive converter)
Devices	20 m local bus: max. 9 (voltage difference between device ground $\leq$ 2 V)
Data integrity	Block parity (d=4)
Mode	Half–duplex

CP 5412 A1

Connection to SINEC L2	9–way (sub–miniature ’D’, female)
Connection to SINEC L2FO	HP duplex socket for fibre–optic line
Supply voltage	DC + 5 V
Space	Short AT
Ambient temperature	$\leq$ 30° C
– Operation	0 to 55° C
– Storage	– 40 to + 70° C
Humidity class to DIN 40040	F (max. 95% at 25° C)

HIGRAPH 2 graphics interface

Grafics processor	TMS 34010 (TI), 50 MHz
Main memory	2 MB DRAM
Image memory (video RAM)	1 MB RAM
Resolution	640x480, 1024x768 pixels
Image refresh rate	60 Hz
Colors	256 attribute combinations (blinking frequency 0.5; 2; 8 Hz)

CP 1413 communication processor

Circuitry structure:	
Microprocessor	80386 SX
ETHERNET controller	82596 SX
ETHERNET serial interface	82C501 AD
Memory configuration:	
Dynamic RAM	Max. 1.768 MB
DPRAM	Max. 256 KB
Connectors:	
PC/PG connection	AT connector
SINEC H1 connection	15–way subminiature ”D” connector
upply voltage	+ 5 V, + 10%
Current consumption	Approx. 1.5 A (at + 5 V)

Signal module

Audible indicator	
– Relay output	Contact load DC 24 V, max. 200 mA If you switsch inductive load you have to fit suppressor diodes
– Reset output	Transistor output DC 24 V, max. 100 mA Up to 6 signal modules in mixed operation (OS 525 and OS 265) Up to 10 signal modules with OS 525 only
– Reset input	Input voltage low –33 V to + 5 V Input voltage high + 13 V to + 33 V Input voltage DC 24 V Input current + 2 mA to 7,5 mA Operating frequency max. 100 Hz
Cable length	Max. 50 m
Watchdog	
– Relay output	Contact load DC 24 V, max. 200 mA If you switsch inductive load you have to fit suppressor diodes
Hardcopy	
– Output	Transistor output DC 24 V, max. 100 mA
– Input	Input voltage low –33 V to + 5 V Input voltage high + 13 V to + 33 V Input voltage DC 24 V Input current + 2 mA to 7,5 mA Operating frequency max. 100 Hz

Radiotransmission clock (FU–AT)

Time signal receiver (radiotransmission submodule) with capacitor backup of internal crystal–controlled clock

Backup time	Max. 3 days
4–bit digital output	Via relay contacts
Loading capacity of relay contacts	60 V / 1 A
4–bit digital input	
Bipolar	Input current 2.5 mA at 12 V, 12 mA at 60 V
TTL level	Max. input current 4 mA at 0 V
Interrupt generation	Edge–controlled via digital input selectable for each input, edge polarity selectable
Teal–time clock (RTC) with lithium battery backup	
Basic accuracy	+ /– 20 ppm can be adjusted and read by OS
Antenna	For indoor installation
Length of connection cable	10 m

Contents Section 5

5 I/O Devices

This chapter provides an overview of the I/O devices that can be connected to the OS 525 system.

The OS 525 needs the following I/O devices for operation:

- Monitor
- Keyboard
- Mouse/trackball
- Printer

5.1 The PM54/C2 Multi–Standard Color Monitor

Brief description

The high–resolution low–radiation multi–standard 54–cm color monitor has been designed to meet the high requirements of industrial applications.

Its wide synchronization range permits connection to a variety of monitor systems to be made.

The unit boasts the following special features:

- Multi–standard operation (up to 20 different standards can be stored from the outside)
- Anti–glare black matrix tube, dark glass, antistatic coating
- Line frequency between 15.6 and 58 kHz
- Image refresh rate between 45 and 120 Hz
- Resolution up to 1280 x 1024 pixels
- Low radiation to MPR II recommendation
- A microprocessor controls all major functions
- Automatic color representation stabilization provides for ageing of the tube
- Automatic contrast control with external light sensor (–0FA0 only)
- 24–h de–gauss automatic for continuous operation
- Isolation between video ground and protective ground
- Integrated cable equalizer for up to 500 m coaxial cable

Technical Specifications

Mechanical data

Enclosure	PU compact foam, color ”ergo” gray
Dimensions (w x h x d)	484 x 421x 503
Weight	Approx. 30 kg

CRT

Format	54 cm (21 inch)
Distance between color triples	0.31 mm
Optical resolution	Max. 1100 x 800 (h x v) pixels
Phosphor	P22, medium–short persistence
Convergence	Max. 0.3 mm in the screen center Max. 0.5 mm at the screen margin
De–magnetization	When the unit is switched on Automatically every 24 hours

Power connection

Mains voltage	230 V, +15%/–15%, internal selector for 115 V, +15%/–15%
Mains frequency	47 – 63 Hz
Power consumption	Approx. 140 W / 200 VA
Switch–on current	Max. 10 A at 230 V

Signal inputs

R, G (S), B, H/S, V, M	6 x BNC input
RGB, analog and TTL	15–way subminiature ’D’ socket
Rated RGB level	0.7 V_{pp} to 75 Ω (without S)
Rated G(S) level	1.0 V_{pp} to 75 Ω (S in green = 0.3 V_{pp})
R (S), B (S)	S signal component in R and B does not interfere
Rated H/S level	1.0 V_{pp} to 75 Ω, any polarity
75–Ω terminators	Selectable
S source	S to green, S_{ext} automatically selected

Integrated cable repeater for a maximum distance of 500 meters from the video source.

