Industrial Automation

System *HIMatrix*

Service-PDA

User Manual

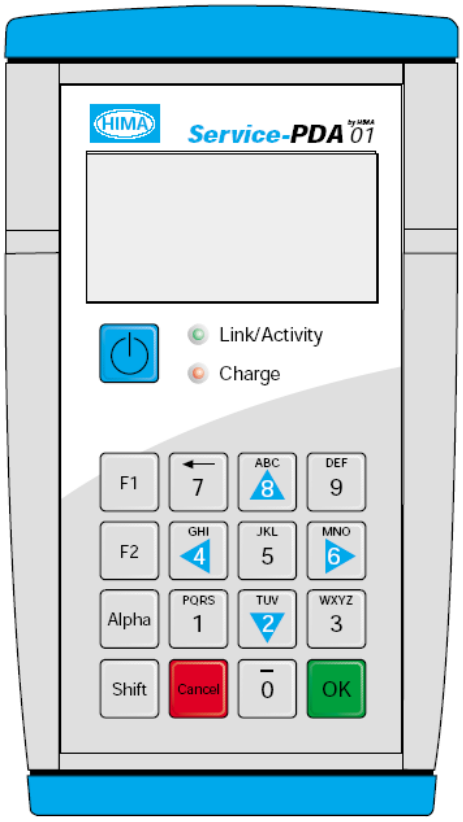

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Table of Contents

1 Description 1

1.1 Introduction 1

1.2 Technical Data 2

1.3 Scope of Delivery 2

1.4 The Service-PDA's MultiMedia Card (MMC) 3
1.4.1 Memory card 3
1.4.2 Storing Configurations on the MultiMedia Card (MMC) 4

1.5 Functions for Controller Operation 5
1.5.1 Establishing Connection to a Controller 5
1.5.2 Starting and Stopping a Controller 5
1.5.3 Reading out Data from a Resource 5
1.5.4 Send a Configuration to a Resource 6
1.5.5 Load Resource configuration from Flash memory 6
1.5.6 Boot Resource 6

1.6 Basic Functions of the Service-PDA 7

1.7 Controller Status Messages 8
1.7.1 CPU and COM Messages 8
1.7.2 User Program Status Messages 8
1.7.3 I/O Module Status Messages 8
1.7.4 Environment Data Status Messages 9
1.7.5 Displaying and setting Date and Time 9
1.7.6 Displaying CPU and COM OS Version 9

1.8 Connection between Service-PDA and ELOP II Factory (V 7.56.x and newer) 10
1.8.1 Manage Service-PDA Resource Data 11
1.8.2 Display and change Service-PDA Communication Parameters 11
1.8.3 Service-PDA Settings 11
1.8.4 Service-PDA Login 11

2 Operation 13

2.1 Prepare Service-PDA for Operation 13
2.1.1 Insert Batteries 13
2.1.2 Charge Batteries 13
2.1.3 Switching the Service-PDA ON/OFF 14

2.2 Indicators 14
2.2.1 Status Bar 15
2.2.2 Dialog Window 16
2.2.3 Messages 16
2.2.4 Safety Queries 16
2.2.5 Entry Fields 17
2.2.6 Inserting the MultiMedia Card (MMC) 18
2.2.7 The PDA displays following messages, if the MMC is inserted 19
2.2.8 Formatting the MultiMedia Cards 19

2.3 Prompting 20

2.3.1 Main Menu 20
2.3.2 PES Menu 20
2.3.3 Dialog Window “Connect by” 21
2.3.4 Menu Function “PADT Data” 21
2.3.5 Dialog Window “Connect to PES” 22
2.3.6 Dialog Window “Connect by” 22
2.3.7 Dialog Window “Found PES” 23
2.3.8 Menu Function “Default Setting” 23
2.3.9 Dialog Window ”Read Parameters by“ 24
2.3.10 PES Menu “Settings” 24
2.3.11 Dialog Window “Network Settings” 25
2.3.12 Dialog Window “Display Settings” 25
2.3.13 Dialog Window “Language” 25
2.3.14 Dialog Window “Reset” 26
2.3.15 Dialog Window “Software Versions” 26
2.3.16 Dialog Window “Login” 26
2.3.17 Reading Communication Parameters via MAC Address 27
2.3.17.1 Manually entering User Data 27
2.3.17.2 Select stored User Data 28
2.3.18 Dialog Window “PES Actions” 28
2.3.18.1 Dialog Window “Read States” 29
2.3.18.2 Dialog Window “Write States” 30
2.3.18.2.1 Dialog Window “Start/Stop PES” 31
2.3.18.2.2 Dialog Window “Safety Parameters” 31
2.3.18.2.3 Dialog Window “Reboot Resource” 33
2.3.18.2.4 Dialog Window “Load Res.-Config.” 33
2.3.18.2.5 Dialog Window “Change System ID” 34
2.3.18.2.6 Dialog Window “Network Settings” 34
2.3.18.2.7 Dialog Window “Set Date/Time” 35
2.3.19 PES Menu “Exchange PES” 36
2.3.19.1 Menu Function “Read out PES” 36
2.3.19.2 Menu Function “Set up new PES” 36
2.3.19.3 Dialog Window “Choose source” 37
2.3.20 Communication with ELOP II Factory 37

1 Description

This user manual describes the Service-PDA 01 with Firmware V2.18 operation and handling. The menu functions and displays as well as connecting the Service-PDA with controllers and the programming tool are explained, in detail.

1.1 Introduction

The Service-PDA (PDA = Personal Digital Assistant) is a portable, battery-operated device for the use with HIMatrix systems. With the Service-PDA, the user can locally read out the status of a controller and change the controller configuration via Ethernet without a PC or laptop and ELOP II Factory. For safety reasons, user programs in a controller cannot be changed with the Service-PDA.

After switching on, the Service-PDA is immediately ready for use. Functions with which data or states/modes in a controller can be changed are accessible only with “Read/Write” or “Administrator” rights and can be protected by a password.

The Service-PDA is operated by menu functions, whereby the user can select the menu languages *German* and *English*.

The Service-PDA provides 2 MB of internal Flash memory which is used to read data out of a controller. The configuration is created and administered in the Hardware Management of ELOP II Factory and can be transferred from the Programming and Debugging Tool (PADT) to the Service-PDA over Ethernet. The PADT configuration is stored on the MultiMedia Card (MMC) inserted into the corresponding slot.

Communication between the Programming terminal and the Service-PDA is initiated by the Programming terminal. If the Programming terminal establishes connection while the Service-PDA is connected to a controller with “Read/Write” or “Administrator” rights, the Programming terminal only gets “Read” rights. By use of the menu function “Set Admin Login” in the ELOP II Factory Control Panel higher rights can be assigned. However this terminates the communication between the Service-PDA and the controller.

If the Programming terminal is connected to a Service-PDA with “Read/Write” or “Administrator” rights, communication between the Service-PDA and a controller can only get “Read” rights.

