



Figure similar

\*\*\*spare part\*\*\* SIPLUS S7-300 CPU 314C-2DP based on 6ES7314-6CH04-0AB0 with conformal coating, -25...+60 °C, compact CPU with MPI, 24 DI/16 DQ, 4 AI, 2 AQ, 1 Pt100, 4 high-speed counters (60 kHz), integrated DP interface, integrated power supply 24 V DC, work memory 192 KB, front connector (2x 40-pole) and Micro Memory Card required

General information	
Product type designation	CPU 314C-2 DP
Engineering with	
<ul style="list-style-type: none"> <li>Programming package</li> </ul>	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203
Supply voltage	
Rated value (DC)	24 V; A power supply according to EN 50155 shall be used
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
external protection for power supply lines (recommendation)	Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker type B, min. 4 A
Mains buffering	
<ul style="list-style-type: none"> <li>Mains/voltage failure stored energy time</li> <li>Repeat rate, min.</li> </ul>	5 ms 1 s
Load voltage L+	
Digital inputs	
<ul style="list-style-type: none"> <li>Rated value (DC)</li> <li>Reverse polarity protection</li> </ul>	24 V Yes
Digital outputs	
<ul style="list-style-type: none"> <li>Rated value (DC)</li> <li>Reverse polarity protection</li> </ul>	24 V No
Input current	
Current consumption (rated value)	880 mA
Current consumption (in no-load operation), typ.	150 mA
Inrush current, typ.	5 A
I <sup>2</sup> t	0.7 A <sup>2</sup> ·s
Digital inputs	
<ul style="list-style-type: none"> <li>from load voltage L+ (without load), max.</li> </ul>	80 mA
Digital outputs	
<ul style="list-style-type: none"> <li>from load voltage L+, max.</li> </ul>	50 mA
Power loss	
Power loss, typ.	13 W
Storage	
Work memory	
<ul style="list-style-type: none"> <li>integrated</li> <li>expandable</li> </ul>	192 kbyte No
Load memory	
<ul style="list-style-type: none"> <li>Plug-in (MMC)</li> <li>Plug-in (MMC), max.</li> </ul>	Yes 8 Mbyte

<ul style="list-style-type: none"> <li>• Data management on MMC (after last programming), min.</li> </ul>	10 a
<b>Backup</b>	
<ul style="list-style-type: none"> <li>• present</li> <li>• without battery</li> </ul>	<p>Yes; Guaranteed by MMC (maintenance-free)</p> <p>Yes; Program and data</p>
<b>CPU processing times</b>	
for bit operations, typ.	0.06 $\mu$ s
for word operations, typ.	0.12 $\mu$ s
for fixed point arithmetic, typ.	0.16 $\mu$ s
for floating point arithmetic, typ.	0.59 $\mu$ s
<b>CPU-blocks</b>	
Number of blocks (total)	1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.
<b>DB</b>	
<ul style="list-style-type: none"> <li>• Number, max.</li> <li>• Size, max.</li> </ul>	<p>1 024; Number range: 1 to 16000</p> <p>64 kbyte</p>
<b>FB</b>	
<ul style="list-style-type: none"> <li>• Number, max.</li> <li>• Size, max.</li> </ul>	<p>1 024; Number range: 0 to 7999</p> <p>64 kbyte</p>
<b>FC</b>	
<ul style="list-style-type: none"> <li>• Number, max.</li> <li>• Size, max.</li> </ul>	<p>1 024; Number range: 0 to 7999</p> <p>64 kbyte</p>
<b>OB</b>	
<ul style="list-style-type: none"> <li>• Number, max.</li> <li>• Size, max.</li> <li>• Number of free cycle OBs</li> <li>• Number of time alarm OBs</li> <li>• Number of delay alarm OBs</li> <li>• Number of cyclic interrupt OBs</li> <li>• Number of process alarm OBs</li> <li>• Number of DPV1 alarm OBs</li> <li>• Number of startup OBs</li> <li>• Number of asynchronous error OBs</li> <li>• Number of synchronous error OBs</li> </ul>	<p>see instruction list</p> <p>64 kbyte</p> <p>1; OB 1</p> <p>1; OB 10</p> <p>2; OB 20, 21</p> <p>4; OB 32, 33, 34, 35</p> <p>1; OB 40</p> <p>3; OB 55, 56, 57</p> <p>1; OB 100</p> <p>5; OB 80, 82, 85, 86, 87</p> <p>2; OB 121, 122</p>
<b>Nesting depth</b>	
<ul style="list-style-type: none"> <li>• per priority class</li> <li>• additional within an error OB</li> </ul>	<p>16</p> <p>4</p>
<b>Counters, timers and their retentivity</b>	
<b>S7 counter</b>	
<ul style="list-style-type: none"> <li>• Number</li> </ul>	256
<b>Retentivity</b>	
<ul style="list-style-type: none"> <li>— can be set</li> <li>— preset</li> </ul>	<p>Yes</p> <p>Z 0 to Z 7</p>
<b>Counting range</b>	
<ul style="list-style-type: none"> <li>— lower limit</li> <li>— upper limit</li> </ul>	<p>0</p> <p>999</p>
<b>IEC counter</b>	
<ul style="list-style-type: none"> <li>• present</li> <li>• Type</li> <li>• Number</li> </ul>	<p>Yes</p> <p>SFB</p> <p>Unlimited (limited only by RAM capacity)</p>
<b>S7 timer</b>	
<ul style="list-style-type: none"> <li>• Number</li> </ul>	256
<b>Retentivity</b>	
<ul style="list-style-type: none"> <li>— adjustable</li> <li>— preset</li> </ul>	<p>Yes</p> <p>No retentivity</p>
<b>Time range</b>	
<ul style="list-style-type: none"> <li>— lower limit</li> <li>— upper limit</li> </ul>	<p>10 ms</p> <p>9 990 s</p>
<b>IEC timer</b>	

