SIEMENS

Data sheet

6ES7314-6BF01-0AB0

SIMATIC S7-300, CPU 314C-2 PTP COMPACT CPU WITH MPI, 24 DI/16 DO, 4AI, 2AO, 1 PT100, 4 FAST COUNTERS (60 KHZ), INTEGRATED INTERFACE RS485, INTEGRATED 24V DC POWER SUPPLY, 48 KBYTE WORKING MEMORY, FRONT CONNECTOR (2 X 40PIN) AND MICRO MEMORY CARD REQUIRED

General information	
Hardware product version	01
Firmware version	V2.0.0
Engineering with	
 Programming package 	STEP 7 V5.2 SP1 or higher (with STEP 7 V5.1 SP3 or higher, please use predecessor CPU)
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Load voltage L+	
 Rated value (DC) 	24 V
 permissible range, lower limit (DC) 	20.4 V
 permissible range, upper limit (DC) 	28.8 V
Input current	
Current consumption (rated value)	800 mA
Current consumption (in no-load operation), typ.	150 mA
Inrush current, typ.	11 A
Power loss	
Power loss, typ.	14 W
Memory	
Work memory	
• integrated	48 kbyte; For program and data
• expandable	No
Load memory	
● Plug-in (MMC)	Yes
 Plug-in (MMC), max. 	8 Mbyte
 Data management on MMC (after last programming), min. 	10 y
Backup	
● present	Yes; Guaranteed by MMC (maintenance-free)

• without battery	Yes; Program and data
CPU processing times	
for bit operations, typ.	0.1 µs
for bit operations, max.	0.2 µs
for word operations, typ.	0.2 µs
for fixed point arithmetic, typ.	2 µs
for floating point arithmetic, typ.	3 µs
CPU-blocks	
Number of blocks (total)	1 024
DB	
• Number, max.	511; DB 0 reserved
• Size, max.	16 kbyte
FB	
• Number, max.	512; From FB 0 to FB 511
• Size, max.	16 kbyte
FC	
• Number, max.	512; from FC 0 to FC 511
• Size, max.	16 kbyte
OB	
 Number, max. 	see instruction list
• Size, max.	16 kbyte
 Number of time alarm OBs 	1
 Number of delay alarm OBs 	1
 Number of cyclic interrupt OBs 	1
 Number of process alarm OBs 	1
Nesting depth	
 per priority class 	8
 additional within an error OB 	4
Counters, timers and their retentivity	
S7 counter	
• Number	256
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	256
Counting range	
— lower limit	0
— upper limit	999
S7 times	
Number	256
Retentivity	