Synchronization range

Line frequency	15.6 – 58 kHz
Image refresh rate	45 – 120 Hz

Video amplifier

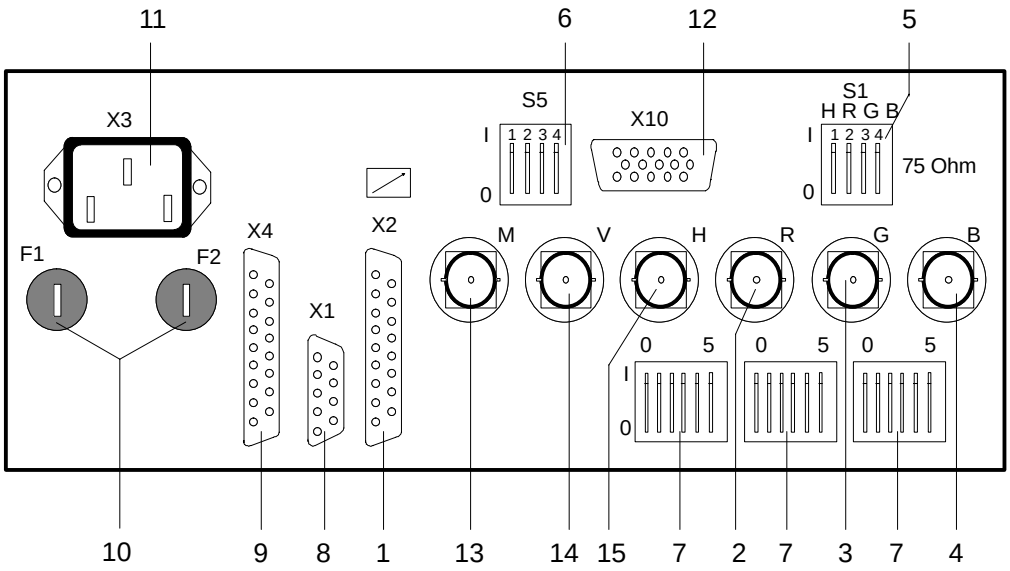
Band width	80 MHz / –3 dB

Ambient conditions

Temperature	+ 5 °C to + 40 °C ii operation
Humidity	95 % at 25 °C
Degree of protection	IP 30 to DIN 40050

Safety and EMC

Safety	VDE 0805, EN 60950, IEC 950
Interference suppression symbol	To decree 1064/1984
Interference radiation	To VDE 0871/curve B
X–ray radiation	Max. 1.0 µSv/h (intrinsically safe tube)



1	X2; Remote control connector
2,3,4	Connectors for the R, G, B color signals
5	S1 switch: For R, G, B color signals and horizontal synchronization (I = 75 Ω added)
6	S5 switch: Selector for analog/TTL signal inputs
7	Cable equalizer for R, G, B (cable lengths between 100 and 500 meters)
8	X1: Key switch connector
9	X4: Touch screen connector
10	Fuses
11	Power cable connector
12	VGA input (analog) / TTL input
13	Mod. signal, analog/TTL (video input) selection
14	Separate vertical sync impulse
15	Separate horizontal sync impulse

Fig. 4.1 Connector field of the PM54 process monitors

Please refer to the Operating Instructions
(Order no. C79145–A3072–X100) for details.

5.2 SM 2185 Multi–Standard Color Monitor

The SM 2185 high–resolution multi–standard color monitor has been designed for applications with particularly high requirements placed upon the image quality.

It boasts the following special features:

- Multi–standard operation (up to 20 different standards can be stored from the outside)
- Anti–glare black matrix tube, dark glass, antistatic coating
- Line frequency between 30 and 85 kHz
- Image refresh rate between 45 and 120 Hz
- Resolution up to 1600 x 1200 pixels
- Low radiation to MPR II recommendation
- Power–down management
- A microprocessor controls all major functions
- Automatic color representation stabilization provides for ageing of the tube
- Selectable white adjustment (6500*K, 7500*K, 9300*K)
- Automatic contrast control with external light sensor (–0FA0 only)
- 24–h de–gauss automatic for continuous operation
- Disconnectable link between video ground and protective ground

Technical Specifications

Mechanical data

Enclosure	PU compact foam, ergo–gray
Dimensions (w x h x d)	490 mm x 470 mm x 510 mm
Weight	Approx. 28 kg

CRT

Format	54 cm (21 inch)
Screen diagonal	500 mm
Distance between color triples	0.29 mm
Optical resolution	Max. 1100 x 800 (h x v) pixels
Phosphor	P22, medium–short persistence
Convergence	Max. 0.3 mm in the screen center Max. 0.4 mm at the screen margin
De–magnetization	– When the unit is switched on – Automatically every 24 hours

Power connection

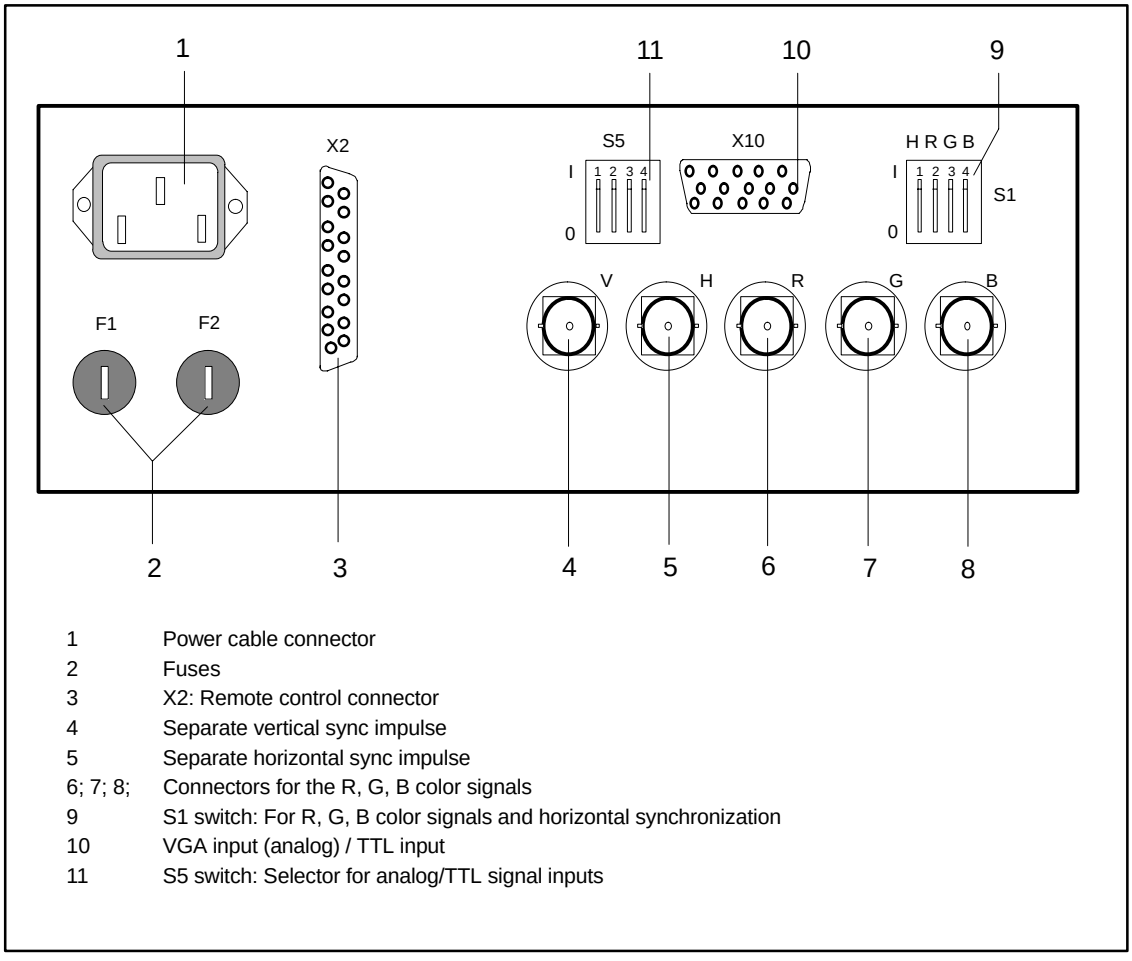
Mains voltage	230 V, +15%/–15%, internal selector for 115 V, +15%/–15%
Mains frequency	47 – 63 Hz
Power consumption	Approx. 120 W / 180 VA
Switch–on current	Max. 10 A at 230 V