<ul style="list-style-type: none"> <li>• present</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Type</li> </ul>	SFB
<ul style="list-style-type: none"> <li>• Number</li> </ul>	Unlimited (limited only by RAM capacity)
<b>Data areas and their retentivity</b>	
Retentive data area (incl. timers, counters, flags), max.	64 kbyte
<b>Flag</b>	
<ul style="list-style-type: none"> <li>• Size, max.</li> </ul>	256 byte
<ul style="list-style-type: none"> <li>• Retentivity available</li> </ul>	Yes; MB 0 to MB 255
<ul style="list-style-type: none"> <li>• Retentivity preset</li> </ul>	MB 0 to MB 15
<ul style="list-style-type: none"> <li>• Number of clock memories</li> </ul>	8; 1 memory byte
<b>Data blocks</b>	
<ul style="list-style-type: none"> <li>• Retentivity adjustable</li> </ul>	Yes; via non-retain property on DB
<ul style="list-style-type: none"> <li>• Retentivity preset</li> </ul>	Yes
<b>Local data</b>	
<ul style="list-style-type: none"> <li>• per priority class, max.</li> </ul>	32 kbyte; Max. 2048 bytes per block
<b>Address area</b>	
<b>I/O address area</b>	
<ul style="list-style-type: none"> <li>• Inputs</li> </ul>	2 048 byte
<ul style="list-style-type: none"> <li>• Outputs</li> </ul>	2 048 byte
of which distributed	
— Inputs	2 003 byte
— Outputs	2 010 byte
<b>Process image</b>	
<ul style="list-style-type: none"> <li>• Inputs</li> </ul>	2 048 byte
<ul style="list-style-type: none"> <li>• Outputs</li> </ul>	2 048 byte
<ul style="list-style-type: none"> <li>• Inputs, adjustable</li> </ul>	2 048 byte
<ul style="list-style-type: none"> <li>• Outputs, adjustable</li> </ul>	2 048 byte
<ul style="list-style-type: none"> <li>• Inputs, default</li> </ul>	128 byte
<ul style="list-style-type: none"> <li>• Outputs, default</li> </ul>	128 byte
<b>Digital channels</b>	
<ul style="list-style-type: none"> <li>• Inputs</li> </ul>	16 048
— of which central	1 016
<ul style="list-style-type: none"> <li>• Outputs</li> </ul>	16 096
— of which central	1 008
<b>Analog channels</b>	
<ul style="list-style-type: none"> <li>• Inputs</li> </ul>	1 006
— of which central	253
<ul style="list-style-type: none"> <li>• Outputs</li> </ul>	1 007
— of which central	250
<b>Hardware configuration</b>	
Number of expansion units, max.	3
<b>Number of DP masters</b>	
<ul style="list-style-type: none"> <li>• integrated</li> </ul>	1
<ul style="list-style-type: none"> <li>• via CP</li> </ul>	4
<b>Number of operable FMs and CPs (recommended)</b>	
<ul style="list-style-type: none"> <li>• FM</li> </ul>	8
<ul style="list-style-type: none"> <li>• CP, PtP</li> </ul>	8
<ul style="list-style-type: none"> <li>• CP, LAN</li> </ul>	10
<b>Rack</b>	
<ul style="list-style-type: none"> <li>• Racks, max.</li> </ul>	4
<ul style="list-style-type: none"> <li>• Modules per rack, max.</li> </ul>	8; In rack 3 max. 7
<b>Time of day</b>	
<b>Clock</b>	
<ul style="list-style-type: none"> <li>• Hardware clock (real-time)</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• retentive and synchronizable</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Backup time</li> </ul>	6 wk; At 40 °C ambient temperature
<ul style="list-style-type: none"> <li>• Deviation per day, max.</li> </ul>	10 s; Typ.: 2 s
<ul style="list-style-type: none"> <li>• Behavior of the clock following POWER-ON</li> </ul>	Clock continues running after POWER OFF
<ul style="list-style-type: none"> <li>• Behavior of the clock following expiry of backup period</li> </ul>	the clock continues at the time of day it had when power was switched off