1.2 Technical Data

Body	Rugged plastic case
Dimensions (L, W, H) in cm	approx. 16,5 x 9 x 3
Weight (without batteries)	approx. 300 g
Supply voltage	2,4 ... 3,0 VDC Operates on 2 x Mignon (AA) rechargeable batteries, NiMH 2000 mAh, or standard batteries
Current consumption	approx. 360 mA, display illumination OFF approx. 560 mA, display illumination max.
Minimum operating time (with NiMH 2000 mAh)	approx. 3 h
Operating temperature	0 °C to +50 °C
Storage temperature	-20 °C to +60 °C
Protection	IP 20
Humidity	max. 90 % relative humidity, non condensing
Display and indicators	- Multiline graphical LC display with backlight - LED “Link/Activity“ (green) to indicate Ethernet communication - LED “Charge“ (red) to indicate battery charge
Keys	- 1 x push button actuator ON/OFF - Keyboard with 16 keys
Connections	- 1 x network socket (RJ-45) on the top side - 1 x MultiMedia Card (MMC) slot on the top side - 1 x charging socket on the bottom side
Internal battery charger Operation with batteries	Supply voltage 12 V Current input ≤ 0,83 A Charging current approx. 1 A Trickle charge 25 mA
Reverse polarity protection	Protection diode 20

1.3 Scope of Delivery

The Service-PDA is supplied ready for use.
Scope of supply:

1 x Service-PDA
1 x Rechargeable batteries (2 pcs) NiMH 2000 mAh, size AA
1 x AC Adapter 12 V/0,83 A
1 x Data storage medium with instruction manual
1 x Patchcable grey 3 m
1 x MultiMedia Card 256 MB, HIMA Part-No. 98 0000 080

1.4 The Service-PDA's MultiMedia Card (MMC)

Beginning with ELOP II Factory version 7.56.x, resource configurations and user programs can be stored onto the PDA's MultiMedia Card (MMC). In this case, the MMC must be inserted into the corresponding memory card slot. One MMC should be used individually for each project.

Storing data on the MMC via the PDA is supported by firmware (FW) version 2.8 and newer. Firmware versions prior to 2.8 only store configurations in the PDA's internal flash memory.

NOTE:	A firmware upgrade is recommended for Service-PDA using firmware older than 2.8. The current firmware is available upon request.

1.4.1 Memory card

A MultiMedia Card is included in the scope of delivery for use with the Service-PDA. HIMA recommends using the memory card delivered with the package, which is formatted with a FAT16 file format.

Commercially available memory cards may also function with the PDA; however, HIMA does not guarantee their function. If memory cards other than those delivered with the package are used, they must be formatted with a FAT16 file format.

The usable memory size of a MMC cannot exceed 2 GB.

Attention:	Secure Digital (SD) memory cards can not be used.

1.4.2 Storing Configurations on the MultiMedia Card (MMC)

The PADT transfers resource configurations and user programs to the MMC inserted in the PDA. To transfer data from the PADT to the Service-PDA, a PDA must be added and parameterized in the project "configuration" in ELOP II Factory's Hardware Management. For more details on this subject, refer to ELOP II Factory's Online Help.

NOTE:	If the MultiMedia Card (MMC) has not been inserted into the PDA correctly, the following error message appears on the error status display: "No MMC available".

Using "Load New PES", resource configurations are written to a controller (refer to 2.3.19.2). If a controller is replaced, no previous controller readout is required because the PADT data are accessible with "PADT Data".
This may also be done using "Write States / Download Config".

Configurations can no longer be stored in the internal flash memory of PDA's with firmware version 2.8 and newer. Files read out from a controller can always be stored in the PDA's flash memory.

NOTE:	Data can not be exchanged between flash memory and MMC.

1.5 Functions for Controller Operation

The Service-PDA incorporates the most important functions of the Control Panel of ELOP II Factory, so that one can access controllers locally if necessary without the need for a personal computer, software and hard lock (Dongle).

1.5.1 Establishing Connection to a Controller

Establishing connection between the Service-PDA and a controller is done either by manually entering the MAC address or the IP address + SRS, or by selecting a resource from the resources data stored in the Service-PDA.

In order to be able to also communicate with controllers with unknown connecting parameters, the Service-PDA can provide a list of all HIMatrix controllers available in the network, from which the user selects the desired controller. For this the HIMatrix controllers must have a COM operating system starting from version 4.0.

The Service-PDA can read out and display the following communication parameters from a resource (see also chapter 1.5.3):

- IP address
- Subnet mask
- Standard gateway and
- SRS (system & rack ID)

The communication parameters can be edited and written back into the controller using the MAC address. This allows the communication parameters to be changed in case of an IP address conflict.

1.5.2 Starting and Stopping a Controller

With the Service-PDA the user can stop a controller and carry out a *Cold start* or *Warm start*.

1.5.3 Reading out Data from a Resource

The Service-PDA can read out the configuration plus user program of one controller and store the data in its internal Flash memory. The data remain in the Flash memory until the Flash memory is overwritten.

The data can be read from the Flash memory and be sent to another controller. This function is needed if an erroneous controller is exchanged at site and the new controller has to get the configuration and user program of the erroneous controller.

1.5.4 Send a Configuration to a Resource

Controllers are configured as part of a project in the Hardware Management of ELOP II Factory. The configuration contains the network settings and the user names for login if users have been created in the access management.
A configuration for one of the available resources can be selected and the network settings be used to establish communication to the controller.

1.5.5 Load Resource configuration from Flash memory

The Service-PDA can initiate loading the resource configuration from the Flash memory of the controller.

1.5.6 Boot Resource

The Service-PDA can be used to reboot a controller if the controller is in ERROR STOP, or if an operating system download was aborted.

1.6 Basic Functions of the Service-PDA

Apart from the functions to access a controller by the Service-PDA, there are further functions for displaying and changing settings, which concern the Service-PDA.

Function	Description
Display the connection status between Service-PDA and controller	The status (Online, Offline) and the used access rights (Read, Read/Write, Administrator) for the connection.
Firmware version	Service-PDA firmware version including CRC
Display and change communication parameters	The Service-PDA communication parameters (IP address, Subnet mask, Standard gateway, SRS) can be displayed and edited. The Service-PDA provides a built-in default configuration, which can be activated at any time.
Reset	Resets the communication parameters and the settings for display and language. All stored resource data are lost.
Display illumination	The display illumination can be set in steps.
Display contrast	The display contrast can be set in steps.
Battery charge status display	The battery charge status is represented by four bars in the first line of the display.

1.7 Controller Status Messages

1.7.1 CPU and COM Messages

The Service-PDA can display the current states of the CPU and COM of a controller. These are:

CPU States	COM States
STOP/VALID CONFIGURATION	STOP/VALID CONFIGURATION
STOP/INVALID CONFIGURATION	STOP/INVALID CONFIGURATION
STOP/OS LOADING	STOP/OS LOADING
STOP/LOADING	
RUN	RUN
ERROR STOP	ERROR STOP/OS LOADING (Emergency loader)

1.7.2 User Program Status Messages

The Service-PDA can display the current status and name of the user program. The following states are possible:

User Program States
RUN
STOP

FREEZE

1.7.3 I/O Module Status Messages

The Service-PDA can display the number of erroneous I/O modules of a controller.

1.7.4 Environment Data Status Messages

The Service-PDA can display the states for the following environment data of a controller:

Environment Data
Temperature
Power supply
Fan
Relay

1.7.5 Displaying and setting Date and Time

Date and time of a controller can be displayed and changed on the Service-PDA. Because the Service-PDA does not have a clock and time zone of its own, the time is displayed in UTC (Universal Time Coordinated).