— adjustable	Yes
— lower limit	0
	256
— upper limit	No retentivity
— preset	No retentivity
Time range	10 ms
— lower limit	
— upper limit	9 990 s
IEC timer	Nee
• present	Yes
• Туре	SFB
Data areas and their retentivity	
Flag	
• Number, max.	256 byte
 Retentivity available 	Yes; MB 0 to MB 255
Retentivity preset	MB 0 to MB 15
 Number of clock memories 	8
Data blocks	
• Number, max.	511; from DB1 to DB511
• Size, max.	16 kbyte
Local data	
 per priority class, max. 	510 byte
Address area	
Address area I/O address area	
	1 kbyte
I/O address area	1 kbyte 1 kbyte
I/O address area • Inputs	
I/O address area • Inputs • Outputs	
I/O address area • Inputs • Outputs Process image	1 kbyte
I/O address area Inputs Outputs Process image Inputs 	1 kbyte 128 byte
I/O address area • Inputs • Outputs Process image • Inputs • Outputs	1 kbyte 128 byte
 I/O address area Inputs Outputs Process image Inputs Outputs Default addresses of the integrated channels 	1 kbyte 128 byte 128 byte
 I/O address area Inputs Outputs Process image Inputs Outputs Default addresses of the integrated channels — Digital inputs 	1 kbyte 128 byte 128 byte 128 byte 124.0 to 126.7
 I/O address area Inputs Outputs Process image Inputs Outputs Default addresses of the integrated channels — Digital inputs — Digital outputs 	1 kbyte 128 byte 128 byte 128 byte 124.0 to 126.7 124.0 to 125.7
 I/O address area Inputs Outputs Process image Inputs Outputs Default addresses of the integrated channels Digital inputs Digital outputs Analog inputs 	1 kbyte 128 byte 128 byte 124.0 to 126.7 124.0 to 125.7 752 to 761
 I/O address area Inputs Outputs Process image Inputs Outputs Default addresses of the integrated channels Digital inputs Digital outputs Analog inputs Analog outputs 	1 kbyte 128 byte 128 byte 124.0 to 126.7 124.0 to 125.7 752 to 761
 I/O address area Inputs Outputs Process image Inputs Outputs Default addresses of the integrated channels Digital inputs Digital outputs Analog inputs Analog outputs Digital channels 	1 kbyte 128 byte 128 byte 124.0 to 126.7 124.0 to 125.7 752 to 761 752 to 755
 I/O address area Inputs Outputs Process image Inputs Outputs Default addresses of the integrated channels Digital inputs Digital outputs Analog inputs Analog outputs Digital channels Inputs 	1 kbyte 128 byte 128 byte 124.0 to 126.7 124.0 to 125.7 752 to 761 752 to 755 992
 I/O address area Inputs Outputs Process image Inputs Outputs Default addresses of the integrated channels Digital inputs Digital outputs Analog inputs Analog outputs Digital channels Inputs of which central 	1 kbyte 128 byte 128 byte 128 byte 124.0 to 126.7 124.0 to 125.7 752 to 761 752 to 755 992 992
 I/O address area Inputs Outputs Process image Inputs Outputs Default addresses of the integrated channels Digital inputs Digital outputs Analog inputs Analog outputs Digital channels Inputs of which central Outputs 	1 kbyte 128 byte 128 byte 124.0 to 126.7 124.0 to 125.7 752 to 761 752 to 755 992 992 992
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 I/O address area Inputs Outputs Process image Inputs Outputs Default addresses of the integrated channels Digital inputs Digital outputs Analog inputs Analog outputs Digital channels Inputs of which central Outputs of which central Analog channels 	1 kbyte 128 byte 128 byte 124.0 to 126.7 124.0 to 125.7 752 to 761 752 to 755 992 992 992 992

Outputs	124
— of which central	248
Hardware configuration	
Number of expansion units, max.	3
Number of DP masters	
• via CP	4
Number of operable FMs and CPs (recommended)	0
• FM	8
• CP, PtP	8
• CP, LAN	10
Rack	
 Racks, max. 	4
 Modules per rack, max. 	8; In rack 3 max. 7
Time of day	
Clock	
 Hardware clock (real-time) 	Yes
 retentive and synchronizable 	Yes
Backup time	6 wk
 Deviation per day, max. 	10 s
Operating hours counter	
• Number	1
Number/Number range	0
 Range of values 	0 to 2^31 hours (when using SFC 101)
Granularity	1 hour
• retentive	Yes
Clock synchronization	
• supported	Yes
● to MPI, master	Yes
● to MPI, slave	Yes
● in AS, master	Yes
Digital inputs Number of digital inputs	24
integrated channels (DI)	24 24
Input voltage	24
Rated value (DC)	24 V
• for signal "0"	-3 to +5V
• for signal "1"	+15 to +30V
Input current	
• for signal "1", typ.	8 mA
Input delay (for rated value of input voltage)	
for standard inputs	
ior stanuaru inputs	

— parameterizable	Yes; 0.1 / 0.3 / 3 / 15 ms
for counter/technological functions	
— at "0" to "1", max.	8 µs
Cable length	
● shielded, max.	1 000 m; 100 m for technological functions
 unshielded, max. 	600 m
Digital outputs	
Number of digital outputs	16
integrated channels (DO)	16
Short-circuit protection	Yes; Clocked electronically
Limitation of inductive shutdown voltage to	L+ (-48 V)
Output voltage	
• for signal "1", min.	L+ (-0.8 V)
Output current	
 for signal "1" permissible range, max. 	500 mA
 for signal "1" permissible range for 0 to 60 °C, max. 	500 mA
 for signal "1" minimum load current 	5 mA
 for signal "0" residual current, max. 	0.5 mA
Switching frequency	
 with resistive load, max. 	100 Hz
 with inductive load, max. 	0.5 Hz
Total current of the outputs (per group)	
all mounting positions	
— up to 40 °C, max.	8 A
— up to 60 °C, max.	4 A
Cable length	
• shielded, max.	1 000 m
• unshielded, max.	600 m
Analog inputs	
Number of analog inputs	
 For voltage/current measurement 	4
 For resistance/resistance thermometer 	1
measurement	
integrated channels (AI)	4+1
permissible input voltage for current input (destruction limit), max.	5 V; Permanent
permissible input current for voltage input (destruction limit), max.	0.5 mA; Permanent
Technical unit for temperature measurement adjustable	Yes; Degrees Celsius / degrees Fahrenheit / Kelvin
Input ranges	