<b>Operating hours counter</b>	
• Number	1
• Number/Number range	0
• Range of values	0 to 2 <sup>31</sup> hours (when using SFC 101)
• Granularity	1 h
• retentive	Yes; Must be restarted at each restart
<b>Clock synchronization</b>	
• supported	Yes
• to MPI, master	Yes
• on MPI, device	Yes
• to DP, master	Yes; With DP slave only slave clock
• on DP, device	Yes
• in AS, master	Yes
• in AS, device	No
<b>Digital inputs</b>	
Number of digital inputs	24
• of which inputs usable for technological functions	16
integrated channels (DI)	24
Input characteristic curve in accordance with IEC 61131, type 1	Yes
<b>Number of simultaneously controllable inputs</b>	
<b>horizontal installation</b>	
— up to 40 °C, max.	24
— up to 60 °C, max.	12
<b>vertical installation</b>	
— up to 40 °C, max.	12
<b>Input voltage</b>	
• Rated value (DC)	24 V
• for signal "0"	-3 to +5V
• for signal "1"	+15 to +30 V
<b>Input current</b>	
• for signal "1", typ.	8 mA
<b>Input delay (for rated value of input voltage)</b>	
<b>for standard inputs</b>	
— parameterizable	Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.)
— Rated value	3 ms
<b>for technological functions</b>	
— at "0" to "1", max.	8 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency
<b>Cable length</b>	
• shielded, max.	1 000 m; 50 m for technological functions
• unshielded, max.	600 m; for technological functions: No
<b>for technological functions</b>	
— shielded, max.	50 m; at maximum count frequency
— unshielded, max.	not allowed
<b>Digital outputs</b>	
Number of digital outputs	16
• of which high-speed outputs	4; Notice: You cannot connect the fast outputs of your CPU in parallel
integrated channels (DO)	16
<b>Short-circuit protection</b>	
• Response threshold, typ.	1 A
Limitation of inductive shutdown voltage to	L+ (-48 V)
Controlling a digital input	Yes
<b>Switching capacity of the outputs</b>	
• on lamp load, max.	5 W
<b>Load resistance range</b>	
• lower limit	48 Ω
• upper limit	4 kΩ
<b>Output voltage</b>	