1.7.6 Displaying CPU and COM OS Version

The CPU and COM OS version including CRC can be displayed for the following software components:

Software Component	Description
CPU OS	CPU operating system
CPU OS Loader	Emergency Loader for CPU OS
CPU Boot loader	Boot loader
COM OS	COM operating system
COM OS Loader	Emergency Loader for COM OS
COM Boot loader	Boot loader

1.8 Connection between Service-PDA and ELOP II Factory (V 7.56.x and newer)

The physical connection between the Service-PDA and the Programming terminal is done via Ethernet. Therefore the Service-PDA is equipped with an eight pin RJ-45 socket on the top.
A crossed patch cable must be used to connect the PDA *directly* with the Programming terminal. Alternatively, a normal CAT 5 cable can be used in conjunction with an external switch or a HIMatrix controller.

The connection is initiated by the Programming terminal and is also possible if the Service-PDA is already connected to a controller. ELOP II Factory provides a tab in the Control Panel with functions to operate and configure the Service-PDA.

The Service-PDA supports the following functions of the ELOP II Factory Control Panel:

Control Panel Tab	**Function**
Resource State	CPU/COM State Program Name Program State Faulty I/O Modules Force State Remaining Force Time [s]
OS	Serial Number CPU OS/COM OS Version
IP Settings	Global Settings Interface Settings Routing Settings Ethernet switch
Extra	Change System ID Update OS Clear Resource Configuration Set Admin Login

Furthermore the firmware of the Service-PDA can be updated via the Hardware Management.

1.8.1 Manage Service-PDA Resource Data

Resource data contain the configuration and the user identifications for a resource. These data are created in the Hardware Management as part of the project and can be transferred to the Service-PDA and stored onto the MMC. The resource data expedite the login to controllers on site (see chapter 1.5.3).

1.8.2 Display and change Service-PDA Communication Parameters

The communication parameters IP address, Subnet mask, Standard gateway and SRS (System & Rack ID) of the Service-PDA can be read out, edited and written back into the Service-PDA with ELOP II Factory.

It is also possible to set the communication parameters directly in the Service-PDA.

1.8.3 Service-PDA Settings

The Service-PDA is delivered with factory settings, which can be adapted by the user with exception of the MAC address. The settings are summarized in the following table.

Factory Settings	**User Settings**
MAC address	IP address
	Subnet mask
	Standard gateway
	System-, Rack-ID
	Language
	Display brightness
	Display contrast

1.8.4 Service-PDA Login

So that ELOP II Factory can communicate with the Service-PDA, a registration (login) to the Service-PDA is necessary.

The factory default for the user name is “Administrator“ and the password is not used. The user cannot change these settings.

2 Operation

2.1 Prepare Service-PDA for Operation

The Service-PDA is supplied with rechargeable batteries, battery charger and MMC. Prior to the first use the batteries must be inserted in the Service-PDA and charged.

NOTE:	The operation of the Service-PDA requires knowledge about the HIMatrix devices and about ELOP II Factory. It is not the task of this manual to convey this knowledge!

2.1.1 Insert Batteries

- ☐ Press the two latches on the lower side of the body and pull off the bottom lid.
- ☐ Open the battery case by pressing against the right side of the cover and fold the cover to the left.
- ☐ Pull the battery holder out of the battery case (consider the length of the leads) and insert the provided rechargeable batteries. Alternatively you can use standard batteries (size of Mignon, AA).

NOTE:	Pay attention to the correct polarity! Temporarily inserting the batteries the wrong way does not result in the destruction of the Service-PDA, however the batteries become rapidly depleted.

- ☐ Carefully push the battery holder back in the battery case and close the cover.
- ☐ Remount the bottom lid.

2.1.2 Charge Batteries

- ☐ Plug the provided plug power pack in the charging socket of the Service-PDA. Connect the plug power pack to the mains voltage.
- ☐ Charge the batteries for at least one hour ("Charge" LED lights up). After approx. 2 h the batteries are completely charged ("Charge" LED flashes) and trickle charge is activated. Overcharging the batteries is not possible.

  The batteries warm up while being charged. This is normal and does not impair their function.

  It is possible to switch on the Service-PDA during charging. This however can lead to the premature switch-off of the charging circuit. After switching off the Service-PDA briefly unplug the power pack from the Service-PDA to start a new charging cycle.

CAUTION:	- NEVER attach the Service-PDA to an external voltage supply, if you operate the equipment with primary batteries (not rechargeable)! - NEVER attach the Service-PDA to an external voltage supply without rechargeable batteries inserted!

Rechargeable batteries discharge themselves with approx. 1 % per day. If you do not use the Service-PDA for a longer time, remove the batteries from the device. Recharge the batteries before the next use.

NiMH batteries are not affected by the so-called “memory effect”, so that you can charge the batteries at any time. However it is recommended to not recharge the equipment after only a short use.

2.1.3 Switching the Service-PDA ON/OFF

- ☐ For switching the Service-PDA on press and hold the ON/OFF switch until the HIMA Logo appears in the display. After switching the Service-PDA on it is in the Main menu.
- ☐ For switching the Service-PDA off press the ON/OFF switch briefly.
  You can switch the Service-PDA off at any time. If you do this while you are in an input window, the settings are not stored.

2.2 Indicators

The Service-PDA is operated via menu functions, which are selected by cursor keys. Groups of menu functions are summarized in dialog windows (screens). In each dialog window a → Status Bar is displayed.

Commands, whose execution affect the function of the attached controller, are protected by safety queries from faulty operation. Furthermore the Service-PDA also displays notes and error messages.

2.2.1 Status Bar

The status bar is the first line in the display and is shown in all dialog windows. The status bar gives information about the connection status of the Service-PDA and the condition of the controller.

<table>
<tr><th>Status Bar left</th><th>Status Bar middle</th><th>Status Bar right</th></tr>
<tr><td>Offline (displayed as an empty rectangle)
The Service-PDA neither communicates with a controller, nor with a Programming terminal.</td><td>---</td><td>---</td></tr>
<tr><td rowspan="8">Online (displayed as a full rectangle)
The Service-PDA communicates either with a controller or with a Programming terminal.</td><td>PADT
A Programming terminal communicates with the Service-PDA.</td><td>---</td></tr>
<tr><td rowspan="7">ADMIN
The Service-PDA has “Administrator” access on the connected controller.
Read
The Service-PDA has only “Read” access to an attached controller.
Write
The Service-PDA has “Read/Write” access to the attached controller.</td><td>Emerg.
The CPU operating system of the controller is faulty. The Emergency loader is active.</td></tr>
<tr><td>Error
The controller is in ERROR STOP.</td></tr>
<tr><td>Init
The controller is initialized after switching on or a reboot.</td></tr>
<tr><td>OSDownl
A new CPU operating system is loaded into the controller.</td></tr>
<tr><td>RUN
The controller is executing an user program.</td></tr>
<tr><td>STOP/IC
STOP/INVALID CONFIGURATION
The controller is in STOP. No valid configuration is loaded.</td></tr>
<tr><td>STOP/OS
The controller is in STOP. A new operating system was loaded.</td></tr>
</table>

Status Bar left	Status Bar middle	Status Bar right
		STOP/VC STOP/VALID CONFIGURATION The controller is in STOP and can be started with *Warm start* or *Cold start*.