Signal inputs

R, G(S), B, H/C, V, M	5 x BNC input
RGB, analog and TTL	15–way subminiature 'D' socket
Rated RGB level	0.7 V_{pp} to 75 Ω (without S)
Rated G(S) level	1.0 V_{pp} to 75 Ω (S in green = 0.3 Vpp)
R (S), B (S)	S signal component in R and B does not interfere

Rated H/S level	1,0 V_{pp} to 75 Ω, any polarity
75–Ω terminators	Selectable
S source	S to green, S_{ext} automatically selected
Synchronization range	
Line frequency	30 to 85 kHz
Image refresh rate	45 to 120 Hz
Video amplifier	
Band width (–6 dB limit)	140 MHz / 30 V_{pp} (BNC–input) 80 MHz / 30 V_{pp} (submin. 'D' input)
Ambient conditions	
Temperature	+ 5 to + 40 °C in operation
Humidity	95 % at 25 °C
Degree of protection	IP 30 to DIN 40050
Safety and EMC	
Safety	VDE 0805, EN 60950, IEC 950
Interference radiation	To VDE 0871/curve B
X–ray radiation	Max. 1.0 µSv/h (intrinsically safe tube)

Fig. 4.2 Connector field of the SM 2185 process monitor



1	Power cable connector
2	Fuses
3	X2: Remote control connector
4	Separate vertical sync impulse
5	Separate horizontal sync impulse
6; 7; 8;	Connectors for the R, G, B color signals
9	S1 switch: For R, G, B color signals and horizontal synchronization
10	VGA input (analog) / TTL input
11	S5 switch: Selector for analog/TTL signal inputs

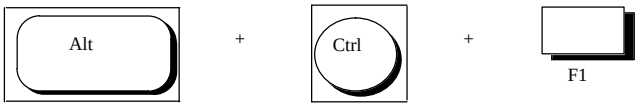
Please refer to the Operating Instructions
(Order no. C79145–A3070–X600) for details.

5.3 Keyboard

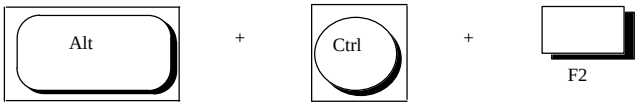
Five different keyboards are available for the user to be connected to the OS 525 base unit (see Parts List).
In case of rough environmental conditions (IP65), membrane or full impact keyboards can be used each with German or international layout.
A standard keyboard with layout selection German/international is available for control rooms.

The keyboard layout is GERMAN/INTERNATIONAL

Pressing the keys ”Alt”, ”Ctrl”, and ”F1” at the same time selects the international keyboard layout.



Pressing the key combination ”Alt”, ”Ctrl”, and ”F2” at the same time selects the German keyboard layout.



The keyboard consists of four key fields:

The numeric keypad is not supported by the OS 525. Numeric inputs are not possible.

Note

Each key can be removed vertically from the top. The pertaining key function is no longer accessible if the removed key is replaced with a blind key (without label). This enables certain key functions to be inhibited.

5.4 Mouse / Trackball

The system uses a normal mouse/trackball.

The mouse cursor moves on the screen as you move the mouse on your desk or the trackball. Pressing the left–hand mouse button triggers the OS function while the right–hand button is used for moving elements on the screen.

Please refer to the ”OS 525 CONFIG” and ”OS 525 SUPERVISOR” Manuals for details.

Connection and commissioning

The mouse/trackball can either be connected to the 9–way connector of the terminal or to the COM2 connector of the base unit.

☞ The short connecting cable (approximately 2 m) does usually not require any particular interference suppression measures to be taken.

5.5 Printer

The following printer types may be conected:
DR 215//216, DR 235/236, DR 240/241.

In the standard configuration, the report printer conects to the base unit. The printers used for operator input reports and hard copies (remote printers) connect to the terminals.

Please refer to Sections 2.3.2 and 2.3.3 for the settings of the individual printers.

Contents Section 6

6 Service and Maintenance

All service and maintenance work is performed via the FlexOS desktop.

6.1 Opening Additional Desktops

Upon delivery, one FlexOS desktop has been set up in your OS 525 system. Use the following procedure to install additional FlexOS desktops that may be used for working with the text editor, for example:

Change from CONFIG to the FlexOS desktop.

The following selection of commands appears on the screen when you press the keys <Alt> and <+> at the same time:

Commands:

C – CREATE Screen

D – DELETE Screen

<HELP> – HELP INFORMATION (Ctrl+Insert)

<number> – Screen number to select

☞ The key combination <Ctrl>+<Insert> must not be used to call the HELP INFORMATION because it leads to system errors.

Entering <C> and <Return> opens a new desktop that is displayed above the command field, together with a new window number.

When you enter <D> and <Return>, the system asks you what desktop is to be deleted.

