



SIMATIC S7-300, CPU 313C,
 COMPACT CPU WITH MPI, 24 DI/16 DO, 4AI,
 2AO 1 PT100, 3 FAST COUNTERS (30 KHZ),
 INTEGRATED 24V DC POWER SUPPLY,
 128 KBYTE WORKING MEMORY,
 FRONT CONNECTOR (2 X 40PIN) AND MICRO MEMORY
 CARD REQUIRED

Supply voltage

Tensão de alimentação / a CD / Valor de cálculo / [nicht versorgt - 120 V]

Si

Tensão de alimentação / a CD / Valor de cálculo / mínimo

19,2 V

Tensão de alimentação / a CD / Valor de cálculo / máximo

28,8 V

Alimentação de corrente / [nicht versorgt - Netz- und Spannungsausfallüberbrückung]

Alimentação de corrente / [nicht versorgt - Netz- /Spannungsausfallüberbrückung]

5 ms

Alimentação de corrente / [nicht versorgt - Netz- /Spannungsausfallüberbrückung] / [nicht versorgt - Wiederholrate, min.]

1 s

Digital inputs

Load voltage L+

Rated value (DC)

24 V

Reverse polarity protection

Si

Digital outputs

Load voltage L+

Rated value (DC)

24 V

Reverse polarity protection

No

Alimentação de corrente / [nicht versorgt - Eingang] / [nicht versorgt - Eingangsstrom]

Corrente consumida / Valor nominal	650 mA
Current consumption (in no-load operation), typ.	150 mA
Corrente de activação / típico	5 A
Tensões e correntes / I ² t	0,7 A ² ·s
Consumo de energia / Entradas digitais	
from load voltage L+ (without load), max.	80 mA
Digital outputs	
from load voltage L+, max.	50 mA
Power loss	
Potência activa dissipada / típico	12 W
Memory	
Work memory	
Capacidade de memória / [nicht versorgt - erweiterbar] / [nicht versorgt - integriert]	128 kbyte
Ampliação do produto / [nicht versorgt - Arbeitsspeicher]	No
Size of retentive memory for retentive data blocks	64 kbyte
Load memory	
Plug-in (MMC)	Si
Plug-in (MMC), max.	8 Mbyte
Data management on MMC (after last programming), min.	10 a
Backup	
present	Si
without battery	Si
CPU processing times	
for bit operations, typ.	0,07 µs
for word operations, typ.	0,15 µs
for fixed point arithmetic, typ.	0,2 µs
for floating point arithmetic, typ.	0,72 µs
CPU-blocks	
Number of blocks (total)	1024
DB	
Number, max.	1024
Size, max.	64 kbyte
FB	
Number, max.	1024
Size, max.	64 kbyte
FC	
Number, max.	1024

Size, max.	64 kbyte
OB	
Size, max.	64 kbyte
Number of free cycle OBs	1
Number of time alarm OBs	1
Number of delay alarm OBs	2
Number of time interrupt OBs	4
Number of process alarm OBs	1
Number of startup OBs	1
Number of asynchronous error OBs	4
Number of synchronous error OBs	2
Nesting depth	
per priority class	16
additional within an error OB	4
Counters, timers and their retentivity	
S7 counter	
Number	256
Retentivity	
adjustable	Si
lower limit	0
upper limit	255
Counting range	
lower limit	0
upper limit	999
IEC counter	
present	Si
S7 times	
Number	256
Retentivity	
adjustable	Si
lower limit	0
upper limit	255
Time range	
lower limit	10 ms
upper limit	9990 s
IEC timer	
present	Si
Data areas and their retentivity	

Flag	
Number, max.	256 byte
Retentivity available	Si
Number of clock memories	8
Data blocks	
Number, max.	1024
Size, max.	64 kbyte
Retentivity adjustable	Si
Local data	
per priority class, max.	32 kbyte
Address area	
I/O address area	
Quantidade de dados/ da área de endereço das entradas / total	1024 byte
Quantidade de dados/ da área de endereço das saídas / total	1024 byte
Process image	
Inputs	1024 byte
Outputs	1024 byte
Inputs, adjustable	1024 byte
Outputs, adjustable	1024 byte
Inputs, default	128 byte
Outputs, default	128 byte
Digital channels	
Quantidade de entradas digitais / endereçável	1016
Quantidade de saídas digitais / [nicht versorgt - adressierbar]	1008
Inputs, of which central	1016
Outputs, of which central	1008
Analog channels	
Quantidade de entradas analógicas / [nicht versorgt - adressierbar]	253
Quantidade de saídas analógicas / [nicht versorgt - adressierbar]	250
Inputs, of which central	253
Outputs, of which central	250
Hardware configuration	
Expansion devices, max.	3
Number of DP masters	
via CP	4
Number of operable FMs and CPs (recommended)	