2.2.2 Dialog Window

A dialog window consists of a heading and the menu functions. By selecting a menu function an action is triggered or another dialog window is opened.

NOTE:	You find an overview of all dialog windows integrated in the Service-PDA in → Appendix A.

Use the cursor keys *Up/Down* of the keyboard to select a menu function. The selected menu function is displayed inversely. If a menu contains more text than can be shown on the display, small arrows on the screen margins indicate protruding text. Use the cursor keys *right/left* to roll long names of menu functions. If the number of menu functions is larger than the available lines, a small arrow appears on the left in the bottom line.

By pressing the *OK* button the selection is confirmed. The *Cancel* button gets you back to the parent menu.

2.2.3 Messages

Messages are started with "Info" or “Error” and provide information about whether an action was carried out successfully. *OK* closes the message box.

2.2.4 Safety Queries

Safety queries help to avoid faults in actions that cannot be undone. An action is only carried out if the user answers the safety query with *Yes* and confirms it with *OK*. With *Cancel* the action is aborted.

2.2.5 Entry Fields

Entry fields are used to enter user specific data. A dialog window can contain several entry fields.

Use the cursor keys *Left/Right* to move the cursor within the entry field. Use *Backspace* (key "7") to delete the last entered character.

IMPORTANT:	-	For entering numbers press the *Shift* key with the numeric key simultaneously.
	-	For entering characters press the *Alpha* key with the character key simultaneously. Several letters are assigned to one key on the Service-PDA. If necessary, press a button repeatedly until the desired letter is shown. When releasing the *Alpha* key, the cursor automatically moves to the next position.

If there are two or more entry fields on a screen, use the cursor keys *Up/Down* to navigate between the entry fields.

Entries are confirmed with *OK. Cancel* aborts the operation and opens the parent dialog window.

2.2.6 Inserting the MultiMedia Card (MMC)

The MultiMedia Card (MMC) can be inserted in the PDA's memory card slot at any time.

- ☐ Insert the MMC in the PDA with the bevelled edge to the lower left (see photo).
  Please be careful to avoid damage to the PDA and MMC.
- ☐ To remove the MMC, extract it from the corresponding slot. Do not re-move the MMC during read or write operations!

2.2.7 The PDA displays following messages, if the MMC is inserted

Message	Message	Note
Reading out Card. Please wait.		MMC is automatically read out
	Loading completed.	Resources are listed with Name, IP, SRS and CRC
	Config. could not be loaded.	MMC is empty
	Card format is not supported. Continue with Ok.	MMC not formatted. In this case, this card must be formatted (Refer to 2.2.8)

2.2.8 Formatting the MultiMedia Cards

MultiMedia Cards must be formatted with the FAT16. If the MMC is not formatted with FAT16, the MMC must be formatted using a card reader (not supplied by HIMA) and a PC. The PC recognizes the card reader as a removable medium.

- ☐ In Windows Explorer, right click on the drive letter corresponding to the removable medium.
- ☐ Select the function *Format…* from the context menu and the file system FAT or FAT16 from the dialog box "File system".
- ☐ Click the Start button to start the formatting process. Wait for the message "Format Complete" prior to removing the card from the card reader.

2.3 Prompting

After switching the Service-PDA on the Main screen is opened, where the functions of the Service-PDA can be selected.

You find an overview of all dialog windows in → Appendix A.

2.3.1 Main Menu

The main screen contains the following menu functions:

Menu Function	Description
Exchange PES	Prepare a new controller in exchange for an old device.
Connect to PES	Prepare communication with a controller (see PES menu).
Settings	Display and change the Service-PDA settings.

2.3.2 PES Menu

The dialog window "PES menu" contains the following menu functions:

Menu Function	Description
Open Connection	Establish communication with a controller (see menu *Connect by*).
Change IP	Read and change IP settings of a controller via its MAC address.

2.3.3 Dialog Window “Connect by”

Establishing communication between the Service-PDA and a controller can be carried out the following ways:

Menu Function	Description
PADT Data	Select a controller whose communication parameters are stored on the MMC.
IP & SRS	Enter a known IP address and SRS (→*Connect to PES*).
MAC Address	Enter a MAC address. Then the unknown parameters IP address and SRS are read from the controller.
Search	Automatic identification of HIMatrix controllers (as of COM operating system V4.x). Identified controllers are listed and can be selected by the user.
Default Setting	Prepare communication with the factory defaults of a controller.

2.3.4 Menu Function “PADT Data”

The dialog window "PADT Data" lists the resource configurations, which were transferred to the Service-PDA from the Programming terminal (PADT). It displays Resource name, IP address, SRS and CRC (Cyclic redundancy check).

This allows the Service-PDA to connect to a controller without knowing the network parameters of the controller.

- ☐ Select a resource from the list and confirm your selection with the *OK* key.
- ☐ If a users list was created in the Access management of ELOP II Factory, select a user from the list.
- ☐ In the dialog window → “Login“ enter the password of the user.
  Note that the access rights are automatically adapted to the privileges of the user.

2.3.5 Dialog Window “Connect to PES”

The dialog window "Connect to PES" contains the following entry fields:

Entry Field	Description
IP Address	IP address of the controller with which connection is to be established.
SRS	System ID and Rack ID of the controller with which connection is to be established.

- ☐ In the entry fields enter the communication parameters of the controller.
  - o Use the cursor keys to move the cursor to the desired position.
  - o To enter figures simultaneously press the *Shift* key with the number key.
  - o Push *Backspace* (key "7") to delete the character left of the cursor.
- ☐ Confirm your entries with *OK*.
  - o If a controller with the entered communication parameters exists in the attached network, the → Dialog Window “Login” opens (see also chapter 2.3.16) .
  - o If a connection to the controller could not be made because of wrong communication parameters, you get an error message. Confirm the error message with *OK* and correct your settings.

2.3.6 Dialog Window “Connect by”

In the dialog window "Connect by" enter the MAC address of the controller that you want to connect the Service-PDA to.

- ☐ Enter the controller MAC address. The MAC address is on a sticker near the network connections or on the CPU/COM assembly (only F60).
  - o Use the cursor keys to move the cursor to the desired position.
  - o To enter figures simultaneously press the *Shift* key with the number key.
  - o To enter characters simultaneously press the *Alpha* key with the character key. Press a key repeatedly to switch between upper case and lower case letters. Release the *Alpha* key to move the cursor further.
  - o Push *Backspace* (key "7") to delete the character left of the cursor.
- ☐ Confirm your entry with *OK*.
  - o If a controller with the entered MAC address exists in the attached network, the → Dialog Window “Connect to PES” opens.
- ☐ Push *OK* in the Dialog Window “Connect to PES” without changing the shown parameters. You get to the dialog window "Login", where you can manually enter the → User data.
- ☐ The user "Administrator" is preset after switching on the Service-PDA. Otherwise the latest user name is shown. Push *OK*, if you don't want to change the setting. You get to the → Dialog Window “PES Actions (see also chapter 2.3.18).

