

3. Power Supply Modules

3.1 General Information

Power supply modules create the voltages required internally by the PLC from a 24 VDC input voltage. Each main and expansion unit requires its own power supply module. The power supply module always has to be operated in the far left slot of the backplane. All power supply modules require two slots.

3.1.1 Overview

Power Supply	Input Voltage	Output Power	Interface for System Expansions
PS465	24 VDC	Max. 60 W	Expansion slot
PS477		Max. 58.5 W	Expansion slave

Table 30: Power supply module overview

3.1.2 Slots



The power supply must always be located on the far left slot.

When configuring a system, make sure that the power consumption of all modules installed is not larger than the output power of the power supply module. If a power supply unit cannot provide the power required by the modules, install the I/O modules on an expansion backplane.

3.1.3 Current Limitation

Power supply modules are equipped with an internal current limit (short circuit protection) and have connections for an external buffer voltage (AC240 battery module). The current limitation is also activated if the modules require more power than the power supply can deliver. This causes a reset on the CPU without a power failure having occurred.

3.1.4 10-pin Terminal Block

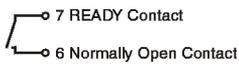
Connection	Assignment
10	External buffer + ¹⁾
9	External buffer - ¹⁾
8	---
7	
6 ²⁾	
5	+24V
4	---
3	---
2	GND
1	Ground

Table 31: Power supply modules 10-pin terminal blocks

- 1) For the PS477 power supply module, these connections are only meaningful when used in the main rack.
- 2) Contacts for the READY relay when the PLC is switched off.

3.1.5 LED Displays

Power supply modules have LED displays which indicate specific operational states:

LED Name	Function
DC1	Control LED for 5 V voltage supply.
DC2	Control LED for 24 V voltage supply.
DC3	Control LED for 11 V voltage supply.
	If one of the DCs LEDs is not lit, it means the internal voltage is not within the valid range. This can be caused by an overload or the input voltage has slipped under the required minimum range.
DC 24V	The connected 24 VDC input voltage is OK.

Table 32: Power supply modules operational states

3.1.6 READY Relay

If a reset occurs, the ready relay reacts to a loss in current by stopping the entire PLC through the programming system. It can be set or reset by the operating system. Errors that cause the relay to open are defined in the operating system.

It is also possible using software to define other errors that should cause a drop in the ready relay. The ready relay is coupled with the status LED "RUN" on the CPU.



The READY relay is controlled by the CPU. Therefore the pin assignments listed for the power supply PS477 are only valid for use in a main backplane.

Wiring the ready relay is carried out using the 10-pin terminal block. The ready relay contact can be integrated in the emergency stop circuit:

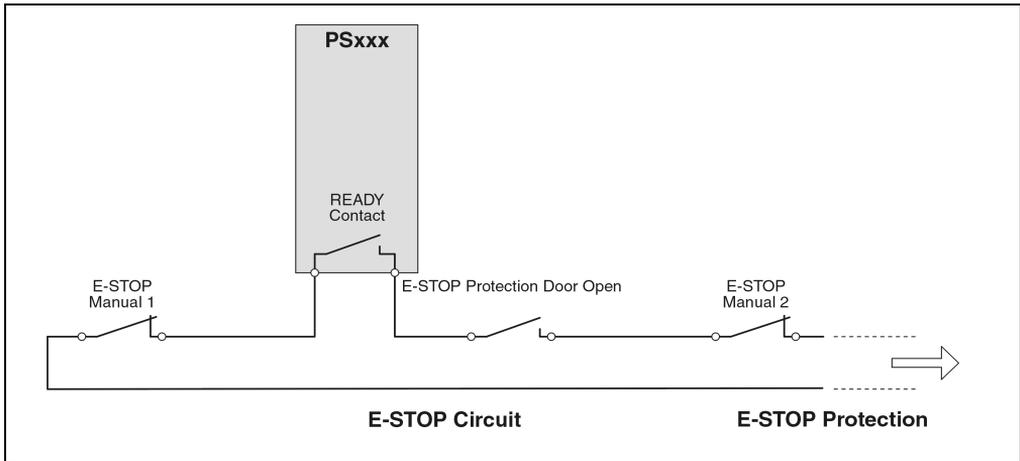


Figure 48: Power supply READY relay

3.1.7 Fuse

The power supply is equipped with a fuse which protects it from reverse polarity and overload. The compartment for the fuse is located behind the module door.

