

3.3 Rack UR5213 (6DD1682-0CH0)

3.3.1 Areas of application

Rack UR5213 with 21 slots forms the mechanical base for SIMATIC TDC and features an integrated system power supply and integrated system fans. A high-performance 64-bit backplane bus supports high-speed data exchange between the inserted modules.

3.3.2 Mechanical layout

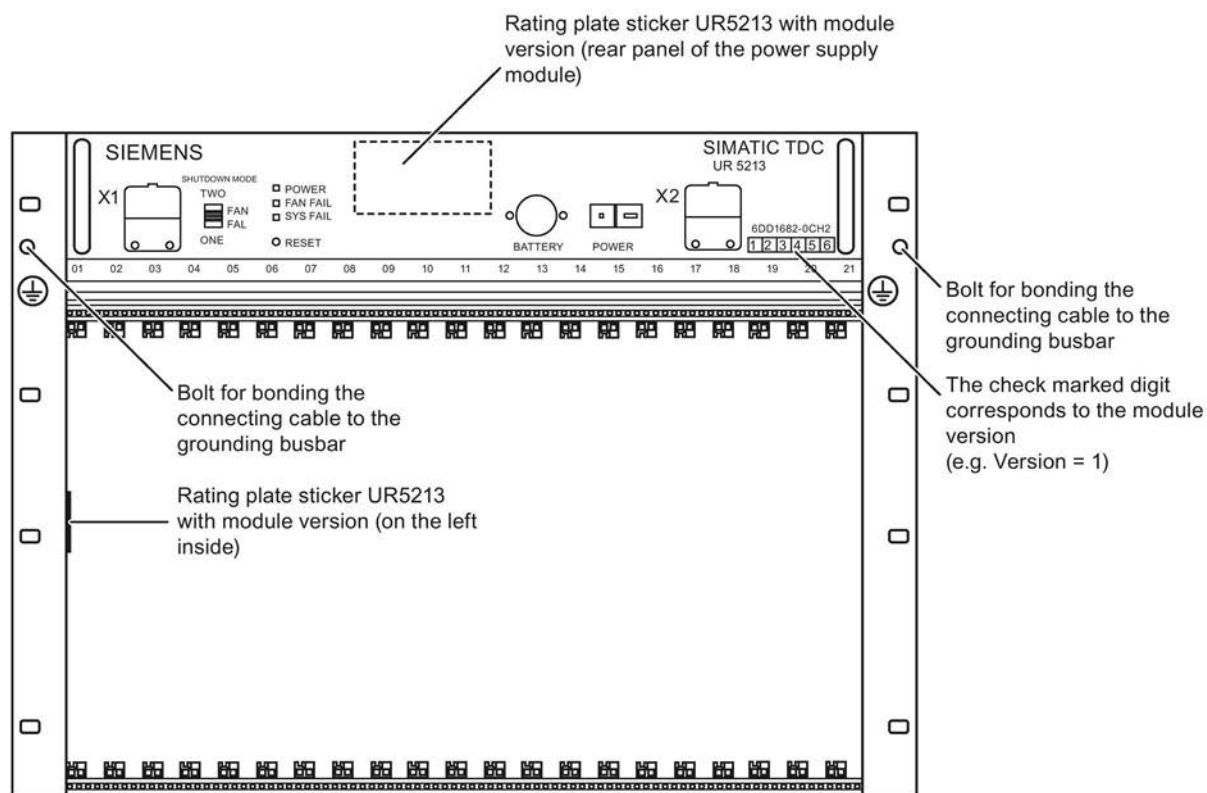


Figure 3-7 Rack UR5213 (front view)

PS5213 power supply

The power supply with three fans is inserted and screw mounted in the upper section of the rack.

3.3.3 Control and display elements

X1

3 signaling relays, 230 V floating potential (3 x 2 contacts)

SHUTDOWN MODE

A system stop triggered by fan failure can be set based on the switch position, i.e. "ONE" setting for failure of one fan, or "TWO" setting for failure of two fans.