The desktop is deleted once you have entered the window number and <Return>. The procedure is cancelled when you press <Return> without specifying a window number.

Use the key combinations <Ctrl> and <+> and <Ctrl> and <–> to switch back and forth between the desktops.

6.2 The Configuration Menu

Your OS 525 has a pre–configured device configuration. Changes using the SETUP program are only required if you want to alter the hardware structure of after a malfunction has occurred during power–up.

The SETUP program is located in the ROM–BIOS. SETUP is employed for transferring information regarding the system structure into the battery–backed OS 525 memory.

The configuration menu can only be started during the startup phase.

SETUP call

Calling the SETUP menu and further settings with the SETUP menu are described in detail in the RI45 Manual.

Modified device configuration with SETUP

Note the modified SETUP configuration or make a hard copy to keep it with the log/configuration report: data of the SETUP configuration could be needed after a CPU module exchange.

6.3 Replacing the Hard Disk and Installing the Software

Please refer to SIMATIC PC RI45 Manual to replace the hard disk drive.

Activate the configuration menu (see Section 6.2) once the new hard disk has been installed. Edit the entries in the configuration menu if the new hard disk requires different parameters.

SW installation

Now you may start the MS–DOS (cf. 6.3.1).

Partitioning the hard disk

You must partition the hard disk after you have installed MS–DOS. Enter **fdisk**.

at the DOS prompt. The fdisk program displays its main menu when it starts:

MS–DOS Version x.y

Hard disk Setup Program

(C) Copyright Microsoft Corp. 1983–1991

FDISK–Options

Current fixed disk drive: 1

Choose one of the following:

1. Create a DOS partition or Logical DOS Drive

2. Set active partition

3. Delete partition or Logical DOS Drive

4. Display partition information

Enter choice: [1]

Press ESC to exit FDISK.

As you have only one partition on your hard disk, you must enter the option number ”1” before you press <ESC> to exit the FDISK program.

Formatting the hard disk

The hard disk must be formatted before you can start loading the backup floppy disks. Enter the command

format c: /s

This command formats the hard disk partition and transfers the MS–DOS system files from the start floppy disk to the installed partition.

☞ For a hard disk change install the BIOS diskette from the OS diskette set.

6.3.1 Installing the System Software

Delivered software

The delivered software comprises a boot diskette (1/28) and 4 packages that are to be installed separately:

– MS DOS	4 diskettes	(2/30 ... 5/30)	
– FLEXOS	6 diskettes	(6/30 ... 11/30)	
– OS 525 SW	17 diskettes	(12/30 ... 28/30)	OS software
– OS 525 ST	2 diskettes	(29/30 ... 30/30)	OS–SET

Installing the 4 packages in host and terminal is mandatory.

Previous settings

OS–SET reads all previous settings except the settings concerning the printer and the signal module. Note these settings before installation and then check the parameter settings after.

Before Installation

Before installation make sure that there is sufficient memory space on the hard disk; a first installation necessitates about 60 MB, a further installation about 8 MB. If possible format the hard disk before a first intallation. Previously save all the user data. At least delete the directory c:\OS_CODE\RUN if formatting is not possible.

☞ When using an ES500 save the “config.sys” and “autoexec.bat” files before installation.

Installation

Perform the installation of all the packages with MSBACKUP.

1. Insert the boot diskette in the drive (1/30), reset the PC and enter INSTALL, then remove the diskette, boot again and enter MOUSE.COM.
2. Insert the last diskette of the MS DOS package (5/30).
3. Enter MSBACKUP.
4. Activate the RESTORE function and select CATALOG.
5. With entering of RETRIEVE read the directory information from the diskette (answer the question OVERWRITE with ”yes”).
6. Activate the LOAD function.
7. Activate the c: drive 8(with blank) in the form RESTORE FILES; ALL FILES appears beside the drive designation.
8. After that activate START RESTORE.
9. Insert further package diskettes if required (pay attention to the acoustic signal).

Repeat step 2 to 9 for the other packages. The last package diskette specified in step 2 has to be selected correspondingly.

After installation

After installation reset the computer and then activate OS–SET.

6.3.2 Loading User Data onto the Hard Disk

The FlexOS desktop is used for loading user data from the backup floppy disks onto the hard disk.
To start loading, enter the command

C:>restore a: c: –s

RESTORE only permits files that have been created by the MSBACKUP function to be handled. The option ”S” also restores all subdirectories. The following text is displayed after you have terminated your input by RETURN:

Insert backup diskette #01 in drive fd 0:
Press any key when you are ready...
**** files were backed up 05/25/1994*
**** Restoring files from diskette 01 ****
/ANWENDER/xxx.BLD

All the backup diskettes can now be interactive loaded.

6.4 Connecting Cable Pin Assignments

The item numbers refer to the ”Connecting cables summary” in Section 2.3.9, Fig. 2.10 and Fig. 2.11.

Item 2: Signal module ⇔ Audible indicator Order no. 6XV2175–8A...

Connector A 25–way (SUB–D, female)	Bundle	Open cable end core color	Connector A 25–way (SUB–D, female)	Bundle	Open cable end core color
1	red	white/green	14	white	brown
2	red	gray	15	white	white
3	red	pink	16	white	green/gray
4	red	blue	17	white	yelow
5	red	red	18	white	pink
6	red	brown	19	white/blue	blue/white
7	red	yellow	20	white	red
8	green	white/green	21	blue	brown
9	green	brown	22	blue	green/gray
10	green	yellow	23	blue	yellow
11	green	blue	24	blue	pink
12	green	red	25	green	gray
13	green	pink	shell	screen	

Item 4: VGA ⇔ Monitor Order no. 6XV1441–0AH20

Connector A 15–way (SUB–D, male)	Core color	Connector B, 15–way (SUB–D, male)	Connector A, 15–way (SUB–D, male)	Core color	Connector B, 15–way (SUB–D, male)
1	red	1	9	not used	
2	green	2	10 *)	gray	10
3	violet	3	11	white	11
4 *)			12	not used	
5	not used		13	brown	13
6	blue	6	14	pink	14
7	yellow	7	15	not used	
8	black	8	shell	screen	shell

*) Jumper between pins 4 and 10

Item 5a: LPT1⇔ DR 215/216, DR 235/236 DR 240/241 (Centronics) **Order no. 6XV1406–0CN10**

