MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

SIEMENS

6ES7400-2JA00-0AA0

SEGMENTED REDUNDANT CONTROLLER RACK

Used with the applicable SIMATIC S7-400 UR2-H configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Siemens SIMATIC S7-400 UR2-H technical documentation

1.4 Mechanical and Ambient Climatic Conditions for Operating the S7-400/M7-400

Operating Conditions

The S7-400/M7-400 is designed for weather-protected use as a permanent installation. The S7-400/M7-400 fulfills the requirements for use in accordance with IEC 60721-3-3:

- Class 3M3 (mechanical requirements)
- Class 3K3 (ambient climatic conditions)

Use with Additional Measures

The S7-400/M7-400, for example, must **not** be used without taking additional measures:

- In locations exposed to a high degree of ionizing radiation
- In hostile environments caused, for instance, by
  - Dust accumulation
  - Corrosive vapors or gases
  - Strong electric or magnetic fields
- In installations requiring special monitoring, for example
  - Elevators
  - Electrical installations in particularly hazardous areas

An additional measure might be, for instance, installation of the S7-400/M7-400 in a cabinet or in a housing.

Ambient Mechanical Conditions

The ambient mechanical conditions for S7-400/M7-400 modules are listed in the following table in the form of sinusoidal oscillations.

Table 1-10 Mechanical Conditions

Frequency Range in Hz	Test Values
$10 \leq f < 58$	0.075 mm amplitude
$58 \leq f < 500$	1 g constant acceleration

Table 1-11 Ambient Mechanical Conditions for the MSM 478 Mass Storage Module in Operation

Frequency Range in Hz	Test Values
10 ≤ f < 58 58 ≤ f < 500	0.035 mm amplitude 0.5 g constant acceleration
Shock	Semi-sinusoidal 5 g, 11 ms

Reducing Vibrations

If the S7-400/M7-400 is subject to high levels of shock or vibration, you must take suitable measures to reduce the acceleration or amplitude.

We recommend that you install the S7-400/M7-400 on vibration-damping materials (for example, rubber-metal antivibration mountings).

Tests for Ambient Mechanical Conditions

The following table contains important information on the type and scope of tests for ambient mechanical conditions.

Table 1-12 Ambient Mechanical Conditions Test

Test ...	Test Standard	Remarks
Vibrations	Vibration test in accordance with IEC 60068-2-6 (sinusoidal)	Type of oscillation: frequency sweeps with a rate of change of 1 octave/minute. 10 Hz ≤ f < 58 Hz, constant amplitude 0.075 mm 58 Hz ≤ f < 500 Hz, constant acceleration 1 g Duration of oscillation: 10 frequency sweeps per axis in each of three axes perpendicular to each other
Shock	Shock test in accordance with IEC 60068-2-29	Type of shock: half-sine Severity of shock: 10 g peak value, 6 ms duration Direction of shock: 100 shocks in each of the 3 axes arranged vertically to each other

Ambient Climatic Conditions for the S7-400

You can use the S7-400 under the following ambient climatic conditions:

Table 1-13 Ambient Climatic Conditions for the S7-400

Climatic Conditions	Permitted Range	Remark
Temperature	0 to +60 °C	
Temperature change	Max. 10 °C/h	

Table 1-13 Ambient Climatic Conditions for the S7-400

Climatic Conditions	Permitted Range	Remark
Relative humidity	Max. 95 % at +25 °C	No condensation, corresponds to RH stressing level 2 in accordance with IEC 61131-2
Atmospheric pressure	1080 to 795 hPa (corresponds to a height of -1000 to 2000 m)	The power supply modules in Table 1-12 achieve the following values: 1080 to 869 hPa (corresponds to a level of –1000 to 1500 m)
Concentration of contaminants	SO_2: < 0.5 ppm; RH < 60 %, no condensation H_2S: < 0.1 ppm; RH < 60 %, no condensation	Test: 10 ppm; 4 days Test: 1 ppm; 4 days

Table 1-14 Power Supply Modules for Use at up to + 1500 m

Name	Order number
Power supply module PS 407 4A	6ES7407-0DA00-0AA0
Power supply module PS 407 10A	6ES7407-0KA00-0AA0
Power supply module PS 407 20A	6ES7407-0RA00-0AA0
Power supply module PS 405 4A	6ES7405-0DA00-0AA0
Power supply module PS 405 10A	6ES7405-0KA00-0AA0
Power supply module PS 405 20A	6ES7405-0RA00-0AA0

2.1 Function and Structure of the Racks

Introduction

The racks in the S7-400 have the following tasks:

- They hold the modules
- They supply the modules with operating voltage
- They connect the individual modules to each other via the signal buses

Structure of the Racks

A rack consists of the following elements:

- Mounting rail with threaded bolts for fixing the modules and lateral cutouts for mounting the rack
- Plastic parts that function, among other things, as guides when swinging the modules into place.
- A backplane bus, an I/O bus and, if necessary, a communication bus with bus connector
- Connection for local ground

Figure 2-1 shows the mechanical configuration of a rack (UR1).