Glass fuse 5 * 20 mm: 6.3 A slow-blow / 250 V

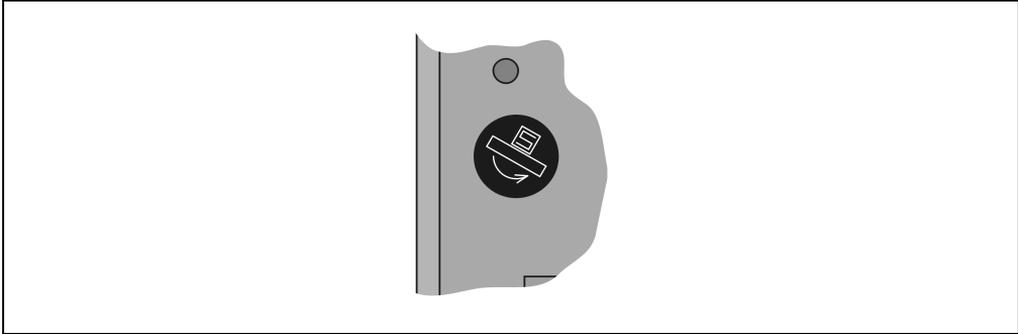


Figure 49: Fuses for the power supply modules



Before changing the fuse, the power supply must be disconnected.

Procedure when Changing a Fuse

- 1) Disconnect the power supply.
- 2) Touch the mounting rail or ground connection (not the power supply!) in order to discharge any electrostatic charge from your body.
- 3) Open the module door.
- 4) Loosen fuse holder by turning with a screwdriver in the direction shown by the arrow
- 5) Remove the fuse holder.
- 6) Remove the old fuse from the fuse holder.
- 7) Place the new fuse in the fuse holder.
- 8) Replace fuse holder in the power supply module.
- 9) Tighten fuse holder by turning with a screwdriver in the opposite direction as shown by the arrow
- 10) Close the module door.
- 11) Connect the lines to the power supply.

3.1.8 Expansion Slot

Power supply module PS465 has an expansion slot. The XP152 CPU e.g. can be placed in this expansion slot.

3.1.9 Expansion Slave (local expansion)

An expansion slave is integrated into the PS477 power supply module which allows another I/O bus segment to be started (see Chapter 2 "Installation", Section 2 "System Configuration and Power Supply", on page 54).

Interfaces for bus expansion are located behind the module door:

- Interface 1 (expansion slave IN) is connected with the EX350 I/O master controller or with interface 2 of a PS477 power supply module.
- Interface 2 (expansion slave OUT) is connected with interface 1 of another PS477 power supply module.