Connector A 25–way (SUB–D, female)	Core color	Connector B, 36–way (Centronics connector)	Connector A 25–way (SUB–D, female)	Core color	Connector B, 36–way (Centronics, connector)
1		1	6		
2		3	7		7
3		2	8–24		
4			25		5,6
5		20	shell		shell

Item 5b: COM1 ⇔ DR 215/216, DR 235/236, DR 240/241 (V.24) **Order no..: 6XV1440–3A...**

Connector A 9–way (SUB–D, female)	Core color	Connector B, 25–way (SUB–D, male)	Connector A 9–way (SUB–D, female)	Core color	Connector B, 25–way (SUB–D, male)
1			5		7
2		2	6 *)		
3		3	8 *)		25
4		5	shell		shell

*) Jumper between pins 6 and 8

Item 6: HIGRAPH 2 ⇔ Process monitor **Order no.: 6XV1 441–0BH20**

Connector A, 15–way (SUB–D, male)	Core color	Connector B, 5xBNC	Connector A 15–way (SUB–D)	Core color	Connector B 5xBNC
1			9		BNC
2		BNC	10		
3			11		
4		BNC	12		
5			13		
6		BNC	14		
7			15		
8		BNC	shell		

Item 7a N–AT ⇔ Connection distributor (CS 275 bus) Order no.: 6DS8208–8KC

Connector A, 25–way (SUB–D, female)	Bundle	Core color	Connector B ES 902	Connector A, 25–way (SUB–D, female	Bundle	Core color	Connector B, ES 902
1	B3	brown	b 28	14	B3	green	b 26
2	B3	red	b 20	15	B3	blue	b 18
3	B2	brown	b 12	16	B2	green	b 10
4	B2	red	b 4	17	B2	blue	b 2
5	B1	blue	d 2	18	B1	brown	d 12
6	B1	red	d 4	19	B1	white	d 14
7	B1	gray	d 6	20	B1	black	d 16
8	B1	yellow	d 8	21			
9	B1	green	d 10	22	B3	white	b 30
10	B3	black	b 32	23	B3	gray	b 22
11	B3	yellow	b 24	24	B2	white	b 14
12	B2	black	b 16	25	B2	gray	b 6
13	B2	yellow	b 8	shell	screen		

Item 7b: N–AT ⇔ FAE (CS 275 bus) Order no.: 6DS8210–8..

Connector A, 25–way (SUB–D, female)	Bundle	Core color	Connector B 3xES 902 parallel	Connector A, 25–way (SUB–D, female	Bundle	Core color	Connector B, 3xES 902 parallel
1	B3	brown	b 28	14	B3	green	b 26
2	B3	red	b 20	15	B3	blue	b 18
3	B2	brown	b 12	16	B2	green	b 10
4	B2	red	b 4	17	B2	blue	b 2
5	B1	blue	d 2	18	B1	brown	d 12
6	B1	red	d 4	19	B1	white	d 14
7	B1	gray	d 6	20	B1	black	d 16
8	B1	yellow	d 8	21			
9	B1	green	d 10	22	B3	white	b 30
10	B3	black	b 32	23	B3	gray	b 22
11	B3	yellow	b 24	24	B2	white	b 14
12	B2	black	b 16	25	B2	gray	b 6
13	B2	yellow	b 8	shell	screen		

Item 7C: N–AT ⇔ CS 275 bus Order no.: 6DS8211–8..

Connector A, 25–way (SUB–D, female)	Bundle	Core color	Open cable end	Connector A, 25–way (SUB–D, female	Bundle	Core color	Open cable end
1	B3	brown		14	B3	green	
2	B3	red		15	B3	blue	
3	B2	brown		16	B2	green	
4	B2	red		17	B2	blue	
5	B1	blue		18	B1	brown	
6	B1	red		19	B1	white	
7	B1	gray		20	B1	black	
8	B1	yellow		21			
9	B1	green		22	B3	white	
10	B3	black		23	B3	gray	
11	B3	yellow		24	B2	white	
12	B2	black		25	B2	gray	
13	B2	yellow		shell	screen		

Item 7d 2 x N–AT ⇔ 1 x N–AT (CS 275 bus) Order no.: 6DS8212–8..

Connector A, 2x25–way (SUB–D, female)	Bundle	Core color	Connector B 25–way (SUB–D, male	Connector A, 2x25–way (SUB–D, female	Bundle	Core color	Connector B 25–way (SUB–D, male)
1	B3	brown	b 28	14	B3	green	b 26
2	B3	red	b 20	15	B3	blue	b 18
3	B2	brown	b 12	16	B2	green	b 10
4	B2	red	b 4	17	B2	blue	b 2
5	B1	blue	d 2	18	B1	brown	d 12
6	B1	red	d 4	19	B1	white	d 14
7	B1	gray	d 6	20	B1	black	d 16
8	B1	yellow	d 8	21			
9	B1	green	d 10	22	B3	white	b 30
10	B3	black	b 32	23	B3	gray	b 22
11	B3	yellow	b 24	24	B2	white	b 14
12	B2	black	b 16	25	B2	gray	b 6
13	B2	yellow	b 8	shell	screen		

Item 8: Signal module ⇔ Color graphics printer Order no.: 6XV2174–8A...

Connector A 9–way (SUB–D, female)	Core color	Connector B, 9–way (SUB–D, male)	Connector A 9–way (SUB–D, female)	Core color	Connector B, 25–way (SUB–D, male)
1	yellow	5	6 *)		
2	green	4	7		
3			8 *)		
4	brown	5	9		
5	white	2	shell	screen	shell
shell					

*) jumper between pins 6 and 8

6.5 The DR EDIX Text Editor

DR EDIX™ is the text editor of the FlexOS desktop. To start the editor, enter the file name DREDIX.286 or the mnemonic ED. Fig. 6.1 shows the screen layout after the OSCONFIG.OS file has been activated.