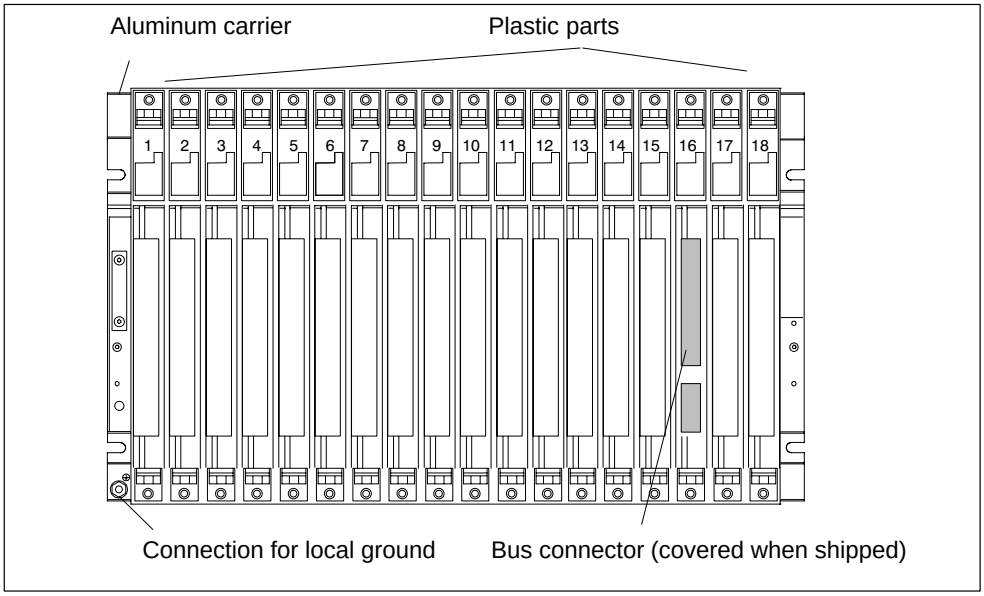


Figure 2-1 Structure of a Rack with 18 Slots

UL/CSA Note

Special requirements should be taken into consideration in the area of influence of the UL/CSA; these may be fulfilled by installing the system in a cabinet.

2.3 The Rack UR2-H; (6ES7400-2JA00-0AA0)

Introduction

The UR2-H rack is used for assembling two central racks or expansion racks in one rack. The UR2-H rack essentially represents two electrically isolated UR2 racks on the same rack profile. The main area of application of the UR2-H is in the compact structure of redundant S7-400H systems (two subracks or subsystems in one rack).

Suitable Modules for the UR2-H

You can use the following modules in the UR2-H rack:

When the UR2-H is used as a central rack:

- All S7-400 modules with the exception of receive IMs

When the UR2-H is used as an expansion rack:

- All S7-400 modules apart from CPUs, send IMs, the IM 463-2, and the adapter module

  Special case: Power supply modules cannot be used in conjunction with the IM 461-1 receive IM.

Structure of the UR2-H

Figure 2-3 shows the structure of the UR2-H rack with 2 x 9 slots.

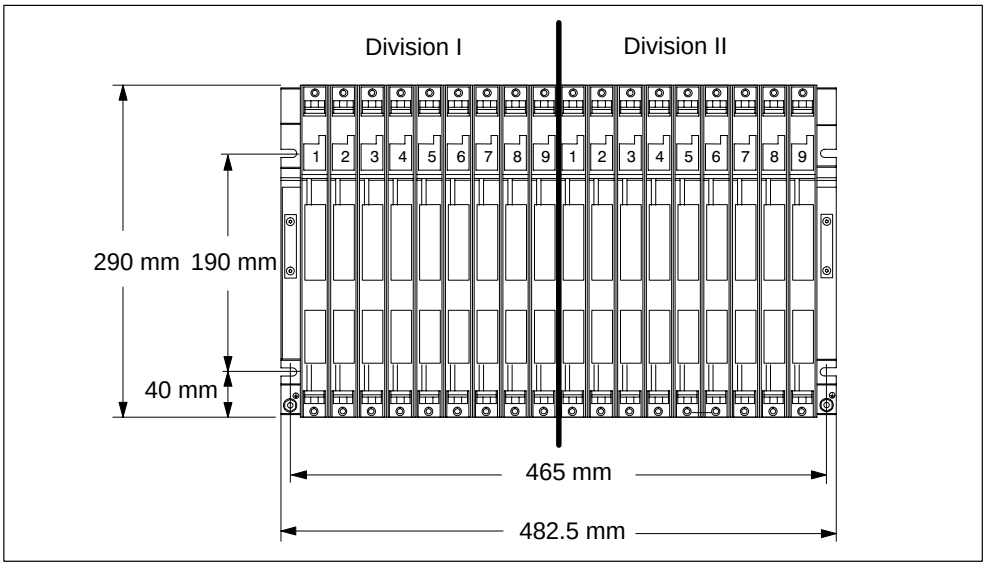


Figure 2-3 Rack Dimensions

Caution

Danger of damage to equipment.

If you insert a power supply module in a slot that is not permitted for power supply modules, the module may be damaged. Slots 1 to 4 are permitted, whereby power supply modules starting from slot 1 must be inserted without leaving gaps.

Make sure that power supply modules are only inserted in permitted slots. Take particular notice of the option of swapping modules in slot 1 on subrack II and slot 9 on subrack I.

Technical Specifications of the UR2-H Rack

Rack	UR2-H
Number of single-width slots	2 x 9
Dimensions W x H x D (in mm)	482.5 x 290 x 27.5
Weight (in kg)	3 4.1 as of version 03
Buses	Segmented I/O bus, segmented communication bus