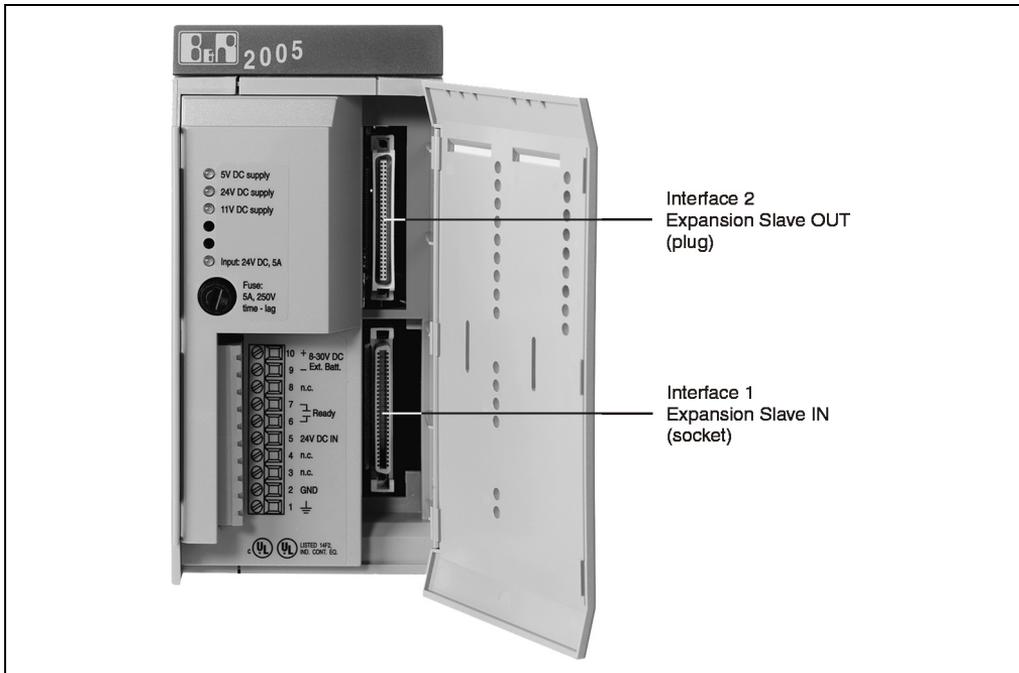


Figure 50: Power supply module interfaces for expansion slaves

3.1.10 Remote Slave (remote expansion)

The remote slave EX250 can be inserted in the expansion slot on power supply module PS465. The remote slave can be connected to the remote master bus cable on 2005 or 2010 systems.

With remote expansion (remote I/O), the expansion unit (remote slave) can be up to 1200 m away from the main unit (remote master). With a repeater, the network can be extended even further. Without a repeater, a maximum of 31 remote slaves can be connected to a remote master.

3.2 PS465 / PS477

3.2.1 Order Data

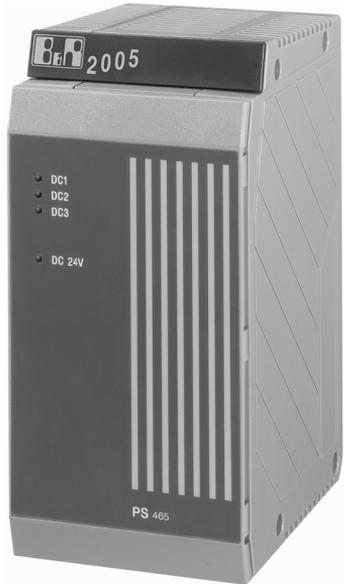
Model Number	Short Description	Image
Power Supply Modules		
3PS465.9	2005 power supply module, 24 VDC, 50 W, with expansion slot	
3PS477.9	2005 power supply module, 24 VDC, 50 W, with expansion slave	
Accessories		
0G0010.00-090	Cable I/O bus expansion, 1 m, bus expansion for B&R 2005 / B&R 2010	
0G0012.00-090	Cable I/O bus expansion, 2 m, bus expansion for B&R 2005 / B&R 2010	

Table 33: PS465 / PS477 order data

3.2.2 Technical Data

Product ID	PS465	PS477
C-UL-US Listed	Yes	
Input Voltage		
Minimum	18 VDC	
Nominal	24 VDC	
Maximum	30 VDC	
External Backup Capacitor		
For Single-Phase Bridge	10000 μ F	
For Three-Phase Bridge	6000 μ F	
Output Power		
5 V	Max. 40 W	Max. 40 W
24 V	Max. 50 W	Max. 50 W
Total	Max. 60 W	Max. 58.5 W
Current Requirements	Max. 3.5 A	
Input Capacitance	500 μ F	

Table 34: PS465 / PS477 technical data

Product ID	PS465	PS477
Protection	6.3 A time lag / 250 V	
Expansion Slave	No	Yes
Expansion Slot	Yes	No
External RAM Buffering by Supplying	12 V (min. 8 V / max. 30 V)	
Contact for READY Relay Design Switching Voltage Switching Current Protection	Normally open contact Max. 30 VDC Max. 3 A 370 V transient voltage protection diode to ground	
Dimensions	B&R 2005 double-width	

Table 34: PS465 / PS477 technical data (cont.)