• for signal "1", min.	L+ (-0.8 V)
<b>Output current</b>	
• for signal "1" rated value	500 mA
• for signal "1" permissible range, min.	5 mA
• for signal "1" permissible range, max.	0.6 A
• for signal "1" minimum load current	5 mA
• for signal "0" residual current, max.	0.5 mA
<b>Parallel switching of two outputs</b>	
• for uprating	No
• for redundant control of a load	Yes
<b>Switching frequency</b>	
• with resistive load, max.	100 Hz
• with inductive load, max.	0.5 Hz
• on lamp load, max.	100 Hz
• of the pulse outputs, with resistive load, max.	2.5 kHz
<b>Total current of the outputs (per group)</b>	
horizontal installation	
— up to 40 °C, max.	3 A
— up to 60 °C, max.	2 A
vertical installation	
— up to 40 °C, max.	2 A
<b>Cable length</b>	
• shielded, max.	1 000 m
• unshielded, max.	600 m
<b>Analog inputs</b>	
Number of analog inputs	
• For voltage/current measurement	4
• For resistance/resistance thermometer measurement	1
integrated channels (AI)	5; 4x current/voltage, 1x resistance
permissible input voltage for current input (destruction limit), max.	5 V; Permanent
permissible input voltage for voltage input (destruction limit), max.	30 V; Permanent
permissible input current for voltage input (destruction limit), max.	0.5 mA; Permanent
permissible input current for current input (destruction limit), max.	50 mA; Permanent
Electrical input frequency, max.	400 Hz
No-load voltage for resistance-type transmitter, typ.	3.3 V
Constant measurement current for resistance-type transmitter, typ.	1.25 mA
Technical unit for temperature measurement adjustable	Yes; Degrees Celsius / degrees Fahrenheit / Kelvin
<b>Input ranges</b>	
• Voltage	Yes; $\pm 10$ V / 100 k $\Omega$ ; 0 V to 10 V / 100 k $\Omega$
• Current	Yes; $\pm 20$ mA / 100 $\Omega$ ; 0 mA to 20 mA / 100 $\Omega$ ; 4 mA to 20 mA / 100 $\Omega$
• Resistance thermometer	Yes; Pt 100 / 10 M $\Omega$
• Resistance	Yes; 0 $\Omega$ to 600 $\Omega$ / 10 M $\Omega$
<b>Input ranges (rated values), voltages</b>	
• 0 to +10 V	Yes
— Input resistance (0 to 10 V)	100 k $\Omega$
<b>Input ranges (rated values), currents</b>	
• 0 to 20 mA	Yes
— Input resistance (0 to 20 mA)	100 $\Omega$
• -20 mA to +20 mA	Yes
— Input resistance (-20 mA to +20 mA)	100 $\Omega$
• 4 mA to 20 mA	Yes
— Input resistance (4 mA to 20 mA)	100 $\Omega$
<b>Input ranges (rated values), resistance thermometer</b>	
• Pt 100	Yes
— Input resistance (Pt 100)	10 M $\Omega$

