




## Data sheet

### CPU 314SC/DPM (314-6CG13)

#### Technical data

<b>Order no.</b>	<b>314-6CG13</b>
Type	CPU 314SC/DPM
<b>General information</b>	
Note	-
Features	SPEED7 technology 24 x DI, 16 x DO, 8 x DIO, 4 x AI, 1 x AI Pt100, 2 x AO 256 kB work memory Memory extension (max. 1 MB) PROFIBUS-DP master / PtP (switchable) Also configurable via TIA-Portal
SPEED-Bus	-
<b>Technical data power supply</b>	
Power supply (rated value)	DC 24 V
Power supply (permitted range)	DC 20.4...28.8 V
Reverse polarity protection	
Current consumption (no-load operation)	350 mA
Current consumption (rated value)	1 A
Inrush current	11 A
$I^2t$	0.7 A <sup>2</sup> s
Max. current drain at backplane bus	3 A
Power loss	14 W
<b>Technical data digital inputs</b>	
Number of inputs	24
Cable length, shielded	1000 m
Cable length, unshielded	600 m
Rated load voltage	DC 24 V
Reverse polarity protection of rated load voltage	
Current consumption from load voltage L+ (without load)	70 mA
Rated value	DC 24 V
Input voltage for signal "0"	DC 0...5 V
Input voltage for signal "1"	DC 15...28.8 V
Input voltage hysteresis	-
Frequency range	-
Input resistance	-
Input current for signal "1"	6 mA
Connection of Two-Wire-BEROs possible	
Max. permissible BERO quiescent current	1.5 mA
Input delay of "0" to "1"	0.1 / 0.35 ms
Input delay of "1" to "0"	0.1 / 0.35 ms
Number of simultaneously utilizable inputs horizontal configuration	24
Number of simultaneously utilizable inputs vertical configuration	24
Input characteristic curve	IEC 61131-2, type 1

Initial data size 3 Byte

**Technical data digital outputs**

Number of outputs	16
Cable length, shielded	1000 m
Cable length, unshielded	600 m
Rated load voltage	DC 24 V
Reverse polarity protection of rated load voltage	-
Current consumption from load voltage L+ (without load)	100 mA
Total current per group, horizontal configuration, 40°C	3 A
Total current per group, horizontal configuration, 60°C	2 A
Total current per group, vertical configuration	2 A
Output voltage signal "1" at min. current	L+ (-0.8 V)
Output voltage signal "1" at max. current	L+ (-0.8 V)
Output current at signal "1", rated value	0.5 A
Output current, permitted range to 40°C	5 mA to 0.6 A
Output current, permitted range to 60°C	5 mA to 0.6 A
Output current at signal "0" max. (residual current)	0.5 mA
Output delay of "0" to "1"	100 µs
Output delay of "1" to "0"	100 µs
Minimum load current	-
Lamp load	5 W
Parallel switching of outputs for redundant control of a load	possible
Parallel switching of outputs for increased power	not possible
Actuation of digital input	✔
Switching frequency with resistive load	max. 2.5 kHz
Switching frequency with inductive load	max. 0.5 Hz
Switching frequency on lamp load	max. 2.5 kHz
Internal limitation of inductive shut-off voltage	L+ (-52 V)
Short-circuit protection of output	yes, electronic
Trigger level	1 A
Number of operating cycle of relay outputs	-
Switching capacity of contacts	-
Output data size	2 Byte

**Technical data analog inputs**

Number of inputs	5
Cable length, shielded	200 m
Rated load voltage	DC 24 V
Reverse polarity protection of rated load voltage	✔
Current consumption from load voltage L+ (without load)	-
Voltage inputs	✔
Min. input resistance (voltage range)	-
Input voltage ranges	-10 V ... +10 V 0 V ... +10 V
Operational limit of voltage ranges	+/-0.3%
Basic error limit voltage ranges with SFU	+/-0.2%
Current inputs	✔
Max. input resistance (current range)	100 ?