2.3.7 Dialog Window “Found PES”

The dialog window "Found PES" lists all HIMatrix controllers found in the network together with their MAC address, IP address and System.Rack ID.

- ☐ Use the cursor keys *Left/Right* to navigate between the columns "MAC address", "IP address" and "SRS".
- ☐ Use the cursor keys *Up/Down* to select a controller.
- ☐ Press *OK* to establish communication with the selected controller.
- ☐ The dialog window “Login” is opened where you can manually enter the → User data (see also chapter).
- ☐ The user "Administrator" is preset after switching on the Service-PDA. Otherwise the latest user name is shown. Push *OK*, if you don't want to change this setting. You get to the → Dialog Window “PES Actions” (see also chapter 2.3.18)..

2.3.8 Menu Function “Default Setting”

The menu function *Default Setting* opens the dialog window "Connect to PES" in which the factory defaults for the IP address and SRS are already preset.

If you want to connect the Service-PDA with a factory-new controller, it suffices to confirm the settings with *OK*.

You can, however, overwrite the shown parameters and establish communication to a controller already configured.

2.3.9 Dialog Window ”Read Parameters by“

The dialog window "Read Parameters by" serves for entering the MAC address of a controller, whose communication parameters are to be determined.

☐ Enter the controller MAC address by overwriting the shown MAC address.

NOTE:	The MAC address can be taken from a sticker, which is located on the CPU/COM assembly of a modular controller (HIMatrix F60). For compact controllers you find the sticker on the underside of the case near the Ethernet socket.

- o Use the cursor keys *Left/Right* to move the cursor to the desired position.
- o To enter figures simultaneously press the *Shift* key with the number key.
- o To enter characters simultaneously press the *Alpha* key with the character key. Press a key repeatedly to change between the letters. Release the *Alpha* key to move the cursor further.

☐ Enter the password belonging to the user name. The password must be created in the Access management and stored in the controller!

☐ Terminate the entries with *OK*.

- o If the Service-PDA could detect a controller with the given MAC address, you get to the dialog window "IP Settings" (see also chapter 1.5.1, → Establishing Connection to a Controller).

2.3.10 PES Menu “Settings”

The following settings for the Service-PDA can be carried out in the dialog window "Settings":

Menu Function	Description
Network	Display the MAC address of the Service-PDA and display and change IP address, Subnet mask, Standard gateway and System ID.
Display	Display and change brightness and contrast
Language	Select the menu language German/English
Reset	Restore the factory defaults
Software Versions	Show the software versions and check sums

2.3.11 Dialog Window “Network Settings”

You can read the MAC address of the Service-PDA in the dialog window "Network Settings". In addition, you can view and change the communication parameters IP address, Subnet mask, Standard gateway and System.Rack ID.

- ☐ Enter the communication parameters of the Service-PDA.
  - o Use the cursor keys to move the cursor to the desired position.
  - o To enter figures simultaneously press the *Shift* key with the number key.
  - o Push *Backspace* (key "7") to delete the character left of the cursor.
- ☐ Confirm your entries with *OK*.

2.3.12 Dialog Window “Display Settings”

To improve the readability, the display of the Service-PDA is equipped with a backlighting which the user can adjust in steps. In addition, the contrast is adjustable.
The settings for brightness and contrast are shown graphically.

- ☐ Change brightness and contrast according to your desires.
  - o Use the cursor keys *Up/Dow*n to change between brightness and contrast.
  - o Use the cursor keys *Left/Right* to change the chosen setting.
- ☐ Confirm your entry with *OK*.

NOTE:	Alterations of the brightness and contrast settings become immediately effective. However, if you leave the dialog window with *Cancel*, the current settings remain valid only until the device is turned off.

2.3.13 Dialog Window “Language”

For prompting the user can choose between the languages "English" and "German".

- ☐ Select the desired language.
  - o Use the cursor keys *Up/Down* to mark *German* or *English*.
- ☐ Confirm your selection with *OK*.

2.3.14 Dialog Window “Reset”

With *Reset* the factory defaults of the Service-PDA are activated again. These are:

- Deleting all resource configurations stored on the Service-PDA.
- Activating the default communication parameters
  IP address: 192.168.0.22
  Subnet mask: 255.255.252.0
  SRS: 60000.000.001
  Standard gateway: 0.0.0.0
- Resetting display brightness and contrast.

The factory defaults are activated after a warning note and the confirmation of a safety query.

2.3.15 Dialog Window “Software Versions”

The dialog window "Software Versions" shows the version numbers and check sums (CRC) of the CPU operating system and the CPU boot loader of the Service-PDA.

2.3.16 Dialog Window “Login”

So that the Service-PDA can establish communication with a controller, a user registration (Login) is required. The → User data (user name, password) can either be

- entered manually or
- selected from the resource list saved in the Service-PDA (if an Access management has been created).

2.3.17 Reading Communication Parameters via MAC Address

The procedure for reading the communication parameters via the MAC address is described in chapter 2.3.6, → Dialog Window “Connect by”.

The communication parameters shouldn't be changed manually any more.

2.3.17.1 Manually entering User Data

The dialog window "Login" contains the following selection and input fields:

Selection/Input Field	Description
Encryption [Yes/No]	Determines whether the login process between the Service-PDA and the controller is scrambled
User name	After switching on the Service-PDA the user name is set to "Administrator" and can be changed
Password	By default the password is empty and can be completed
Access Type [Administrator Read Read/Write]	Selection of the user rights. The standard setting is "Administrator"

- ☐ Select whether encryption has to be switched on or off (starting from COM operating system V.6.x)
  Particularly in networks with unknown participants encryption aggravates spying on login data by unauthorized persons.
- ☐ Correct the user name if required. The user name must already be stored in the controller!
  - o Use the cursor keys to move the cursor to the desired position.
  - o To enter figures simultaneously press the *Shift* key with the number key.
  - o To enter characters simultaneously press the *Alpha* key with the character key. Press a key repeatedly to switch between upper case and lower case letters. Release the *Alpha* key to move the cursor further.
  - o Push *Backspace* (key "7") to delete the character left of the cursor.
- ☐ Enter the password belonging to the user name. The password must be created in the Access management and stored in the controller!
- ☐ Select the access type.
  - o Use the cursor keys Left/Right for selection.
  - o Note that this user probably has restricted rights only (e.g. not Administrator).

- ☐ Terminate your entries with *OK*.
  - o If the entered user data are correct, the → Status Bar shows Online status, (full rectangle) followed by the user rights and the CPU status of the controller.
    Note that the assigned rights can differ from the requested rights.

2.3.17.2 Select stored User Data

Resources stored in the internal flash memory or on the MMC are listed with their names. After the selection of a resource the user list is shown, if the configuration of the resource contains a user administration. The login is carried out after the manual input of the password.

Note that you only have restricted rights on the controller with “Read” access!

2.3.18 Dialog Window “PES Actions”

The dialog window “PES-Actions“ contains the following menu functions:

Menu Function	Description
Read states	Read and show different states of the attached controller
Write States	Display and change states of the attached controller, e.g. starting/stopping the user program. The functions of this menu aren't accessible with “Read-only” rights!