<b>Input ranges (rated values), resistors</b>	
<ul style="list-style-type: none"> <li>• 0 to 600 ohms</li> </ul>	Yes
<ul style="list-style-type: none"> <li>— Input resistance (0 to 600 ohms)</li> </ul>	10 MΩ
<b>Thermocouple (TC)</b>	
Temperature compensation	
<ul style="list-style-type: none"> <li>— Parameterizable</li> </ul>	No
<b>Characteristic linearization</b>	
<ul style="list-style-type: none"> <li>• Parameterizable</li> </ul>	Yes; by software
<ul style="list-style-type: none"> <li>— for resistance thermometer</li> </ul>	Pt 100
<b>Cable length</b>	
<ul style="list-style-type: none"> <li>• shielded, max.</li> </ul>	100 m
<b>Analog outputs</b>	
integrated channels (AO)	2
Voltage output, short-circuit protection	Yes
Voltage output, short-circuit current, max.	55 mA
Current output, no-load voltage, max.	14 V
<b>Output ranges, voltage</b>	
<ul style="list-style-type: none"> <li>• 0 to 10 V</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• -10 V to +10 V</li> </ul>	Yes
<b>Output ranges, current</b>	
<ul style="list-style-type: none"> <li>• 0 to 20 mA</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• -20 mA to +20 mA</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• 4 mA to 20 mA</li> </ul>	Yes
<b>Connection of actuators</b>	
<ul style="list-style-type: none"> <li>• for voltage output two-wire connection</li> </ul>	Yes; Without compensation of the line resistances
<ul style="list-style-type: none"> <li>• for voltage output four-wire connection</li> </ul>	No
<ul style="list-style-type: none"> <li>• for current output two-wire connection</li> </ul>	Yes
<b>Load impedance (in rated range of output)</b>	
<ul style="list-style-type: none"> <li>• with voltage outputs, min.</li> </ul>	1 kΩ
<ul style="list-style-type: none"> <li>• with voltage outputs, capacitive load, max.</li> </ul>	0.1 μF
<ul style="list-style-type: none"> <li>• with current outputs, max.</li> </ul>	300 Ω
<ul style="list-style-type: none"> <li>• with current outputs, inductive load, max.</li> </ul>	0.1 mH
<b>Destruction limits against externally applied voltages and currents</b>	
<ul style="list-style-type: none"> <li>• Voltages at the outputs towards MANA</li> </ul>	16 V; Permanent
<ul style="list-style-type: none"> <li>• Current, max.</li> </ul>	50 mA; Permanent
<b>Cable length</b>	
<ul style="list-style-type: none"> <li>• shielded, max.</li> </ul>	200 m
<b>Analog value generation for the inputs</b>	
Measurement principle	Actual value encryption (successive approximation)
<b>Integration and conversion time/resolution per channel</b>	
<ul style="list-style-type: none"> <li>• Resolution with overrange (bit including sign), max.</li> </ul>	12 bit
<ul style="list-style-type: none"> <li>• Integration time, parameterizable</li> </ul>	Yes; 16.6 / 20 ms
<ul style="list-style-type: none"> <li>• Interference voltage suppression for interference frequency f1 in Hz</li> </ul>	50 / 60 Hz
<ul style="list-style-type: none"> <li>• Time constant of the input filter</li> </ul>	0.38 ms
<ul style="list-style-type: none"> <li>• Basic execution time of the module (all channels released)</li> </ul>	1 ms
<b>Analog value generation for the outputs</b>	
<b>Integration and conversion time/resolution per channel</b>	
<ul style="list-style-type: none"> <li>• Resolution with overrange (bit including sign), max.</li> </ul>	12 bit
<ul style="list-style-type: none"> <li>• Conversion time (per channel)</li> </ul>	1 ms
<b>Settling time</b>	
<ul style="list-style-type: none"> <li>• for resistive load</li> </ul>	0.6 ms
<ul style="list-style-type: none"> <li>• for capacitive load</li> </ul>	1 ms
<ul style="list-style-type: none"> <li>• for inductive load</li> </ul>	0.5 ms
<b>Encoder</b>	
<b>Connection of signal encoders</b>	
<ul style="list-style-type: none"> <li>• for voltage measurement</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• for current measurement as 2-wire transducer</li> </ul>	Yes; with external supply