Input current ranges	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA
Operational limit of current ranges	+/-0.3%
Basic error limit current ranges with SFU	+/-0.2%
Resistance inputs	✔
Resistance ranges	0 ... 600 Ohm
Operational limit of resistor ranges	+/-0.4%
Basic error limit	+/-0.2%
Resistance thermometer inputs	-
Resistance thermometer ranges	Pt100
Operational limit of resistance thermometer ranges	+/-0.6%
Basic error limit thermoresistor ranges	+/-0.4%
Thermocouple inputs	-
Thermocouple ranges	-
Operational limit of thermocouple ranges	-
Basic error limit thermoelement ranges	-
Programmable temperature compensation	-
External temperature compensation	-
Internal temperature compensation	-
Resolution in bit	12
Measurement principle	successive approximation
Basic conversion time	0.5 ms
Noise suppression for frequency	80 dB
Initial data size	10 Byte
<b>Technical data analog outputs</b>	
Number of outputs	2
Cable length, shielded	200 m
Rated load voltage	-
Reverse polarity protection of rated load voltage	-
Current consumption from load voltage L+ (without load)	-
Voltage output short-circuit protection	✔
Voltage outputs	✔
Min. load resistance (voltage range)	1 k $\Omega$
Max. capacitive load (current range)	1 $\mu$ F
Output voltage ranges	-10 V ... +10 V 0 V ... +10 V
Operational limit of voltage ranges	+/-0.2%
Basic error limit voltage ranges with SFU	+/-0.1%
Current outputs	✔
Max. in load resistance (current range)	500 $\Omega$
Max. inductive load (current range)	10 mH
Output current ranges	-20 mA ... +20 mA 0 mA ... +20 mA +4 mA ... +20 mA
Operational limit of current ranges	+/-0.3%
Basic error limit current ranges with SFU	+/-0.2%
Settling time for ohmic load	0.5 ms
Settling time for capacitive load	0.5 ms
Settling time for inductive load	0.5 ms

Resolution in bit	12
Conversion time	1 ms
Substitute value can be applied	no
Output data size	4 Byte

### Technical data counters

Number of counters	4
Counter width	32 Bit
Maximum input frequency	60 kHz
Maximum count frequency	60 kHz
Mode incremental encoder	✓
Mode pulse / direction	✓
Mode pulse	✓
Mode frequency counter	✓
Mode period measurement	✓
Gate input available	✓
Latch input available	✓
Reset input available	-
Counter output available	✓

### Load and working memory

Load memory, integrated	1 MB
Load memory, maximum	1 MB
Work memory, integrated	256 KB
Work memory, maximal	1 MB
Memory divided in 50% program / 50% data	✓
Memory card slot	MMC-Card with max. 1 GB

### Hardware configuration

Racks, max.	4
Modules per rack, max.	8
Number of integrated DP master	1
Number of DP master via CP	4
Operable function modules	8
Operable communication modules PtP	8
Operable communication modules LAN	8

### Status information, alarms, diagnostics

Status display	yes
Interrupts	yes
Process alarm	yes
Diagnostic interrupt	yes
Diagnostic functions	no
Diagnostics information read-out	possible
Supply voltage display	green LED
Group error display	red SF LED
Channel error display	red LED per group

### Command processing times

Bit instructions, min.	0.01 µs
Word instruction, min.	0.01 µs

Double integer arithmetic, min.	0.01 $\mu$ s
Floating-point arithmetic, min.	0.06 $\mu$ s

### Timers/Counters and their retentive characteristics

Number of S7 counters	512
Number of S7 times	512



### Data range and retentive characteristic

Number of flags	8192 Byte
Number of data blocks	4095
Max. data blocks size	64 KB
Max. local data size per execution level	510 Byte

### Blocks

Number of OBs	15
Number of FBs	2048
Number of FCs	2048
Maximum nesting depth per priority class	8
Maximum nesting depth additional within an error OB	4

### Time

Real-time clock buffered	
Clock buffered period (min.)	6 W
Accuracy (max. deviation per day)	10 s
Number of operating hours counter	8
Clock synchronization	
Synchronization via MPI	Master/Slave
Synchronization via Ethernet (NTP)	no