2.3.18.1 Dialog Window “Read States”

For executing the functions in the dialog window "Read states" read-only access is sufficient. The following functions are available:

Menu Function	**Description**
CPU & COM	Display the CPU and COM states of the PES (e.g. RUN, STOP etc.
Program & I/O	Display the name and the state of the user program as well as the number of faulty I/O modules
Safety	Displays the status of the safety parameters Main Enable, Autostart, Start/Restart, Loading allowed, Test Mode allowed, Change var. OLT, Forcing allowed, Stop on F.Timeout. The parameters correspond to those in ELOP II Factory Control Panel.
Environment Data	Display the temperature status, power supply, fan status and relay status. The meaning of the values can be found in the data sheet of the respective controller
CPU & COM Versions	Display the version numbers and check sums (CRC) of the CPU and COM operating systems
Network Settings	Display MAC address, IP address, Subnet mask, Standard gateway, system ID and Rack ID of the controller
Configuration CRC	Display the controller’s check sum (CRC)
Date/Time	Display Date and Time of the PES in UTC (Universal Time Coordinated)
Upload Config.	Read the configuration from a resource and store the data in the internal Flash memory of the Service-PDA

2.3.18.2 Dialog Window “Write States”

The commands summarized in the dialog window "Set PES States" influence the function of the attached controller and can therefore only be executed by users who have at least “Read/Write” access.

NOTE:	The functions in the dialog window "Set PES States" can also be found in the "Extra" menu of the Control Panel of the ELOP II Factory Hardware Management. In the following only the operation of the Service-PDA is dealt with. You find details about the menu functions in the Online help for the ELOP II Factory Hardware Management in the table of contents under *Hardware Management* | *The Control Panel* | *Control Panel menu*.

The following functions are available:

Menu Function	Description
Start/Stop	Starts and stops the user program in a controller and display the states of CPU, COM and user program
SafetyT	Main Enable permits or inhibits changing the safety parameters.
Reboot Resource	Reboots the resource after an ERRORSTOP
Load Res.-Config.	Reloads the configuration of the controller from its Flash memory
Change System ID	Changes the System ID and/or Rack ID of the controller (requires “Administrator” access)
Network Settings	Displays and changes IP address, Subnet mask and Standard gateway (requires “Administrator” access)
Set Date/Time	Displays and changes controller date and time
Download Config	Writes a configuration stored in the Flash of the Service-PDA into a controller (see also Upload Config.)

2.3.18.2.1 Dialog Window “Start/Stop PES”

For starting the user program there are the options *Warm start* and *Cold start*.

- ☐ Select *Warm start* or *Cold start*.
  - o Use the cursor keys *Up/Down* for this.
- ☐ Confirm the selection with *OK*.
  - o After a safety query the selected function is executed.

NOTE:	If the resource could not be started, probably the CPU switch "Start/Restart allowed" is deactivated.

1.1.1.1.1. Dialog Window “Safety Parameters” The dialog window “Safety parameters” lists the status of safety parameters. *Change Safety* opens the dialog window with the same name. Where you can change the status of the parameters. Please note that the following functions require at least Read/Write access.

NOTE:	Main Enable must be activated in order to change safety parameters.

Menu Function	**Description**
Set Main Enable	Changing the safety parameters is permitted
Reset Main Enable	Changing the safety parameters is inhibited
Change Safety	Changing the status of the safety parameters (ENABLED / DISABLED).
Main Enable	Display Status of Main Enable
Autostart	Display Status of Autostart
Start/Restart	Display Status of Start/Restart allowed
Loading allowed	Display Status of Loading allowed
Test mode allowed	Display Status of Test Mode allowed
Change var. OLT	Display Status of Change variables in OLT allowed
Forcing allowed	Display Status of Forcing allowed
Stop on F.Timeout	Display Status of Stop on Force Timeout

Dialog Window “Change Safety”
In the dialog window “Change Safety” you can change the safety parameters by using the courser keys Right/Left (ENABLED, DISABLED).

- ☐ Select a safety parameter with the courser keys Up*/Down*.
- ☐ Set the safety parameter.
    - o Use the courser keys *Right/Left.*
- ☐ Repeat the above steps for the other safety parameters.
- ☐ Confirm your settings with *OK*.

  Note that if Main Enable is deactivated, an error message is output.

Note:	With *OK* all settings of the safety parameters are transferred, including the parameter, that not changed.

2.3.18.2.3 Dialog Window “Reboot Resource”

The controller only accepts the menu command Reboot Resource, if it is in the state ERROR STOP or STOP/OS LOADING.

Action	Resource State	Command	Result
The CPU is in STOP. An operating system download is started. The OS download is aborted.	The CPU is in the state OS Download	Reboot	The CPU goes to OS DOWNLOAD
The CPU is in STOP. An operating system download is started with a wrong operating system.	The CPU is in the state OS Download	Reboot	The CPU goes to STOP
None	The CPU is in the state FAILURESTOP	Reboot	The CPU boots
None	The CPU is in the state STOP	Reboot	Error message, a reboot is not permitted in this state.
None	The CPU is in the state RUN	Reboot	Error message, a reboot is not permitted in this state.

NOTE:	A factory-new controller always is in the state ERROR STOP and must be reset first with *Reboot Resource* prior to the first download of an user program.

- ☐ Select *Reboot Resource* and confirm your selection with *OK*.
  - o The function is executed after a safety query.

2.3.18.2.4 Dialog Window “Load Res.-Config.”

The configuration of a controller is read from its COM flash file system with *Load Res.-Config.* and written back into the CPU and COM. This is similar to a "Restore".

- ☐ Select *Load Res.-Config.* and confirm the selection with *OK*.
  - o The function is executed after a safety query.

2.3.18.2.5 Dialog Window “Change System ID”

Change System ID gets you to the window with the same name where you can change the System ID and the Rack ID of the attached controller.

- ☐ Select *Change System ID* and confirm the selection with *OK*.
  - o The dialog window "Change system ID" opens.
- ☐ Replace the shown system ID and Rack ID.
  - o Use the cursor keys to move the cursor to the desired position.
  - o To enter figures simultaneously press the *Shift* key with the number key.
  - o Push *Backspace* (key "7") to delete the character left of the cursor.
- ☐ Terminate the entries with *OK*.
  - o After a safety query the changes are executed.

2.3.18.2.6 Dialog Window “Network Settings”

Network Setting gets you to the dialog window of the same name in which the MAC address and the current communication parameters IP address, Subnet mask and Standard gateway are shown. The communication parameters of the controller can be changed by the Service-PDA.

- ☐ Select *Network settings* and confirm the selection with *OK*.
  - o You get to the dialog window “Network settings“.
- ☐ Replace the communication parameters shown.
  - o Use the cursor keys to move the cursor to the desired position.
  - o To enter figures simultaneously press the *Shift* key with the number key.
  - o To enter characters simultaneously press the *Alpha* key with the character key. Press a key repeatedly to switch between upper case and lower case letters. Release the *Alpha* key to move the cursor further.
  - o Push *Backspace* (key "7") to delete the character left of the cursor.
- ☐ Terminate the entries with *OK*.
  - o After a safety query the changes are executed.

2.3.18.2.7 Dialog Window “Set Date/Time”

Set Date/Time gets you to the dialog window of the same name in which the current date and time of the attached controller is shown at the bottom line of the window. The Service-PDA can change both parameters.