FM	8
CP, point-to-point	8
CP, LAN	6
Rack	
Racks, max.	4
Modules per rack, max.	8
Time of day	
Clock	
Componente do produto / relógio em tempo real do hardware	Si
battery-backed and synchronizable	Si
Deviation per day, max.	10 s
Backup time	6 wk
Operating hours counter	
Number	1
retentive	Si
Clock synchronization	
supported	Si
to MPI, master	Si
to MPI, slave	Si
in AS, master	Si
in AS, slave	No
Digital inputs	
Quantidade de entradas digitais	24
Quantidade de entradas digitais / [nicht versorgt - für technologische Funktionen nutzbar]	12
Quantidade de entradas digitais / [nicht versorgt - integriert]	24
Versão das entradas digitais / tipo 1 conforme IEC 61131	Si
Number of simultaneously controllable inputs	
horizontal installation	
up to 40 °C, max.	24
up to 60 °C, max.	12
vertical installation	
up to 40 °C, max.	12
Input voltage	
Tensão de entrada / na entrada digital / na CC / valor de medição	24 V
Input current	
Corrente de entrada / na entrada digital / a um sinal <1> / típico	8 mA
Input delay (for rated value of input voltage)	

for standard inputs	
parameterizable	Si
Rated value	3 ms
for counter/technological functions	
at "0" to "1", max.	16 μ s
Cable length	
Cable length, shielded, max.	1000 m
Cable length unshielded, max.	600 m
Technological functions	
shielded, max.	100 m
Standard DI	
shielded, max.	1000 m
unshielded, max.	600 m
Digital outputs	
Quantidade de saídas digitais	16
of which high-speed outputs	4
Quantidade de saídas digitais / [nicht versorgt - integriert]	16
Short-circuit protection	Si
Controlling a digital input	Si
Switching capacity of the outputs	
Lamp load, max.	5 W
Load resistance range	
lower limit	48 Ω
upper limit	4 k Ω
Output current	
Corrente de saída / na saída digital / a um sinal <1> / Valor nominal	500 mA
Corrente de saída / na saída digital / a um sinal <1> / mínimo	5 mA
Corrente de saída / na saída digital / a um sinal <1> / máximo	0,6 A
for signal "1" minimum load current	5 mA
Corrente residual / na saída digital / com o sinal <0> / máximo	0,5 mA
Parallel switching of 2 outputs	
for uprating	No
for redundant control of a load	Si
Switching frequency	
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

Total current of the outputs (per group)	
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
Cable length	
Cable length, shielded, max.	1000 m
Cable length unshielded, max.	600 m
Analog inputs	
Quantidade de entradas analógicas / [nicht versorgt - integriert]	5
Quantidade de entradas analógicas	5
Quantidade de entradas analógicas / [nicht versorgt - bei Spannungs-/Strommessung]	4
Quantidade de entradas analógicas / [nicht versorgt - bei Widerstands-/Temperaturmessung]	1
permissible input voltage for current input (destruction limit), max.	5 V
permissible input voltage for voltage input (destruction limit), max.	30 V
permissible input current for voltage input (destruction limit), max.	0,5 mA
permissible input current for current input (destruction limit), max.	50 mA
Função do produto / [nicht versorgt - am Analogeingang] / [nicht versorgt - Adaption für Temperaturmessung parametrierbar]	Si
Input ranges	
Dimensão da entrada / na entrada analógica / sinal de tensão	Si
Dimensão da entrada / na entrada analógica / sinal de corrente	Si
Execução do sensor / na entrada analógica / é suportado / Termoresistência	Si
Dimensão da entrada / na entrada analógica / sinal com resistência variável	Si
Input ranges (rated values), voltages	
Área tensão de entrada / na entrada analógica / 0 V ... 10 V	Si
Input resistance (0 to 10 V)	100 kΩ
Input ranges (rated values), currents	
Área Corrente de entrada / na entrada analógica / 0 mA ... 20 mA	Si
Input resistance (0 to 20 mA)	100 Ω
Área Corrente de entrada / na entrada analógica / [nicht versorgt - -20 mA ... +20 mA]	Si
Input resistance (-20 to +20 mA)	100 Ω
Área Corrente de entrada / na entrada analógica / 4 mA ... 20 mA	Si

