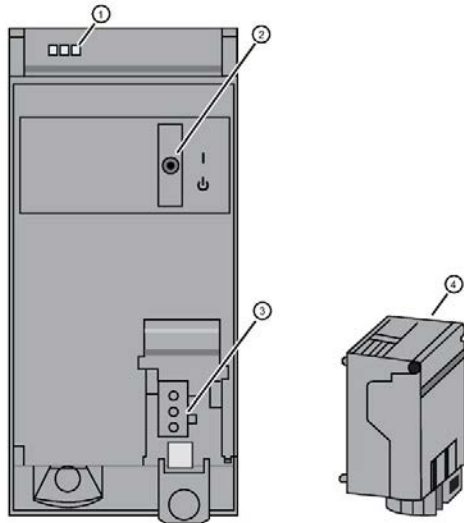


2.2 Operating and display elements

The following figure shows the control and connection elements of the PS 60W 24/48/60VDC behind the front panel as well as the power connector.



- ① LED displays indicating the current operating state and diagnostic status of the PS
- ② On/off switch
- ③ Power inlet for the power connector
- ④ Power connector; inserted in delivery state

Figure 2-2 View of the PS 60W 24/48/60VDC (without front panel) and of the power connector

Wiring

3.1 Connecting the supply voltage (PS 60W 24-48-60VDC)

This section contains information on connecting the power supply module to the mains voltage.

Mains connection

 **WARNING**

Installation instructions

Risk of death or serious injury.

Observe the general installation instructions applicable in your country when wiring the power supply module.

Fuse the power cables according to their conductor cross-section.

The following applies to mains connection of the power supply module using the power connector:

- The power connector enables connection of the input voltage to the power supply module with touch protection.
- The power connector enables permanent wiring.
- The power connector features internal strain relief.
- The power connector ensures reverse polarity protection. A coding element assigns each power connector to a specific type of power supply module on delivery. A connector coded for 230 V AC does not fit in the connection to a 24 V DC power supply module.

 **DANGER**

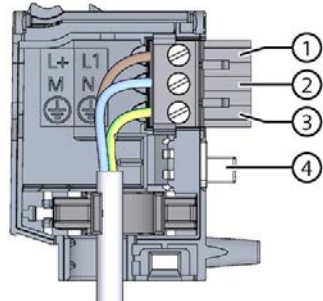
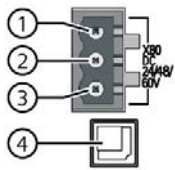
Do not manipulate or omit the coding element

Changes to the coding element can result in dangerous states in your plant and/or damage to the outputs of the I/O modules. In order to avoid damage, do not manipulate the coding. The coding element may not be omitted.

Connection plug

The connection plug for the power supply is plugged in when the power supply module ships from the factory.

The following figure shows the assignment of the connection plug:

Connector	PS connection	Name
		<ul style="list-style-type: none"> ① L ② N ③ Protective conductor ④ Coding element

Cables

You need flexible cables to wire power to the power supply module. The conductor cross-section must be 1.5 mm² (AWG: 16). The diameter of a 3 x 1.5 mm² sheathed cable can be no more than 8.5 mm. The ground conductor of flexible cables must be longer than the two other conductors. The fusing must meet the requirements of the corresponding control cabinet.

Reference

You can find additional information about wiring the mains connector in the system manual S7-1500 automation system.

Siemens recommends the use of devices from the SITOP family of products for applications with load power supplies. Wiring information is available in the documentation for the load power supply.

Parameters

4.1 Parameters

Parameters of the PS 60W 24/48/60VDC

Specify the module properties at the various parameters in the course of your STEP 7 parameterization. The following table lists the configurable parameters.

The parameters you define in the user program are transferred to the module by means of WRREC instruction (Configuration in RUN); see chapter Parameter data record (Page 22).

Table 4- 1 Configurable parameters and their defaults

Parameters	Range of values	Defaults	Configuration in RUN
Diagnostic/maintenance			
• Supply voltage missing	Yes/No	No	Yes
• Switch position Off	Yes/No	No	Yes

Note

Diagnostic alarms without supply voltage

Regardless of whether the supply voltage is missing or the On/Off switch is set to "Off", the power supply module of the CPU or the IM is still capable of generating diagnostic alarms because it is provided sufficient power from the backplane bus. The entire diagnostic functionality is still available.

Interrupts, diagnostic alarms, error and status alarms

5

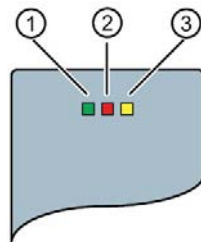
5.1 Status and error displays

Introduction

Diagnostics by means of LEDs is a basic tool for troubleshooting. Usually, you can pinpoint the source of error more precisely by analyzing the module status information in STEP 7, or in the diagnostic buffer of the CPU. These locations contain the corresponding error information in plain text.

LED displays

The following figure shows the LED displays (status and error displays) of PS 60W 24/48/60VDC.

















- ① RUN LED
- ② ERROR LED
- ③ MAINT LED

Figure 5-1 LED displays of PS 60W 24/48/60VDC

Meaning of the LED displays

The following table explains the meaning of the status and error displays. You can find remedial measures for diagnostic alarms in chapter Diagnostic alarms (Page 15).

