

SIMATIC S7-200 SMART CPU CR20s, COMPACT CPU,
 AC/DC/RELAY, ONBOARD I/O: 12 DI 24V DC; 8 DO RELAY 2A;
 POWER SUPPLY: AC, 85 - 264 V AC AT 47 - 63 HZ,
 PROGRAM/DATA MEMORY: 20 KB



General information

Product type designation	CPU CR20 AC/DC/relay
Engineering with	
<ul style="list-style-type: none"> • Programming package 	STEP 7 Micro/WIN SMART

Installation type/mounting

Rail mounting	Yes; Standard - DIN rail
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Supply voltage

Type of supply voltage	85V to 264VAC
Rated value (DC)	
<ul style="list-style-type: none"> • 24 V DC 	No
Rated value (AC)	230 V; 230 V AC (L1, N)
<ul style="list-style-type: none"> • 120 V AC 	Yes; 85 to 132 V AC
<ul style="list-style-type: none"> • 230 V AC 	Yes; 170 to 264 V AC
permissible range, lower limit (AC)	85 V
permissible range, upper limit (AC)	264 V
Reverse polarity protection	No
Line frequency	
<ul style="list-style-type: none"> • permissible range, lower limit 	47 Hz

<ul style="list-style-type: none"> • permissible range, upper limit 	63 Hz
Load voltage L+	
<ul style="list-style-type: none"> • Rated value (DC) 	24 V
<ul style="list-style-type: none"> • permissible range, lower limit (DC) 	5 V
<ul style="list-style-type: none"> • permissible range, upper limit (DC) 	250 V
Input current	
Current consumption (rated value)	60 mA; At 220 V AC
Current consumption, max.	80 mA; At 220 V AC
Inrush current, max.	16.3 A; at 264 V
Power loss	
Power loss, max.	6 W; max.
Memory	
Type of memory	DDR
Flash	Yes
RAM	Yes
Micro Memory Card	No
CPU processing times	
for bit operations, typ.	150 ns; / instruction
for word operations, typ.	1.2 μ s; / instruction
for floating point arithmetic, typ.	3.6 μ s; / instruction
Hardware configuration	
Integrated power supply	No
Number of modules per system, max.	0
Time of day	
Clock	
<ul style="list-style-type: none"> • Type 	Software clock
<ul style="list-style-type: none"> • Hardware clock (real-time) 	No
Digital inputs	
Number of digital inputs	12; Integrated
<ul style="list-style-type: none"> • of which inputs usable for technological functions 	4; HSC: 4 @ 100 kHz single phase, 2 @ 50 kHz A/B phase
Source/sink input	Yes
Input voltage	
<ul style="list-style-type: none"> • Type of input voltage 	DC
<ul style="list-style-type: none"> • Rated value (DC) 	24 V; DC at 4 mA nominal
<ul style="list-style-type: none"> • for signal "0" 	< 5 V DC
<ul style="list-style-type: none"> • for signal "1" 	+15 to +30V
Input current	
<ul style="list-style-type: none"> • for signal "0", max. (permissible quiescent current) 	1 mA

• for signal "1", typ.	4 mA; Typical
Input delay (for rated value of input voltage)	
for standard inputs	
— parameterizable	Yes; 0.2 μ s, 0.4 μ s, 0.8 μ s, 1.6 μ s, 3.2 μ s, 6.4 μ s and 12.8 μ s, selectable in 4 groups
— at "0" to "1", min.	0.2 μ s
— at "0" to "1", max.	12.8 μ s
for interrupt inputs	
— parameterizable	Yes
Cable length	
• shielded, max.	500 m; Standard input: 500 m, high-speed counters: 50 m
• unshielded, max.	300 m
Digital outputs	
Number of digital outputs	8; Relays
Switching capacity of the outputs	
• with resistive load, max.	2 A
• on lamp load, max.	30 W; 30 W with DC, 200 W with AC
Output delay with resistive load	
• "0" to "1", max.	10 ms; max.
• "1" to "0", max.	10 ms; max.
Switching frequency	
• of the pulse outputs, with resistive load, max.	1 Hz
Relay outputs	
• Number of relay outputs	8
• Number of operating cycles, max.	10 000 000; mechanically 10 million, at rated load voltage 100 000
Cable length	
• shielded, max.	500 m
• unshielded, max.	300 m
Interfaces	
Number of RS 485 interfaces	1
With optical interface	No
1. Interface	
Interface type	9-pin sub D socket
Physics	RS 485
Isolated	Yes; 500 V AC or 707 V DC
EMC	
Interference immunity against discharge of static electricity	
• Interference immunity against discharge of static electricity acc. to IEC 61000-4-2	Yes
— Test voltage at air discharge	8 kV
— Test voltage at contact discharge	4 kV