<ul style="list-style-type: none"> <li>• for current measurement as 4-wire transducer</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• for resistance measurement with two-wire connection</li> </ul>	Yes; Without compensation of the line resistances
<ul style="list-style-type: none"> <li>• for resistance measurement with three-wire connection</li> </ul>	No
<ul style="list-style-type: none"> <li>• for resistance measurement with four-wire connection</li> </ul>	No
<b>Connectable encoders</b>	
<ul style="list-style-type: none"> <li>• 2-wire sensor</li> </ul>	Yes
<ul style="list-style-type: none"> <li>— permissible quiescent current (2-wire sensor), max.</li> </ul>	1.5 mA
<b>Errors/accuracies</b>	
Temperature error (relative to input range), (+/-)	0.006 %/K
Crosstalk between the inputs, min.	60 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.06 %
Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-)	0.1 %
Linearity error (relative to output range), (+/-)	0.15 %
Temperature error (relative to output range), (+/-)	0.01 %/K
Crosstalk between the outputs, min.	60 dB
Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)	0.06 %
<b>Operational error limit in overall temperature range</b>	
<ul style="list-style-type: none"> <li>• Voltage, relative to input range, (+/-)</li> </ul>	1 %
<ul style="list-style-type: none"> <li>• Current, relative to input range, (+/-)</li> </ul>	1 %
<ul style="list-style-type: none"> <li>• Resistance, relative to input range, (+/-)</li> </ul>	1 %
<ul style="list-style-type: none"> <li>• Voltage, relative to output range, (+/-)</li> </ul>	1 %
<ul style="list-style-type: none"> <li>• Current, relative to output range, (+/-)</li> </ul>	1 %
<b>Basic error limit (operational limit at 25 °C)</b>	
<ul style="list-style-type: none"> <li>• Voltage, relative to input range, (+/-)</li> </ul>	0.8 %; Linearity error ±0.06 %
<ul style="list-style-type: none"> <li>• Current, relative to input range, (+/-)</li> </ul>	0.8 %; Linearity error ±0.06 %
<ul style="list-style-type: none"> <li>• Resistance, relative to input range, (+/-)</li> </ul>	0.8 %; Linearity error ±0.2 %
<ul style="list-style-type: none"> <li>• Resistance thermometer, relative to input range, (+/-)</li> </ul>	0.8 %
<ul style="list-style-type: none"> <li>• Voltage, relative to output range, (+/-)</li> </ul>	0.8 %
<ul style="list-style-type: none"> <li>• Current, relative to output range, (+/-)</li> </ul>	0.8 %
<b>Interference voltage suppression for <math>f = n \times (f_1 \pm 1 \%)</math>, <math>f_1 =</math> interference frequency</b>	
<ul style="list-style-type: none"> <li>• Series mode interference (peak value of interference &lt; rated value of input range), min.</li> </ul>	30 dB
<ul style="list-style-type: none"> <li>• Common mode interference, min.</li> </ul>	40 dB
<b>Interfaces</b>	
Number of PROFINET interfaces	0
Number of RS 485 interfaces	2; MPI and PROFIBUS DP
Number of RS 422 interfaces	0
<b>1. Interface</b>	
Interface type	Integrated RS 485 interface
Isolated	No
<b>Interface types</b>	
<ul style="list-style-type: none"> <li>• RS 485</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Output current of the interface, max.</li> </ul>	200 mA
<b>Protocols</b>	
<ul style="list-style-type: none"> <li>• MPI</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• PROFIBUS DP master</li> </ul>	No
<ul style="list-style-type: none"> <li>• PROFIBUS DP device</li> </ul>	No
<ul style="list-style-type: none"> <li>• Point-to-point connection</li> </ul>	No
<b>MPI</b>	
<ul style="list-style-type: none"> <li>• Transmission rate, max.</li> </ul>	187.5 kbit/s
<b>Services</b>	
<ul style="list-style-type: none"> <li>— PG/OP communication</li> </ul>	Yes
<ul style="list-style-type: none"> <li>— Routing</li> </ul>	Yes
<ul style="list-style-type: none"> <li>— Global data communication</li> </ul>	Yes
<ul style="list-style-type: none"> <li>— S7 basic communication</li> </ul>	Yes
<ul style="list-style-type: none"> <li>— S7 communication</li> </ul>	Yes; Only server, configured on one side
<ul style="list-style-type: none"> <li>— S7 communication, as client</li> </ul>	No; but via CP and loadable FB

— S7 communication, as server	Yes
<b>2. Interface</b>	
Interface type	Integrated RS 485 interface
Isolated	Yes
<b>Interface types</b>	
• RS 485	Yes
• Output current of the interface, max.	200 mA
<b>Protocols</b>	
• MPI	No
• PROFINET IO Controller	No
• PROFINET IO device	No
• PROFINET CBA	No
• PROFIBUS DP master	Yes
• PROFIBUS DP device	Yes
• Point-to-point connection	No
<b>PROFIBUS DP master</b>	
• Transmission rate, max.	12 Mbit/s
• max. number of DP devices	124
<b>Services</b>	
— PG/OP communication	Yes
— Routing	Yes
— Global data communication	No
— S7 basic communication	Yes; 1 blocks only
— S7 communication	Yes; Only server, configured on one side
— S7 communication, as client	No
— S7 communication, as server	Yes
— Equidistance	Yes
— Isochronous mode	No
— SYNC/FREEZE	Yes
— activation/deactivation of DP devices	Yes
— max. number of DP devices that can be activated/deactivated at the same time	8
— Direct data exchange (slave-to-slave communication)	Yes; as subscriber
— DPV1	Yes
<b>Address area</b>	
— Inputs, max.	2 kbyte
— Outputs, max.	2 kbyte
<b>User data per DP device</b>	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
<b>PROFIBUS DP device</b>	
• GSD file	The latest GSD file is available on the Internet ( <a href="http://www.siemens.com/profibus-gsd">http://www.siemens.com/profibus-gsd</a> )
• Transmission rate, max.	12 Mbit/s
• automatic baud rate search	Yes; only with passive interface
• Address area, max.	32
• User data per address area, max.	32 byte
<b>Services</b>	
— PG/OP communication	Yes
— Routing	Yes; Only with active interface
— Global data communication	No
— S7 basic communication	No
— S7 communication	Yes; Only server, configured on one side
— S7 communication, as client	No
— S7 communication, as server	Yes
— Direct data exchange (slave-to-slave communication)	Yes
— DPV1	No
<b>Transfer memory</b>	