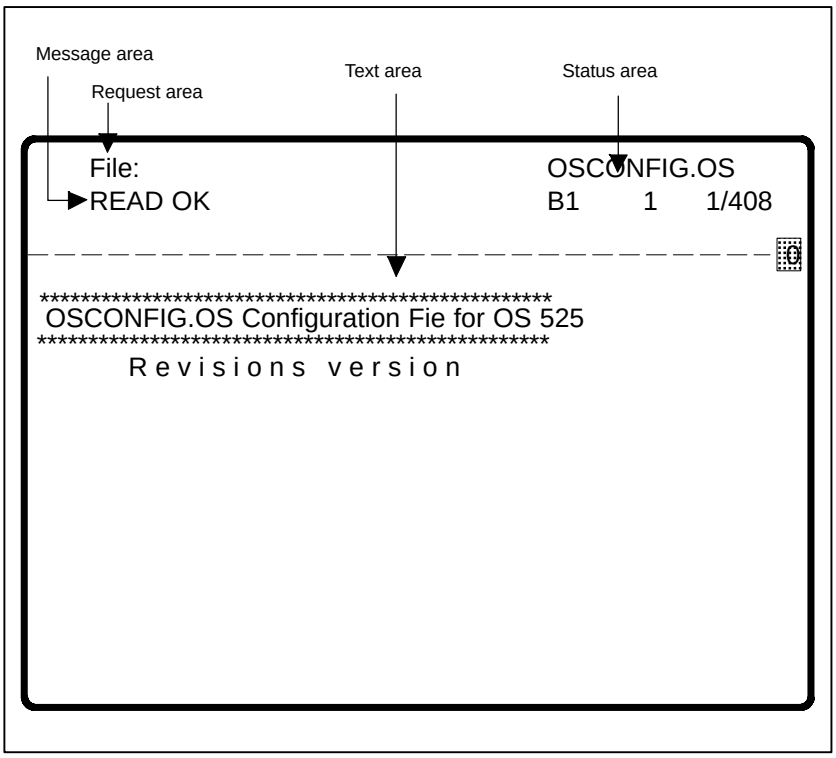


Fig. 6.1 DR EDIX screen areas

Text area Here you enter your text and commands, and move the cursor.

Request area Some DR EDIX commands prompt you to make additional entries. If, for example, you wish to enter a file and press the keys <Ctrl> + <K>, followed by <E>, DR EDIX will ask you for the file name. Your reply may not exceed 50 characters in length. Press the <RETURN> key to terminate your input.
Press <Ctrl> + <K> and <Q> if you wish to abort a command after the system has prompted you to enter additional information. Pressing <Ctrl> + <J> displays help after a message.

Message area DR EDIX displays messages in highlighted representation in the message area.

Status area

In the status area, DR EDIX permanently displays information regarding the currently active window. The following example shows a typical message in the status area.

```
OSCONFIG.OS
B1 1   1/408
```

The following information is displayed in the status area:

OSCONFIG.OS	Name of the file in the active buffer
B1	Buffer 1 (active buffer)
1	Column that contains the cursor
1	Line that contains the cursor
408	Size of the active buffer in number of lines

The status area always shows the status of the active window. The new window status will immediately be displayed when you change windows.

The insert/overtype mode is indicated at the right–hand bottom margin (insert mode ”–”, overtype mode ∅). Enter <Ctrl> + <V> to toggle between the two modes.

6.5.1 Entering and Editing Text

To enter a text, merely type it in. DR EDIX echoes each typed character on the screen and stores it in the active buffer.

Terminate each line by pressing the <RETURN> key. The cursor is then re–positioned at the beginning of the next line.

Pressing the key combination <Ctrl> + <K> and <S> saves the entered text.

Entering <Ctrl> + <K> and <E> cancels the edit and DR EDIT prompts you to specify a new file.

<Ctrl> + <K> and <Q> interrupts this input or exits the file without saving it.

6.5.2 Help

Pressing <Ctrl> + <J> provides you with a 4–page help.

The following table shows **page 1** with the cursor positioning commands.

CURSOR MOTION COMMANDS
KEY ACTION:

<Ctrl> + <E>	Up
<Ctrl> + <X>	Down
<Ctrl> + <S>	Left
<Ctrl> + <D>	Right
<Ctrl> + <R>	Page Up
<Ctrl> + <C>	Page down
<Ctrl> + <A>	Word left
<Ctrl> + <F>	Word right
<Ctrl> + <Q> and <R>	Beginning of buffer
<Ctrl> + <Q> and <C>	End of buffer
<Ctrl> + <Q> and <E>	Beginning of window
<Ctrl> + <Q> and <X>	End of window
<Ctrl> + <Q> and <S>	Beginning of line
<Ctrl> + <Q> and <D>	End of line
<Ctrl> + <Z> and <G>	Go to line (prompts)

Page 2 shows the text editing commands. These commands are listed in the following table.

EDITING COMMANDS
KEY ACTION:

Backspace	Delete character to left of cursor
<Ctrl> + <G> or <Del>	Delete character at cursor
<Ctrl> + <Y>	Delete entire line
<Ctrl> + <Q> and <Y>	Delete line to right of cursor
<Ctrl> + <Z> and <U>	Insert last deleted line above cursor
<Ctrl> + <Z> and <A>	Get blank line below cursor
<Ctrl> + <Z> and <I>	Get blank line above cursor
<Ctrl> + <V> and <V>	Toggle between insert and overstrike mode

FILE COMMANDS
KEY ACTION:

<Ctrl> + <K> and <E>	Edit new file (prompts)
<Ctrl> + <K> and <F>	Change file name for next write (prompts)
<Ctrl> + <K> and <R>	Read file into buffer below cursor (promts)
<Ctrl> + <K> and <S>	Write contents of buffer to file (might prompts)

Page 3 contains the commands for block operation and for search and search/replace functions.

BLOCK COMMANDS

KEY	ACTION:
<Ctrl> + <K> and <B>	Mark lines to copy, move or delete
<Ctrl> + <K> and <C>	Copy marked lines below cursor
<Ctrl> + <K> and <V>	Move marked lines below cursor
<Ctrl> + <K> and <Y>	Delete marked lines

SEARCH AND TRANSLATE COMMANDS

KEY	ACTION:
<Ctrl> + <Q> and <F>	Search for characters that match a pattern (prompt)
<Ctrl> + <I> and <I>	Continue search
<Ctrl> + <Q> and <A>	Translate characters that match a pattern (prompts)

Page 4 shows the remaining commands

WINDOW AND BUFFER COMMANDS

KEY	ACTION:
<Ctrl> + <Z> and <1>	Edit in window 1
<Ctrl> + <Z> and <2>	Edit in window 2 (split screen if necessary)
<Ctrl> + <Z> and <O>	Restore screen to one window (letter O, not zero)
<Ctrl> + <Z> and <B>	Swap to different buffer (prompts)

MISCELLANEOUS COMMANDS

KEY	ACTION:
<Ctrl> + <K> and <Q>	Exit from DR EDIX or exit from prompt
<Ctrl> + <Z> and <S>	Display status of files, buffers, windows, etc.
<Ctrl> + <J>	Get help

Hit the ”space bar” to exit the help menus.