Interference immunity against high-frequency electromagnetic fields	
<ul style="list-style-type: none"> • Interference immunity against high-frequency radiation acc. to IEC 61000-4-3 <ul style="list-style-type: none"> — Frequency range of the RF radiation 	<p>Yes; 10 V/m, 80 to 1 000 MHz (to IEC 61000-4-3); 10 V/m, 900 MHz, 1.89 GHz, 50% ED (to IEC 61000-4-3)</p> <p>10 V/m for 80 MHz ~ 1 GHz, 3 V/m for 1.4 GHz ~ 2 GHz, 3 V/m for 87 MHz ~ 108 MHz, 174 MHz ~ 230 MHz, 470 MHz ~ 790 MHz, 1.4 GHz ~ 2 GHz, 1 V/m for 2 GHz ~ 2.7 GHz</p>
Interference immunity to cable-borne interference	
<ul style="list-style-type: none"> • Interference immunity on supply lines acc. to IEC 61000-4-4 • Interference immunity on signal cables acc. to IEC 61000-4-4 	<p>Yes; ±2 kV acc. to IEC 61000-4-4, burst; surge measurements with additional protective elements</p> <p>Yes; ±2 kV acc. to IEC 61000-4-4, Burst</p>
Interference immunity against voltage surge	
<ul style="list-style-type: none"> • on the supply lines acc. to IEC 61000-4-5 • asymmetric interference <ul style="list-style-type: none"> — Test voltage on supply cables — Test voltage on signal cables >30m 	<p>Yes; ±1 kV (acc. to IEC 61000-4-5; 1995; surge symm.), ±2 kV (acc. to IEC 61000-4-5; 1995; surge asymm.), no external protective circuit required</p> <p>2 kV</p> <p>2 kV</p>
Interference immunity against conducted variable disturbance induced by high-frequency fields	
<ul style="list-style-type: none"> • Interference immunity against high frequency current feed acc. to IEC 61000-4-6 	<p>Yes; 10 V, 150 kHz to 80 MHz (to IEC 61000-4-6)</p>
Emission of radio interference acc. to EN 55 011	
<ul style="list-style-type: none"> • Limit class A, for use in industrial areas 	<p>Yes; Emission of radio interference acc. to EN 61000-6-4 +A1 for use in industrial environments</p>
Emission of conducted and non-conducted interference	
<ul style="list-style-type: none"> • Interference emission via line/AC current cables 	<p>EN 61000-6-4, interference emission: Intended for use in industrial areas.</p>
Degree and class of protection	
<p>Degree of protection acc. to EN 60529</p> <ul style="list-style-type: none"> • IP20 	<p>Yes</p>
Standards, approvals, certificates	
<p>CE mark</p>	<p>Yes</p>
Ambient conditions	
Free fall	
<ul style="list-style-type: none"> • Fall height, max. 	<p>0.5 m; five times, in product package</p>
Ambient temperature during operation	
<ul style="list-style-type: none"> • min. • max. • horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max. 	<p>0 °C</p> <p>55 °C</p> <p>0 °C</p> <p>55 °C</p> <p>0 °C</p> <p>45 °C</p>
Ambient temperature during storage/transportation	

• min.	-40 °C
• max.	70 °C
Air pressure acc. to IEC 60068-2-13	
• Storage/transport, min.	660 hPa
• Storage/transport, max.	1 080 hPa
Altitude during operation relating to sea level	
• Installation altitude, min.	-1 000 m
• Installation altitude, max.	2 000 m
Relative humidity	
• Operation at 25 °C without condensation, max.	95 %

Configuration

Programming

Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes

Dimensions

Width	90 mm
Height	100 mm
Depth	81 mm

Weights

Weight, approx.	365 g; approx.
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