	N/
Current	Yes
Resistance thermometer	Yes
Resistance	Yes
Input ranges (rated values), voltages	
• 0 to +10 V	Yes
 Input resistance (0 to 10 V) 	100 kΩ
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
 Input resistance (0 to 20 mA) 	100 Ω
• -20 mA to +20 mA	Yes
 Input resistance (-20 mA to +20 mA) 	100 Ω
• 4 mA to 20 mA	Yes
 Input resistance (4 mA to 20 mA) 	100 Ω
Input ranges (rated values), resistance thermometer	
• Pt 100	Yes
 Input resistance (Pt 100) 	10 MΩ
Input ranges (rated values), resistors	
• 0 to 600 ohms	Yes
 Input resistance (0 to 600 ohms) 	10 MΩ
Cable length	
• shielded, max.	100 m
Analog outputs	
Number of analog outputs	2
integrated channels (AO)	2
Output ranges, voltage	
• 0 to 10 V	Yes
• -10 V to +10 V	Yes
Output ranges, current	
• 0 to 20 mA	Yes
● -20 mA to +20 mA	Yes
• 4 mA to 20 mA	Yes
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
 Resolution with overrange (bit including sign), 	12 bit
max.	
 Integration time, parameterizable 	Yes; 2,5 / 16,6 / 20 ms
Analog value generation for the outputs	
Integration and conversion time/resolution per channel	
 Resolution with overrange (bit including sign), 	12 bit
	12 bit
 Resolution with overrange (bit including sign), 	12 bit 1 ms

Encoder	
Connectable encoders	
• 2-wire sensor	Yes
— permissible quiescent current (2-wire	1.5 mA
sensor), max.	
Errors/accuracies	
Basic error limit (operational limit at 25 °C)	
 Voltage, relative to input range, (+/-) 	0.7 %
 Current, relative to input range, (+/-) 	0.7 %
 Resistance, relative to input range, (+/-) 	3 %
 Resistance thermometer, relative to input 	3 %
range, (+/-)	
 Voltage, relative to output range, (+/-) 	0.7 %
• Current, relative to output range, (+/-)	0.7 %
Interfaces	
MPI	
Cable length, max.	50 m; without repeater
Point-to-point	
Cable length, max.	1 200 m
Integrated protocol driver	
— 3964 (R)	Yes
— ASCII	Yes
— RK512	Yes
Transmission rate, RS 422/485	
— with 3964 (R) protocol, max.	19.2 kbit/s
— with ASCII protocol, max.	19.2 kbit/s
— with RK 512 protocol, max.	19.2 kbit/s
1. Interface	
Interface type	Integrated RS 485 interface
Physics	RS 485
Isolated	No
Power supply to interface (15 to 30 V DC), max.	200 mA
Functionality	
• MPI	Yes
 PROFIBUS DP master 	No
PROFIBUS DP slave	No
Point-to-point connection	No
MPI	
Number of connections	12
• Transmission rate, max.	187.5 kbit/s
Services	

— PG/OP communication	Yes
— Routing	No
— Global data communication	Yes
— S7 basic communication	Yes
— S7 communication	Yes
— S7 communication, as client	No
— S7 communication, as server	Yes