6.5.3 Typical Application of the DR EDIX Editor

You wish to check the directory for the ”Include ORPA” function that has been selected in the OSCONFIG.OS file.

Enter the command C:>CD/OS_CODE/RUN to change to the directory OS_CODE/RUN. Use the abbreviation ED to activate the file OSCONFIG.OS:

ED OSCONFIG.OS

Enter <Ctrl> + <Q> and <F> DR EDIX then prompts you to enter the search pattern. If, for example, we look for the line ORPA_INF, we enter: ORPA_INF ”RETURN”. DR EDIX replies that the first matching information has been located on line 6. Enter <Ctrl> + <L> to continue the search. The line with the default value of the ”Include ORPA” function is then displayed:

ORPA_INF=C:/OS_DATA/ORPA/

If, for example, you wish to refer to a separate directory that contains the special *.ORP descriptions of this system, you may type

ORPA_INF=C:/BASISDAT/ORPAB1/

and enter <Ctrl> + <K> and <S> to save this selection. Enter <Ctrl> + <K> and <Q> to exit DR EDIX.

This new selection is available after you have started CONFIG again.

6.6 The Graphic PlantTop Operator Desktop

PlantTop® is the graphic user desktop and interface of the FlexOS™ 386 operating system.

PlantTop makes your work on the FlexOS desktop of your OS 525 system easier. Objects (such as files, directories, and devices) are represented as icons thus making the abstract thinking obsolete that has been required by entering elements in the command line. PlantTop permits commands to be entered under menu control. You need not to know them by heart.

6.6.1 Changing to PlantTop

Each menu line contains a drop–down menu with the command lines of the started editors and PlantTop. The menu is opened with the current editor name from the right of the menu line so that, if started, you can directly branch to all started applications (screen change) and return to PlantTop.

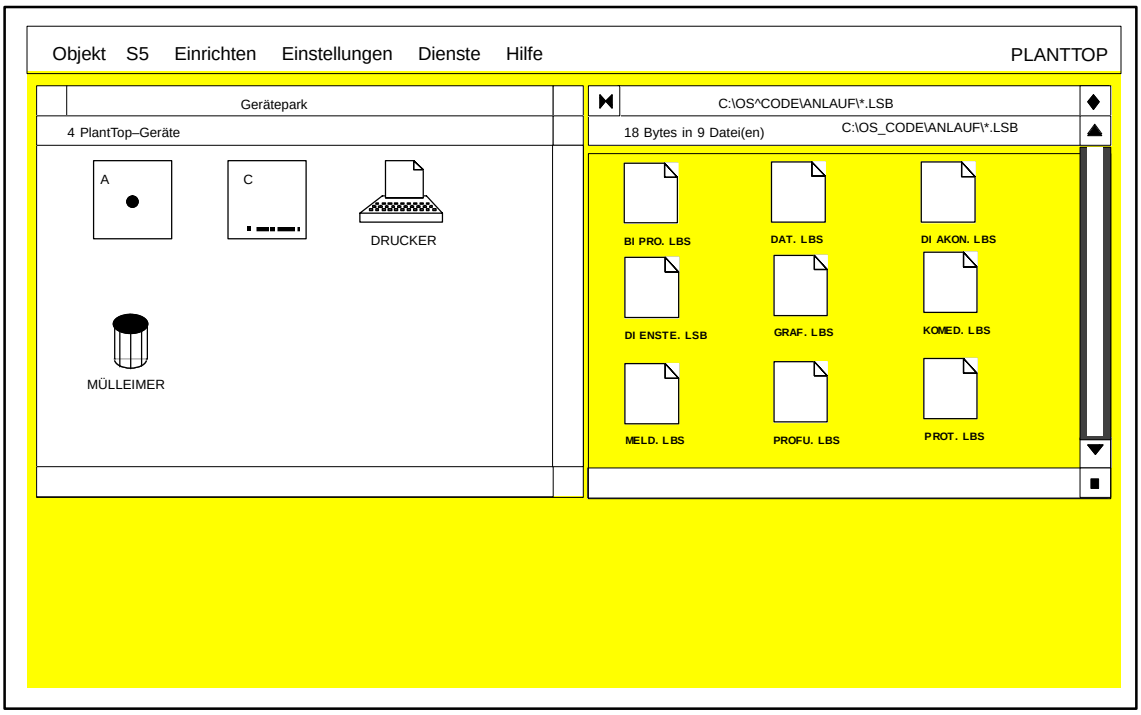


Fig. 6.2 Typical PlantTop interface

6.6.2 Handling PlantTop

Nearly all operator activities in PlantTop require a mouse. Only use the left–hand mouse button. PlantTop does not respond to the other mouse buttons.

All commands that are selected from the PlantTop menus by mouse operation may also be invoked by pressing specific key combinations on the keyboard.

PlantTop offers the following menus:

6.6.2.1 Object Menu

Information ...	informs on currently selected object (device or file / program).
Rename...	The selected file can have a new name allocated.
Open...	Opens the selected object (icon)
To output...	Transfers the selected files to the ”Output” output program.
Close...	Backtracks the topmost window by one level, or closes this window if the highest directory level is displayed.
Close window...	Closes the active window.
Delete...	Irrevocably deletes all selected elements.
Terminate PlantTop...	Terminates PlantTop after a prompt has been confirmed.
Terminate S5DOS/MT	– without function for OS 525 –

6.6.2.2 Create Menu

New directory...	Creates a new directory in the active window (not possible in the device window).
Applications...	Permits the selected FlexOS appli–cations (create. delete) to be configured (document type, parameters, icon)
PlantTop devices...	Permits a device to be created, deleted, or reconfigured.
System configuration...	Starts the FlexPrep application that can be used by a Super User or System Manager for defining the FlexOS and X/GEM configuration that is employed for the next booting.