Input resistance (4 to 20 mA)	100 Ω
Input ranges (rated values), resistance thermometers	
Execução do sensor / na entrada analógica / é suportado / [nicht versorgt - Widerstandsthermometer Pt 100]	Si
Input resistance (Pt 100)	10 MΩ
Input ranges (rated values), resistors	
No-load voltage, typ.	3,3 V
0 to 600 Ohm	Si
Input resistance (0 to 600 Ohm)	10 MΩ
Thermocouple (TC)	
Temperature compensation	
Função do produto / [nicht versorgt - am Analogeingang] / [nicht versorgt - Temperaturkompensation parametrierbar]	No
Characteristic linearization	
parameterizable	Si
Cable length	
Cable length, shielded, max.	100 m
Analog outputs	
Quantidade de saídas analógicas / [nicht versorgt - integriert]	2
Quantidade de saídas analógicas	2
Voltage output, short-circuit protection	Si
Voltage output, short-circuit current, max.	55 mA
Current output, no-load voltage, max.	14 V
Output ranges, voltage	
0 to 10 V	Si
-10 to +10 V	Si
Output ranges, current	
0 to 20 mA	Si
-20 to +20 mA	Si
4 to 20 mA	Si
Connection of actuators	
for voltage output two-wire connection	Si
for voltage output four-wire connection	No
for current output two-wire connection	Si
Load impedance (in rated range of output)	
with voltage outputs, min.	1 kΩ
with voltage outputs, capacitive load, max.	0,1 μF
with current outputs, max.	300 Ω
with current outputs, inductive load, max.	0,1 mH

Destruction limits against externally applied voltages and currents	
Voltages at the outputs towards MANA	16 V
Current, max.	50 mA
Cable length	
Cable length, shielded, max.	200 m
Analog value generation	
Integration and conversion time/resolution per channel	
Resolução A/D / [nicht versorgt - inklusive Übersteuerungsbereich und Vorzeichen] / [nicht versorgt - je Kanal] / [nicht versorgt - maximal]	12 bit
Função do produto / [nicht versorgt - A/D-Integrationszeit parametrierbar]	Si
permissible input frequency, max.	400 Hz
Conversion time (per channel)	1 ms
Time constant of the input filter	0,38 ms
Basic execution time of the module (all channels released)	1 ms
Settling time	
for resistive load	0,6 ms
for capacitive load	1 ms
for inductive load	0,5 ms
Encoder	
Connection of signal encoders	
for voltage measurement	Si
for current measurement as 2-wire transducer	Si
for current measurement as 4-wire transducer	Si
for resistance measurement with two-wire connection	Si
for resistance measurement with three-wire connection	No
for resistance measurement with four-wire connection	No
Connectable encoders	
2-wire sensor	Si
permissible quiescent current (2-wire sensor), max.	1,5 mA
Errors/accuracies	
Temperature error (relative to input range), (+/-)	0,0060 %/K
Crosstalk between the inputs, min.	60 dB
Repeat accuracy in steady state at 25 °C (relative to input area), (+/-)	0,06 %
Output ripple (based on output area, 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 area), (+/-)	0,06 %
Operational error limit in overall temperature range	
Voltage, relative to input area, (+/-)	1 %
Current, relative to input area, (+/-)	1 %
Resistance, relative to input area, (+/-)	1 %
Voltage, relative to output area, (+/-)	1 %
Current, relative to output area, (+/-)	1 %
Basic error limit (operational limit at 25 °C)	
Voltage, relative to input area, (+/-)	0,8 %
Current, relative to input area, (+/-)	0,8 %
Resistance, relative to input area, (+/-)	0,8 %
Resistance thermometer, relative to input area, (+/-)	0,8 %
Voltage, relative to output area, (+/-)	0,8 %
Current, relative to output area, (+/-)	0,8 %
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, $f_1 =$ interference frequency	
Series mode interference (peak value of interference < rated value of input range), min.	30 dB
Common mode interference, min.	40 dB
Interfaces	
Quantidade de interfaces / de acordo com USB	0
Quantidade de interfaces / paralelo	0
Quantidade de interfaces / conforme 20 mA (TTY)	0
Quantidade de interfaces / conforme RS 232	0
Quantidade de interfaces / conforme RS 422	0
Quantidade de interfaces / outras	0
1. Interface	
isolated	No
Power supply to interface (15 to 30 V DC), max.	200 mA
Functionality	
Função do produto / [nicht versorgt - Auswurfvorrichtung] / [nicht versorgt - MPI]	Si
Função do produto / [nicht versorgt - an der 1. Schnittstelle als DP-Master] / [nicht versorgt - PROFIBUS DP]	No
Função do produto / [nicht versorgt - an der 1. Schnittstelle als DP-Slave] / [nicht versorgt - PROFIBUS DP]	No
Função do produto / [nicht versorgt - Auswurfvorrichtung] / [nicht versorgt - PtP]	No
MPI	
Débito binário / [nicht versorgt - an der 1. Schnittstelle als MPI] / [nicht versorgt - maximal]	187,5 kbit/s