2. Interface	
Interface type	Integrated RS 422/ 485 interface
Physics	RS 422/RS 485 (X.27)
Isolated	Yes
Number of connection resources	none
Functionality	
• MPI	No
 PROFIBUS DP master 	No
PROFIBUS DP slave	No
 Point-to-point connection 	Yes
Point-to-point connection	
 Transmission rate, max. 	38.4 kbit/s
 Interface controllable from the user program 	Yes
 Interface can trigger alarm/interrupt in the user 	Yes
program	
Communication functions	
PG/OP communication	Yes
Global data communication	
• supported	Yes
	Yes 4
• supported	
supportedNumber of GD loops, max.	4
 supported Number of GD loops, max. Number of GD packets, max. 	4 4
 supported Number of GD loops, max. Number of GD packets, max. Number of GD packets, transmitter, max. 	4 4 4
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SS compatible communication Yes Number of connections 1 • overall 12 • usable for PG communication 1 - reserved for PG communication, min. 1 - adjustable for PG communication, min. 1 - adjustable for PG communication, max. 11 - adjustable for PG communication, max. 11 - reserved for OP communication, max. 11 - adjustable for OP communication, min. 1 - adjustable for OP communication, max. 11 - adjustable for OP communication, max. 11 - adjustable for ST basic communication, max. 12 - max. 12 ST message functions 12 Number of login stations for message functions, max. 12 Process diagnostic messages Yes Single step Yes Number of login stations for message functions, max. 12 Single step	 User data per job (of which consistent), max. 	64 byte
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• overall12• usable for PG communication11- reserved for PG communication, min.1- adjustable for PG communication, max.11• usable for OP communication, max.11- adjustable for OP communication, min.1- adjustable for S7 basic communication8- reserved for S7 basic communication8- reserved for S7 basic communication8- adjustable for S7 basic communication, min.8- adjustable for S7 basic communication, min.8- adjustable for S7 basic communication, max.12Mumber of login stations for message functions, max.12Process diagnostic message functions, max.12Process diagnostic message functions, max.12Status blockYesSingle stepYesNumber of brainsbioning functions2Status control variableYesNumber of variables, max.30- of which status variables, max.30- of which status variables, max.14ForcingYes• ForcingYes• ForcingYes• ForcingYes• Number of variables, max.14• Countlers14• Countles4• Countler of variables, max.60 kHz	• supported	Yes
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Capitable for PC 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 8 - reserved for S7 basic communication 8 - adjustable for S7 basic communication, min. 0 - adjustable for S7 basic communication, min. 9 - adjustable for S7 basic communication, max. 12 Yes 11 Forcess diagnostic message functions, max. 12 Process diagnostic messages Yes simultaneously active Alarm-S blocks, max. 40 Test commissioning functions 2 Status block Yes Single step Yes Number of breakpoints 2 Status/control variables, max. 30 - of which status variables, max. 30 - of which status variables, max. 14 Forcing Yes Number of variables, max. 14 Forcing Yes - Forcing Number of variables, max. - of which control variables, max. 10 - Number of c	— reserved for PG communication	1
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• Status/control variableYes• VariablesInputs, outputs, memory bits, DB, times, counters• Number of variables, max.30- of which status variables, max.30- of which control variables, max.14ForcingYes• Forcing, variablesInputs, outputs• Number of variables, max.10Integrated FunctionsNumber of counters4Counting frequency (counter) max.60 kHz	·	2
• VariablesInputs, outputs, memory bits, DB, times, counters• Number of variables, max.30- of which status variables, max.30- of which control variables, max.14ForcingYes• Forcing, variablesInputs, outputs• Number of variables, max.10Integrated FunctionsNumber of counters4Counting frequency (counter) max.60 kHz		
• Number of variables, max.30- of which status variables, max.30- of which control variables, max.14ForcingYes• Forcing, variablesInputs, outputs• Number of variables, max.10Integrated FunctionsNumber of counters4Counting frequency (counter) max.60 kHz	Status/control variable	
of which status variables, max.30 of which control variables, max.14ForcingYes• Forcing, variablesInputs, outputs• Number of variables, max.10Integrated FunctionsNumber of counters4Counting frequency (counter) max.60 kHz		
of which control variables, max. 14 Forcing Yes • Forcing, variables Inputs, outputs • Number of variables, max. 10 Integrated Functions Number of counters 4 Counting frequency (counter) max. 60 kHz		
Forcing Yes • Forcing, variables Inputs, outputs • Number of variables, max. 10 Integrated Functions 4 Counting frequency (counter) max. 60 kHz	— of which status variables, max.	
• Forcing Yes • Forcing, variables Inputs, outputs • Number of variables, max. 10 Integrated Functions Inputs, outputs Number of counters 4 Counting frequency (counter) max. 60 kHz		14
 Forcing, variables Number of variables, max. Integrated Functions Number of counters Quanting frequency (counter) max. Go kHz 		
Number of variables, max. 10 Integrated Functions Number of counters 4 Counting frequency (counter) max. 60 kHz	-	
Integrated Functions Number of counters Counting frequency (counter) max. 60 kHz	• Forcing, variables	
Number of counters 4 Counting frequency (counter) max. 60 kHz	 Number of variables, max. 	10
Counting frequency (counter) max. 60 kHz	Integrated Functions	
	Number of counters	4
Frequency measurement Yes	Counting frequency (counter) max.	60 kHz
	Frequency measurement	Yes