6.6.2.3 Config Menu

PlantTop...	This command permits PlantTop to be configured (icons, layout, languages).
Display...	Enables you to select the PlantTop re presentation (sorting mode of devices and files, display mode of text/icons
Change language...	Toggles to the other 2 pre–selected language.
Save PlantTop values...	Stores all PlantTop settings in a configuration file that has the file name extension .INF.

6.6.2.4 Utilities Menu

FlexOS commands...	Starts the ”X/GEM shell” in a separate window in which you may enter FlexOS commands.
Search file...	Searches for one, or more, files in the specified drive or directory. You may use the wildcard characters ?, *, and ^ in the file name specification.
Text editor	Opens the selected text editor for the selected text file.

6.6.2.5 PlantTop Menu

INFO...	Displays information regarding the PlantTop version.

All other menu lines designates the allready started editors or PlantTop. The editors can be activated from this menu.

6.6.2.6 Help Menu

Permits to activate the information of all the displayed objects / functions etc. in boxes that can be scrolled partially.

6.6.2.7 Terminate PlantTop

To terminate PlantTop, select the command ”Terminate PlantTop” from the ”Object” drop–down menu.

A box is displayed that prompts you to confirm the termination of Plant-Top. Clicking on ”YES” takes you back to the last started editor or, if no editor was started, to the FlexOS operating system.

6.7 Diagnostics

Procedure after a malfunction has occurred

OS 525 process control and configuration both feature a self–diagnosis function that is activated when a malfunction occurs. Whenever the system detects any irregularity, it enters information regarding status and system response in several diagnostics files in a diagnostics directory. These files can be retrieved as required by service personnel.

There are two different diagnostics file types that are distinguished by their file name extensions (.LST or .DIA):

LST: Active files
These are the files that have currently been created and are valid for the current malfunction. The OS 525 base unit need not be reset.

DIA: Diagnostics files that were saved when the system was started up
These files are created when the system is started. They are copies of the files with the file name extensions .LST. After a malfunction that requires the system to be restarted, these diagnostics files must be viewed for fault analysis.
(Extension in further ”predecessor” files is in preparation)

The following should be done after a malfunction:

- Record the editor or process control section in which the malfunction has occurred.
- Describe the fault image on the monitor.
  What was expected? How did the system react?
- Describe the last operator activities.
- Terminate CONFIG/SUPERVISOR if the system is no longer controllable or responds in an unpredictable manner with unexpected hard disk access.
  Operator input: Terminate process control or select the menu item ”Terminate file” in CONFIG to terminate configuration. Perform a hardware reset of the base unit if the sytem is no longer controllable before you terminate.
  Reaction: Blue image on the monitor.

- Change to the directory that contains the diagnostics files.
  Operator input: cd/os_code/diagnose <RETURN>
  Reaction: Prompt c:/os_code/diagnose/
- Display files
  Operator input: dir <RETURN>
  Reaction: All diagnostics files are displayed.
- Copy files onto a floppy disk
  Operator input: copy *.* a: <RETURN>
  Reaction: ”copying” – each copied file is displayed on the monitor.

- The files listed by the *dir* command may also be printed if a printer has been connected to the parallel interface (PAR).

  Operator input: type <filename> .LST >prn:
  or
  type <filename> .DIA >prn:

  Reaction: The file is printed. The c:os_code/diagnose/> prompt re–appears on the screen once printout has come to an end.

  Alternative: Printing these diagnostics files (ASCII format) on another PC system.

- The DR EDIX editor in the FlexOS operating system also permits the files to be viewed during telephone diagnostics.

  Operator input: ed <filename> .LST (or .DIA)

  Reaction: The file contents are displayed.

- The arrowhead keys of the cursor control blocks on the keyboard are used for scrolling the file.

  Operator input: <Ctrl> + <K> and <Q> for closing the file.

  Reaction: The c:/os_code/diagnose/> prompt is re–displayed.

- Perform a hardware reset of the base unit (key switch). The system is re–booted and the CONFIG configuration desktop displayed automatically.
- Please inform your nearest Service Department of any malfunctions in your system. Specify the fault as precisely as possible.

6.8 Error Messages

6.8.1 Status indicator

The system automatically performs a self–test after the OS 525 base unit has been switched on. This self–test includes various individual tests. The currently running individual test is indicated on the status indicator, a two–digit hexadecimal display on the front panel. The last individual test to have been performed remains visible after the self–test has been terminated.

In the event of a malfunction, this status indicator shows the test step in which the fault has been detected. The possible indications, their meaning and the appropriate remedy are given in the Technical Description of the RI45 Manual.

6.8.2 Error Messages on the Screen

Error messages output by the processor module are displayed in English.

The possible indications and their meaning are given in the Technical Description of the RI45 Manual.

7 Applicable Documents

/1/ FlexOS 386, User's Manual
Order No. 6EA9200–0AA10–0AA0

/2/ CONFIG, Configuration Instructions
Order No. C79000–G8076–C523

/3/ SUPERVISOR, Operating Instructions
Order No. C79000–G8076–C524

/4/ PM54/C2 Color Monitor, Operating Instructions
Order No. C79145–A3072–X100

/5/ CAE SCM 2185 Color Monitor, Operating Instructions
Order No. C79145–A3070–X600

/6/ SIMATIC PC RI45 Manual
Order No. C79000–G7084–C780
SIMATIC PC RI45 Technical Description
Order No. C79000–G7084–C781

/7/ FP 200–3A Hard Disk Drive
Order No. 6ZB5130–0ET01–0BA0

/8/ FD 0.72/1.55 Floppy Disk Drive
Order No. 6ZB5130–0DN01–0BA0

/9/ Keyboard (Alphanumeric)
Order No. 6ZB5130–0DP01–0BA0

/10/ N–AT Operating Instructions
Order No. 6DS1222–8AA11

/11/ Manual: Instructions and Guidelines for Planning,
Installation and Operation
Order No.: C79000–G8076–C417

/12/ Instructions: SICOMP Printer, Interface Modules
Order No.: 6ZB5130–0FU01–0BA0

/13/ Installation Instructions: Extension of Operation Channel VB 100
Order No.: 6AV9070–1AD00

/14/ Installation Instructions: Extension of Operation Channel VS 100
Order No.: 6AV9070–1AC00

/15/ Working Guidelines "Installation of the SINEC H1 Bus System"
Order No.: AR 463–220

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