LED

The three LEDs display the rack's operating status.

RESET

You can restart all modules by pressing the submerged pushbutton (rack RESET).

BATTERY

Compartment for backup batteries

(2 x 1.5 V leak-proof alkaline manganese cells type AA)

POWER

Mains switch

X2

Line voltage connection

Front panel

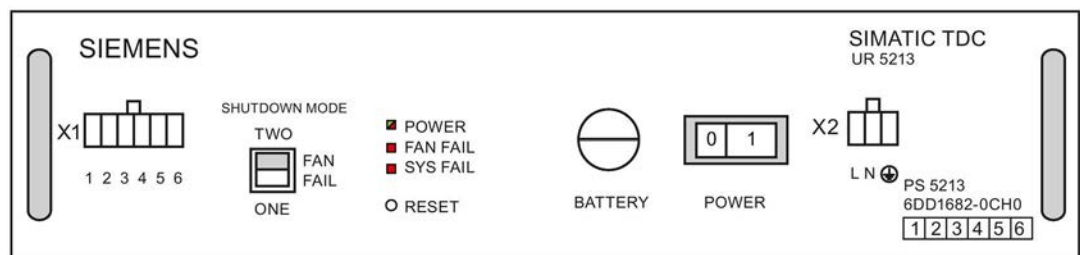


Figure 3-8 Front view of the power supply unit

3.3.4 Status and fault displays

Table 3- 4 Status displays for UR5213

LED	Display	Rack state
POWER (green or red)	green is on	fault-free operation
	red is on	fault (refer to voltage monitoring)
FAN FAIL (red)	Off	fault-free operation
	On	fault (at least one fan has failed)
SYSFAIL (red)	Off	fault-free operation
	On	System was stopped

3.3.5 Power supply

Mains connection

Mains is connected to the 3-pin screw terminal block on the right side of the power supply unit.

The pin assignment is printed onto the front panel.

Input voltage	90 - 264 V AC Derating 85 – 90 V
Dielectric strength • Mains inlet / PE • Mains inlet / SELV • SELV / PE	1500 V AC 3000 V AC 500 V AC
Power consumption	800 W (apparent power approx. 835 VA)
L	Phase conductor L
N	Neutral conductor N
	Ground conductor PE
External fuse (dimensioning)	In = 9 A Is = <50 A (inrush peak) The power supply is equipped with an internal 12 A fuse. This means that only the mains supply has to be fused. It is recommended to use a standard 16 A thermo magnetic circuit-breaker (B characteristic). Alternatively, a slow-acting fuse may be used.

 WARNING

The **PE/ground conductor** must be connected to the power supply. A PE/ground terminal on the rack is inappropriate. The PE/ground conductor must be green with yellow stripe (green/yellow).

3.3.6 Voltage monitoring

Input voltage

The input voltage is monitored for low level.

Input voltage	Reaction
Undervoltage < approx. 90 V	• ACFAIL signal and CPU STOP, shutdown of output voltages <85V

Voltage dips ≤ 15 ms are buffered.

The power supply and therefore the system will be restarted on recovery from voltage dips to approx. 5 % of the rated mains voltage and a duration longer than approx. 3 seconds.

The power on/off sequence (e.g. generation of a RESET or SYSFAIL signal) corresponds to the reaction to manual operation of the mains switch.

The rack goes into standby state following voltage interruption of a duration shorter than approx. 3 and dip to no less than approx. 5 % of the rated mains voltage. A usual power off sequence precedes this state.

This state can only be cleared by cycling power off and on by means of the mains switch.

Output voltage

All output voltages are monitored (e.g. for overload/short-circuit).

Voltage monitoring functions at the power supply outlet	Reaction
+5 V in the range from 4.75 V to 5.35 V	"POWER OK" LED is lit green;
+ 3.3 V in the range from +3.18 V... +3.5 V	
+ 12 V in the range from +11 V to +13 V	
- 12 V in the range from -11 V to -13 V	

In all other cases, the "POWER OK" LED is lit red.