- ☐ Select *Set Date/Time* and confirm your selection with *OK*.
  - o The dialog window “Set Date/Time” opens.
- ☐ Replace the displayed data.
  - o Use the cursor keys to move the cursor to the desired position.
  - o To enter figures simultaneously press the *Shift* key with the number key. Note that you should enter the time in UTC!
- ☐ Terminate the entries with *OK*.
  - o After a safety query the changes are executed.

2.3.19 PES Menu “Exchange PES”

The dialog window “Exchange PES” provides the following functions:

Menu Function	Description
Read out PES	Read out configuration and user program from a resource and store them in the internal Flash memory of the PDA. *This is the “Backup” function* (see also *Read Data*.
Set up new PES	Load configuration and user program into a new controller.

2.3.19.1 Menu Function “Read out PES”

Read out PES gets you to the dialog window “*Connect by*“, where you can select the parameters to establish communication to a controller with.

Subsequently enter your → User data.

NOTE:	You can only stop a controller if you have “Administrator” rights!

A status message on the Service-PDA tells you when the data is read from the controller and saved in the internal Flash memory of the PDA. This is similar to a “Backup”. The communication with the controller is then terminated.

NOTE:	You can read a controller several times; the Service-PDA however can only store the data of one controller. Repeated reading overwrites the stored data. The data are non-volatile and are still available after switching the Service-PDA OFF/ON.

2.3.19.2 Menu Function “Set up new PES”

Set up new PES gets you to the dialog window “*Connect by*“, where you can select the parameters to establish communication to a controller with.

Subsequently enter your → User data.

NOTE:	You need “Administrator” rights to download a configuration and user program into a controller! If you only get "Read" access to the controller despite selecting "Administrator", presumably a Programming terminal (PADT) with administrator rights is logged in on the controller simultaneously.

After the login you get to the dialog window “Choose Source”.

2.3.19.3 Dialog Window “Choose source”

The dialog window “Choose Source“ provides the following functions:

Menu Function	Description
Read Data	Writes a configuration and user program (if available) back into a controller that was backed up in the internal Flash memory of PDA with *Read out*. *This is the “Restore” function.*
PADT Data	Writes data into a controller that were transferred from the Programming terminal to the Service-PDA earlier.

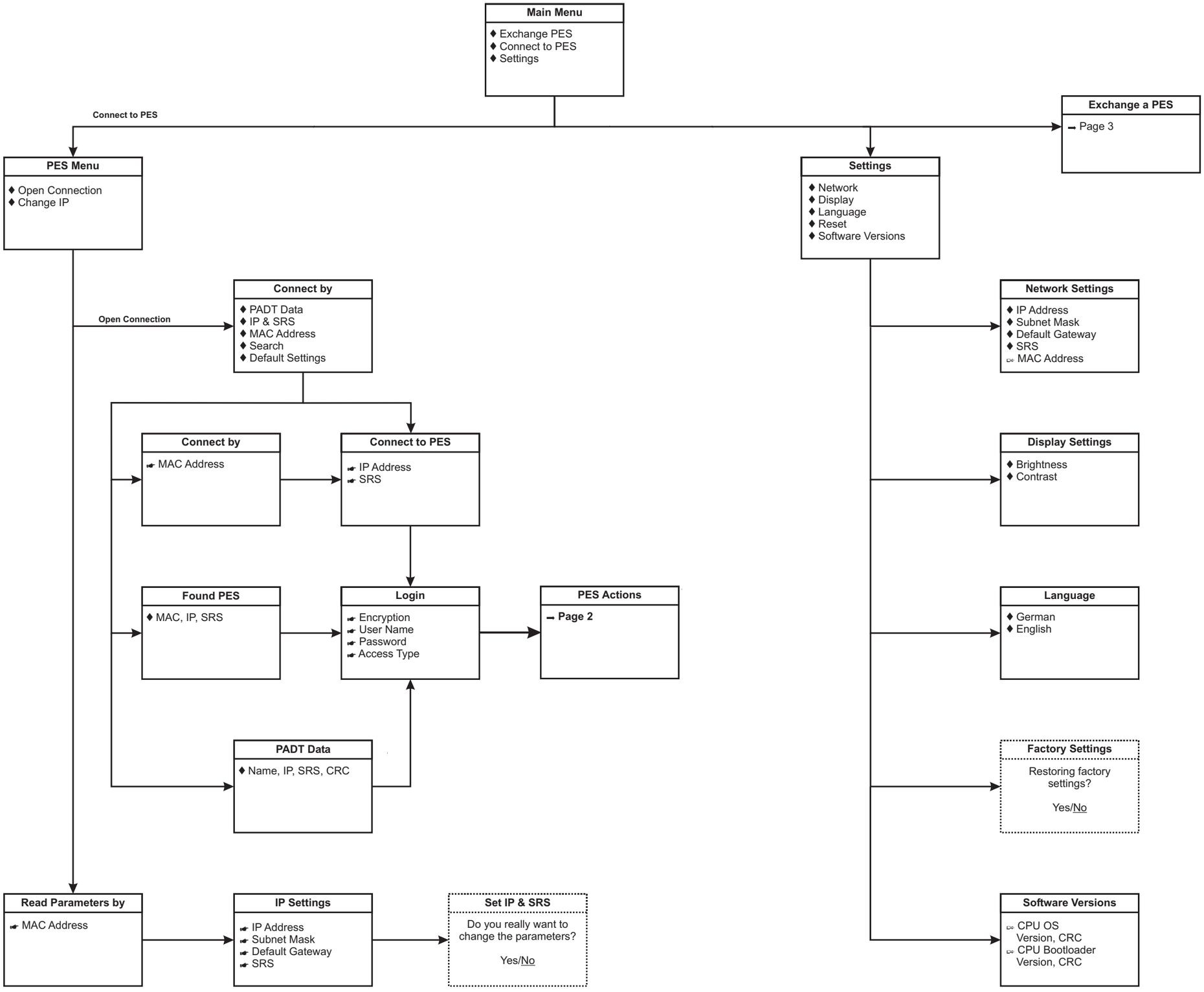
For safety reasons it is not possible to stop a controller in this dialog window. If a controller is in RUN it must be stopped via → Write States.

2.3.20 Communication with ELOP II Factory

ELOP II Factory initiates communication between ELOP II Factory and the Service-PDA. The Service-PDA cannot connect with ELOP II Factory by itself (→ Introduction).

Cancel aborts establishing communication.