Services	
PG/OP communication	Si
Routing	No
Global data communication	Si
S7 basic communication	Si
S7 communication	Si
S7 communication, as client	No
S7 communication, as server	Si
Communication functions	
PG/OP communication	Si
Data record routing	No
Global data communication	
supported	Si
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
S7 basic communication	
supported	Si
User data per job, max.	76 byte
User data per job (of which consistent), max.	76 byte
S7 communication	
supported	Si
as server	Si
as client	Si
User data per job, max.	180 byte
User data per job (of which consistent), max.	240 byte
S5 compatible communication	
supported	Si
Number of connections	
overall	8
usable for PG communication	7
reserved for PG communication	1
adjustable for PG communication, min.	1
adjustable for PG communication, max.	7
usable for OP communication	7

reserved for OP communication	1
adjustable for OP communication, min.	1
adjustable for OP communication, max.	7
usable for S7 basic communication	4
reserved for S7 basic communication	0
adjustable for S7 basic communication, min.	0
adjustable for S7 basic communication, max.	4
S7 message functions	
Number of login stations for message functions, max.	8
Process diagnostic messages	Si
simultaneously active Alarm-S blocks, max.	300
Test commissioning functions	
Status block	Si
Função do produto / [nicht versorgt - der Test- /Inbetriebnahmefunktion] / [nicht versorgt - Einzelschritt]	Si
Number of breakpoints	4
Status/control	
Status/control variable	Si
Number of variables, max.	30
of which status variables, max.	30
of which control variables, max.	14
Forcing	
Forcing	Si
Number of variables, max.	10
Diagnostic buffer	
present	Si
Number of entries, max.	500
adjustable	No
of which powerfail-proof	100
Number of entries readable in RUN, max.	499
adjustable	Si
preset	10
Service data	
can be read out	Si
Interrupts/diagnostics/status information	
Diagnostics indication LED	
Execução do visor / [nicht versorgt - für Diagnosefunktion: Statusanzeige Digitalausgang] / [nicht versorgt - LED grün]	Si

Execução do visor / [nicht versorgt - für Diagnosefunktion: Statusanzeige Digitaleingang] / [nicht versorgt - LED grün]	Si
Integrated Functions	
Number of counters	3
Counting frequency (counter) max.	30 kHz
Frequency measurement	Si
Number of frequency meters	3
controlled positioning	No
integrated function blocks (closed-loop control)	Si
PID controller	Si
Quantidade de saídas de impulsos	3
Limit frequency (pulse)	2,5 kHz
Galvanic isolation	
Galvanic isolation digital inputs	
Galvanic isolation digital inputs	Si
Separação potencial / [nicht versorgt - an den Digitaleingängen] / [nicht versorgt - zwischen den Kanälen]	No
Separação potencial / [nicht versorgt - an den Digitaleingängen] / [nicht versorgt - zwischen den Kanälen und Rückwandbus]	Si
Separação da potência / [nicht versorgt - Digitalausgaben]	
Galvanic isolation digital outputs	Si
Separação potencial / [nicht versorgt - an den Digitalausgängen] / [nicht versorgt - zwischen den Kanälen]	Si
between the channels, in groups of	8
Separação potencial / [nicht versorgt - an den Digitalausgängen] / [nicht versorgt - zwischen den Kanälen und Rückwandbus]	Si
Separação da potência / [nicht versorgt - Analogausgaben]	
Função de produto / na entrada analógica / separação de potencial	Si
Separação potencial / [nicht versorgt - an den Analogeingängen] / [nicht versorgt - zwischen den Kanälen]	No
Separação potencial / [nicht versorgt - an den Analogeingängen] / [nicht versorgt - zwischen den Kanälen und Rückwandbus]	Si
Separação da potência / [nicht versorgt - Analogausgaben]	
Galvanic isolation analog outputs	Si
Separação potencial / [nicht versorgt - an den Analogausgängen] / [nicht versorgt - zwischen den Kanälen]	No
Separação potencial / [nicht versorgt - an den Analogausgängen] / [nicht versorgt - zwischen den Kanälen und Rückwandbus]	Si
Condições ambientais	

Operating temperature	
min.	0 °C
Temperatura ambiente / durante o funcionamento / máxima	60 °C
Configuration	
Configuration software	
STEP 7	Si
STEP 7 Lite	No
Programming	
Nesting levels	8
Programming language	
LAD	Si
FBD	Si
STL	Si
SCL	Si
CFC	Si
GRAPH	Si
HiGraph®	Si
Know-how protection	
User program protection/password protection	Si
Block encryption	Si
Dimensions	
Largura	120 mm
Altura	125 mm
Profundidade	130 mm
Weights	
Weight, approx.	660 g
Status	21/Jul/2014