— Inputs	244 byte
— Outputs	244 byte
<b>Protocols</b>	
PROFIsafe	No
<b>Communication functions</b>	
PG/OP communication	Yes
Data record routing	Yes
<b>Global data communication</b>	
• supported	Yes
• Number of GD loops, max.	8
• Number of GD packets, max.	8
• Number of GD packets, transmitter, max.	8
• Number of GD packets, receiver, max.	8
• Size of GD packets, max.	22 byte
• Size of GD packet (of which consistent), max.	22 byte
<b>S7 basic communication</b>	
• supported	Yes
• User data per job, max.	76 byte
• User data per job (of which consistent), max.	76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)
<b>S7 communication</b>	
• supported	Yes
• as server	Yes
• as client	Yes; Via CP and loadable FB
• User data per job, max.	180 kbyte; With PUT/GET
• User data per job (of which consistent), max.	240 byte; as server
<b>S5 compatible communication</b>	
• supported	Yes; via CP and loadable FC
<b>Number of connections</b>	
• overall	12
• usable for PG communication	11
— reserved for PG communication	1
— adjustable for PG communication, min.	1
— adjustable for PG communication, max.	11
• usable for OP communication	11
— reserved for OP communication	1
— adjustable for OP communication, min.	1
— adjustable for OP communication, max.	11
• usable for S7 basic communication	8
— reserved for S7 basic communication	0
— adjustable for S7 basic communication, min.	0
— adjustable for S7 basic communication, max.	8
• usable for routing	4; max.
<b>S7 message functions</b>	
Number of login stations for message functions, max.	12; Depending on the configured connections for PG/OP and S7 basic communication
Process diagnostic messages	Yes
simultaneously active Alarm_S blocks, max.	300
<b>Test commissioning functions</b>	
Status block	Yes; Up to 2 simultaneously
Single step	Yes
Number of breakpoints	4
<b>Status/control</b>	
• Status/control variable	Yes
• Variables	Inputs, outputs, memory bits, DB, times, counters
• Number of variables, max.	30
— of which status variables, max.	30
— of which control variables, max.	14
<b>Forcing</b>	