Number of frequency meters	4
controlled positioning	Yes
PID controller	Yes
Number of pulse outputs	4
Limit frequency (pulse)	2.5 kHz
Potential separation Potential separation digital inputs	
Potential separation digital inputs	Yes
 between the channels, in groups of 	16
 between the channels and backplane bus 	Yes
Potential separation digital outputs	165
	Yes
Potential separation digital outputs	
• between the channels, in groups of	8
between the channels and backplane bus	Yes
Potential separation analog inputs	
Potential separation analog inputs	Yes; common for analog I/O
between the channels and backplane bus	Yes
Potential separation analog outputs	
 Potential separation analog outputs 	Yes; common for analog I/O
 between the channels and backplane bus 	Yes
Configuration	
Configuration Configuration software	
	Yes; V5.1 SP2
Configuration software	Yes; V5.1 SP2
Configuration software • STEP 7	Yes; V5.1 SP2 see instruction list
Configuration software • STEP 7 Programming	
Configuration software • STEP 7 Programming • Command set	see instruction list
Configuration software • STEP 7 Programming • Command set • Nesting levels	see instruction list 8
Configuration software • STEP 7 Programming • Command set • Nesting levels • System functions (SFC)	see instruction list 8 see instruction list
Configuration software • STEP 7 Programming • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB)	see instruction list 8 see instruction list
Configuration software • STEP 7 Programming • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language	see instruction list 8 see instruction list see instruction list
Configuration software • STEP 7 Programming • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language — LAD	see instruction list 8 see instruction list see instruction list
Configuration software • STEP 7 Programming • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language — LAD — FBD	see instruction list 8 see instruction list see instruction list Yes Yes
Configuration software • STEP 7 Programming • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language — LAD — FBD — STL	see instruction list 8 see instruction list see instruction list Yes Yes Yes
Configuration software • STEP 7 Programming • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language - LAD - FBD - STL - SCL	see instruction list 8 see instruction list see instruction list Yes Yes Yes Yes
Configuration software • STEP 7 Programming • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language - LAD - FBD - STL - SCL - CFC	see instruction list 8 see instruction list see instruction list Yes Yes Yes Yes Yes
Configuration software • STEP 7 Programming • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language — LAD — FBD — STL — SCL — CFC — GRAPH	see instruction list 8 see instruction list see instruction list Yes Yes Yes Yes Yes Yes
Configuration software • STEP 7 Programming • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language - LAD - FBD - STL - SCL - CFC - GRAPH - HiGraph®	see instruction list 8 see instruction list see instruction list Yes Yes Yes Yes Yes Yes
Configuration software • STEP 7 Programming • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language - LAD - FBD - STL - SCL - CFC - GRAPH - HiGraph® Know-how protection • User program protection/password protection	see instruction list 8 see instruction list see instruction list Yes Yes Yes Yes Yes Yes Yes
Configuration software STEP 7 Programming Command set Nesting levels System functions (SFC) System function blocks (SFB) Programming language LAD FBD STL SCL CFC GRAPH HiGraph® Know-how protection User program protection/password protection Dimensions	see instruction list 8 see instruction list see instruction list Yes Yes Yes Yes Yes Yes Yes
Configuration software • STEP 7 Programming • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language - LAD - FBD - STL - SCL - CFC - GRAPH - HiGraph® Know-how protection • User program protection/password protection	see instruction list 8 see instruction list see instruction list Yes Yes Yes Yes Yes Yes Yes

Depth	130 mm
Weights	
Weight, approx.	676 g
last modified:	08/28/2017