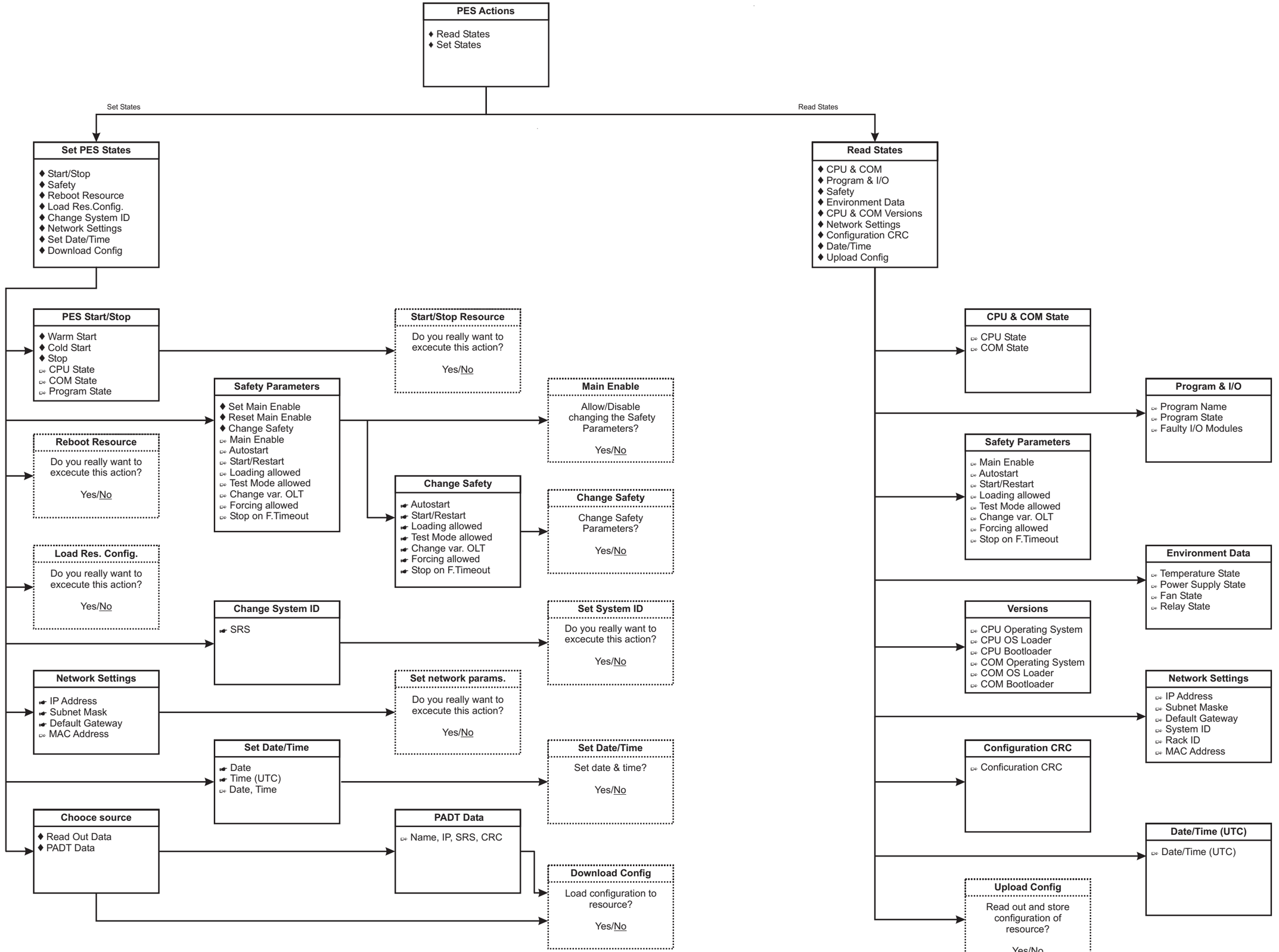
Overview of the Menu Structure



Legend

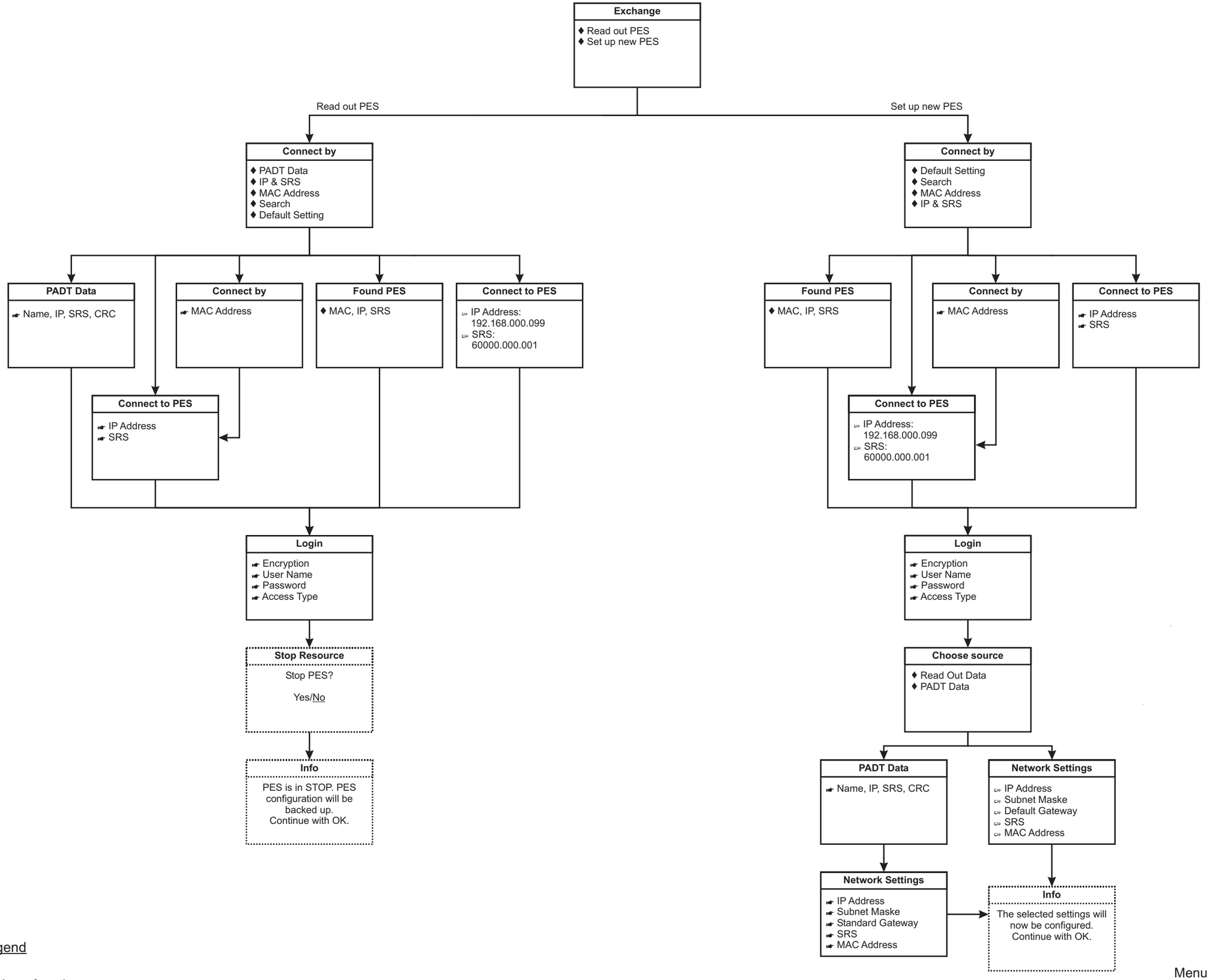
♦ Menu function
☛ User entry
▱ Display

Menu structure Service PDA
Version 2.18



Legend

♦ Menu function
☛ User entry
▻ Display



Legend

♦ Menu function
☛ User entry
⇨ Display

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