<ul style="list-style-type: none"> <li>• Forcing</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Forcing, variables</li> </ul>	Inputs, outputs
<ul style="list-style-type: none"> <li>• Number of variables, max.</li> </ul>	10
<b>Diagnostic buffer</b>	
<ul style="list-style-type: none"> <li>• present</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Number of entries, max.</li> </ul>	500
<ul style="list-style-type: none"> <li>— can be set</li> </ul>	No
<ul style="list-style-type: none"> <li>— of which powerfail-proof</li> </ul>	100; Only the last 100 entries are retained
<ul style="list-style-type: none"> <li>• Number of entries readable in RUN, max.</li> </ul>	499
<ul style="list-style-type: none"> <li>— can be set</li> </ul>	Yes; From 10 to 499
<ul style="list-style-type: none"> <li>— preset</li> </ul>	10
<b>Service data</b>	
<ul style="list-style-type: none"> <li>• Can be read out</li> </ul>	Yes
<b>Interrupts/diagnostics/status information</b>	
<b>Diagnostics indication LED</b>	
<ul style="list-style-type: none"> <li>• Status indicator digital input (green)</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Status indicator digital output (green)</li> </ul>	Yes
<b>Integrated Functions</b>	
<b>Counter</b>	
<ul style="list-style-type: none"> <li>• Number of counters</li> </ul>	4; See "Technological Functions" manual
<ul style="list-style-type: none"> <li>• Counting frequency, max.</li> </ul>	60 kHz
<b>Frequency measurement</b>	
<ul style="list-style-type: none"> <li>• Number of frequency meters</li> </ul>	4; up to 60 kHz (see "Technological Functions" manual)
<b>controlled positioning</b>	
	Yes
<b>integrated function blocks (closed-loop control)</b>	
	Yes; PID controller (see "Technological Functions" manual)
<b>PID controller</b>	
	Yes
<b>Number of pulse outputs</b>	
	4; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)
<b>Limit frequency (pulse)</b>	
	2.5 kHz
<b>Potential separation</b>	
<b>Potential separation digital inputs</b>	
<ul style="list-style-type: none"> <li>• Potential separation digital inputs</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• between the channels</li> </ul>	No
<ul style="list-style-type: none"> <li>• between the channels and backplane bus</li> </ul>	Yes
<b>Potential separation digital outputs</b>	
<ul style="list-style-type: none"> <li>• Potential separation digital outputs</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• between the channels</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• between the channels, in groups of</li> </ul>	8
<ul style="list-style-type: none"> <li>• between the channels and backplane bus</li> </ul>	Yes
<b>Potential separation analog inputs</b>	
<ul style="list-style-type: none"> <li>• Potential separation analog inputs</li> </ul>	Yes; common for analog I/O
<ul style="list-style-type: none"> <li>• between the channels</li> </ul>	No
<ul style="list-style-type: none"> <li>• between the channels and backplane bus</li> </ul>	Yes
<b>Potential separation analog outputs</b>	
<ul style="list-style-type: none"> <li>• Potential separation analog outputs</li> </ul>	Yes; common for analog I/O
<ul style="list-style-type: none"> <li>• between the channels</li> </ul>	No
<ul style="list-style-type: none"> <li>• between the channels and backplane bus</li> </ul>	Yes
<b>Isolation</b>	
Isolation tested with	500 V AC for 1 minute
<b>Standards, approvals, certificates</b>	
CE mark	Yes
UL approval	Yes
RCM (formerly C-TICK)	Yes
KC approval	Yes
EAC (formerly Gost-R)	Yes
<b>Use in hazardous areas</b>	
<ul style="list-style-type: none"> <li>• ATEX</li> </ul>	No
<b>Railway application</b>	
<ul style="list-style-type: none"> <li>• EN 50155</li> </ul>	Yes; Sections 4, 5 and 12; no further agreements apply; T1, Category 1, Class

**Ambient conditions**

<b>Ambient temperature during operation</b>	
• min.	-25 °C; = Tmin
• max.	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155
<b>Ambient temperature during storage/transportation</b>	
• min.	-40 °C
• max.	70 °C
<b>Altitude during operation relating to sea level</b>	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
<b>Relative humidity</b>	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>	
<b>Use in stationary industrial systems</b>	
— to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
— to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>	
— to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
— to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
— to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
<b>Remark</b>	
— Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!

**Configuration**

<b>Configuration software</b>	
• STEP 7	Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203
• STEP 7 Lite	No
<b>Programming</b>	
• Command set	see instruction list
• Nesting levels	8
• System functions (SFC)	see instruction list
• System function blocks (SFB)	see instruction list
<b>Programming language</b>	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— CFC	Yes
— GRAPH	Yes
— HiGraph®	Yes
<b>Know-how protection</b>	
• User program protection/password protection	Yes
• Block encryption	Yes; With S7 block Privacy

**Dimensions**

Width	120 mm
Height	125 mm
Depth	130 mm

**Weights**

Weight, approx.	680 g
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**Classifications**

	Version	Classification
eClass	14	27-24-22-07
eClass	12	27-24-22-07
eClass	9.1	27-24-22-07
eClass	9	27-24-22-07
eClass	8	27-24-22-07
eClass	7.1	27-24-22-07
eClass	6	27-24-22-07
ETIM	10	EC000236
ETIM	9	EC000236
ETIM	8	EC000236
ETIM	7	EC000236
IDEA	4	3565
UNSPSC	15	32-15-17-05

**Approvals / Certificates**

**General Product Approval**

[Manufacturer Declaration](#)

[Declaration of Conformity](#)



[China RoHS](#)



**General Product Approval**      **EMV**



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