Table 5- 1 Status and error displays RUN/ERROR/MAINT

LED			Meaning	Remedy
RUN	ERROR	MAINT		
 Off	 Off	 Off	OFF; PS returns no bus voltage <ul style="list-style-type: none"> External error; diagnostics is disabled PS not powered in the system, no supply voltage at the PS and CPU/IM. 	Switch on power to the PS Check the supply voltage Switch on PS
 On	 On	 On	Startup; all LED displays are lit briefly after system startup, or during module restart after firmware update.	-
 Flashing	Not relevant	Not relevant	Startup, PS returns bus voltage, PS waiting for parameterization	-
 Off	 Flashing	Not relevant	Error, PS supplies no bus voltage <ul style="list-style-type: none"> Supply voltage missing and diagnostics is enabled Internal error 	Evaluate diagnostic alarms and take appropriate remedial measures; see chapter Diagnostic alarms (Page 15)
 Off	Not relevant	 On	Maintenance request, PS returns no bus voltage <ul style="list-style-type: none"> Switch is off; power is present and diagnostics is enabled 	Switch on PS
 Flashing	 Flashing	 Flashing	Malfunction LEDs flash persistently	Replace PS

5.2 Diagnostic alarms

Diagnostic alarms

The following table shows the meaning of the diagnostic alarms and possible remedial measures for the respective cause.

One of the following "LED images" indicates directly on the PS that a diagnostic alarm was triggered.

- The red ERROR-LED is flashing.
Indicates external or internal errors.
- The yellow MAINT-LED is lit.
Maintenance; a maintenance request is active.
- All three LEDs are flashing permanently
The PS is in "Defective" state.

In STEP 7, the diagnostic results are displayed in plain text by means of the online and diagnostic view. You can read the diagnostic data records by means of the "RDREC" instruction.

Table 5- 2 Diagnostic alarms, their meaning and remedies

Diagnostic alarm	Error code		Meaning	Reaction	Remedial measures
	Dec.	Hex.			
External error					
Supply voltage missing	266D	010AH	No supply voltage, or incorrect insertion of the power connector into the PS.	1	Check the supply voltage.
Internal error					
Overtemperature	5D	0005H	Overtemperature on the printed circuit board.	3	Check PS load. Isolate PS from mains. Wait one minute before you power on the PS again.
Overvoltage back-plane bus	267D	010BH	High EMC interference or a defective PS, CPU or IM inserted.	3	Eliminate electromagnetic interference. Check inserted modules and bus connectors. Isolate PS from mains. Wait one minute before you power on the PS again.
Low voltage/overload in the power segment	281D	0119H	A voltage dip below the valid limit has been detected in the power segment to the right of the PS.	2	Check the modules in the affected segment; replace if necessary. Switch off the PS at the switch, then switch on again.
Error in the power segment	282D	011AH	PS or module to the right of the PS is defective.	2	Replace the defective module. Switch off the PS at the switch, then switch on again.
Safety shutdown	285D	011DH	Reliable operation of the module is no longer guaranteed.	3	Check ambient conditions. Isolate PS from mains. Wait one minute before you power on the PS again.
Maintenance					
Switch turned off	268D	010CH	The PS is switched off.	1	Switch on PS.

Technical specifications

Technical specifications of the PS 60W 24/48/60VDC

	6ES7505-0RA00-0AB0
Product type designation	PS 60W 24/48/60V DC
General information	
Hardware version	FS02
Firmware version	V1.0.1
Engineering with	
STEP 7 TIA Portal can be configured/integrated as of version	V12 / V12
STEP 7 can be configured/integrated as of version	V5.5 SP3 or higher
FH technology	
Redundancy	
Redundancy capability	yes
• For increasing performance	yes
Power supply	
Rated value (DC)	24 V / 48 V / 60 V
Valid range low limit (DC)	static 19.2 V, dynamic 18.5 V
Valid range high limit (DC)	static 72 V, dynamic 75.5 V
Reverse polarity protection	yes
Short-circuit protection	yes
Power failure backup	
Power failure backup time	20 ms
Input current	
Current consumption (rated value)	3 A
Rated value at 48 V DC	1.5 A
Rated value at 60 V DC	1.2 A
Output current	
Short-circuit protection	yes
Power	
Power feed to the backplane bus	60 W
Power loss	
Power loss at rated conditions	12 W
Interrupts/diagnostics/status information	
Status display	yes
Electrical isolation	
Primary/secondary	Yes; electrical isolation for 230 V AC (reinforced insulation)
Insulation	
Insulation tested with	2500 V DC 2s (routine test)

6ES7505-0RA00-0AB0	
EMC	
Immunity to surge voltages on the supply lines in accordance with IEC 61000-4-5	Yes; +/- 1 kV (according to IEC 61000-4-5; 1995; symm. surge), +/- 2 kV (according to IEC 61000-4-5; 1995; unsymm. surge), no external protective circuit required
Degree of protection and protection class	
Degree of protection according to EN 60529	IP20
Protection class	1; with ground conductor
Dimensions	
Width	70 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	600 g