System failure alarm

Select the "Object properties" in the "STOP" tab of **HWConfig** to configure the response of the relevant module to a system failure alarm (bus signal ***SYSFAIL=low**):

- Modules can reset their digital and analog outputs
- CPU modules can go into the "STOP" state ("H" is displayed permanently)

3.3.7 Battery backup

Battery connection

In order to backup configured values to memory on power failure (using the SAV function blocks), you need to install two commonly available size AA leak-proof alkaline manganese batteries with a rated voltage of 1.5 V in the power supply circuit.

It is recommended to replace the batteries at annual intervals.

The backup function is no longer available if you remove the power supply unit (e.g. in the case of malfunction, or fan replacement).

Battery voltage monitoring

The CPU module inserted in slot 1 detects missing or low backup batteries and signals these states with a flashing "b".

Battery replacement

You should always replace the battery while the rack is powered on in order to prevent data loss.

Note that **while installing** the battery you also need to take corresponding **measures** in preparation for its **replacement**.

3.3.8 Ventilation/cooling

The PS5213 power supply is equipped with three fans.

Since the rack is not equipped with an air filter, you should provide a filter on the cabinet if necessary.

Fan monitoring

The fans are monitored (speed). Activation of the monitoring function is delayed in order to enable the reliable startup of the rack after you switched on power.

On failure of one or two fans, the power supply is shut down in order to prevent thermal destruction of the modules. Use the "Shutdown Mode" dip switch to select the mode (the switch has the "ONE" or "TWO" settings). With switch position "ONE", a power supply shutdown is triggered on failure of at least one fan and in switch position "TWO" by the failure of at least two fans.

WARNING

Always set the "Shutdown mode" dip switch S1.4 to "ONE" for modules requiring forced convection (e.g. CPU550) at air intake temperatures from 0 °C to 55 °C.

You may only set switch position "TWO" if it can be assured that the air intake temperature at the rack does not exceed 35 °C. The power supply is not shut down on failure of a single fan, but the corresponding backplane bus signal (FANAL*) is activated and can be detected by the configuration software.

Fan replacement

At an ambient temperature of 55 °C, it is recommended to replace the fans at intervals of approx. **40,000 operating hours**. The power supply must be removed for fan replacement. Users cannot replace the fans.

Signaling relay

Three 230V signaling relays with floating potential facilitate external evaluation of the rack's system states.

Table 3- 5 Signaling relay

Signaling relay	Terminal X1	Contact in switched off state	Contact in error-free operation	LED in error-free operation
SYSFAIL	1,2	Closed	Closed	Off
POWER	3,4	Open	Closed	green is on
FAN FAIL	5,6	Open	Closed	Off

3.3.9 Technical specifications

Article number

Rack UR5213	6DD1682-0CH0
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General data

Safety	EN 61131-2
Degree of protection	IP 20
Protection class	Protection class 1 with PE/ground conductor

Storage temperatures	-40 °C to +70 °C
Operating temperatures	0 °C to +55 °C
Relative air humidity	5 % to 95 %, no condensation
Atmospheric pressure	Operation: 1080 hPa to 795 hPa Storage: 1080 hPa to 660 hPa

Power input

Input voltages (AC)	90 V - 264 V
Rated input current	Typically < 10 A
Max. inrush current	< 50 A
Frequency	47 Hz to 63 Hz
Power factor	EN 61000-3-2
Power failure backup	min. 15 ms

Output voltages

Rated output voltage	Output current
+5 V	60 A
+3.3 V	60 A
+12 V	8 A
-12 V	8 A

All outputs are sustained short circuit-proof and **do not** need a basic load.

Battery

Current load	approx. 10 μ A for each inserted CPU module
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Dimensions

Number of rack slots	21
Dimensions W x H x D [mm]	approx. 482.6 x 354.9 x 343
Weight	Approx. 20 kg

3.4 Slot covers

Application

Slot cover SR51 is used to protect unused slots of the rack. This is necessary to ensure proper ventilation and EMC compatibility of the system.

Article number

Slot cover SR51	6DD1682-0DA1
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