### Address areas (I/O)

Input I/O address area	1024 Byte
Output I/O address area	1024 Byte
Input process image maximal	128 Byte
Output process image maximal	128 Byte
Digital inputs	7856
Digital outputs	7904
Digital inputs central	979
Digital outputs central	986
Integrated digital inputs	24 32
Integrated digital outputs	16 24
Analog inputs	494
Analog outputs	495
Analog inputs, central	253
Analog outputs, central	250
Integrated analog inputs	5
Integrated analog outputs	2

### Communication functions

PG/OP channel	
Global data communication	
Number of GD circuits, max.	4

Size of GD packets, max.	22 Byte
S7 basic communication	✓
S7 basic communication, user data per job	76 Byte
S7 communication	✓
S7 communication as server	✓
S7 communication as client	-
S7 communication, user data per job	160 Byte
Number of connections, max.	32

### Functionality Sub-D interfaces

Type	X2
Type of interface	RS485
Connector	Sub-D, 9-pin, female
Electrically isolated	-
MPI	✓
MP <sup>2</sup> I (MPI/RS232)	-
Point-to-point interface	✓

Type	X3
Type of interface	RS485
Connector	Sub-D, 9-pin, female
Electrically isolated	✓
MPI	-
MP <sup>2</sup> I (MPI/RS232)	-
Point-to-point interface	✓

### Functionality MPI

Number of connections, max.	32
PG/OP channel	✓
Routing	✓
Global data communication	✓
S7 basic communication	✓
S7 communication	✓
S7 communication as server	✓
S7 communication as client	-
Transmission speed, min.	19.2 kbit/s
Transmission speed, max.	187.5 kbit/s

### Functionality PROFIBUS master

PG/OP channel	✓
Routing	✓
S7 basic communication	✓
S7 communication	✓
S7 communication as server	✓
S7 communication as client	-
Equidistance support	-

Isochronous mode	-
SYNC/FREEZE	-
Activation/deactivation of DP slaves	✓
Direct data exchange (slave-to-slave communication)	-
DPV1	✓
Transmission speed, min.	9.6 kbit/s
Transmission speed, max.	12 Mbit/s
Number of DP slaves, max.	32
Address range inputs, max.	1 KB
Address range outputs, max.	1 KB
User data inputs per slave, max.	244 Byte
User data outputs per slave, max.	244 Byte

### Functionality PROFIBUS slave

PG/OP channel	✓
Routing	✓
S7 communication	✓
S7 communication as server	✓
S7 communication as client	-
Direct data exchange (slave-to-slave communication)	-
DPV1	✓
Transmission speed, min.	9.6 kbit/s
Transmission speed, max.	12 Mbit/s
Automatic detection of transmission speed	-
Transfer memory inputs, max.	244 Byte
Transfer memory outputs, max.	244 Byte
Address areas, max.	32
User data per address area, max.	32 Byte

### Point-to-point communication

PtP communication	✓
Interface isolated	✓
RS232 interface	-
RS422 interface	-
RS485 interface	✓
Connector	Sub-D, 9-pin, female
Transmission speed, min.	150 bit/s
Transmission speed, max.	115.5 kbit/s
Cable length, max.	500 m

### Point-to-point protocol

ASCII protocol	✓
STX/ETX protocol	✓
3964(R) protocol	✓
RK512 protocol	-
USS master protocol	✓
Modbus master protocol	✓

Modbus slave protocol	-
Special protocols	-
<b>Functionality RJ45 interfaces</b>	
Type	X5
Type of interface	Ethernet 10/100 MBit
Connector	RJ45
Electrically isolated	✓
PG/OP channel	✓
Number of connections, max.	4
Productive connections	-
<b>Housing</b>	
Material	PPE
Mounting	Rail System 300
<b>Mechanical data</b>	
Dimensions (WxHxD)	120 mm x 125 mm x 120 mm
Weight	610 g
<b>Environmental conditions</b>	
Operating temperature	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C
<b>Certifications</b>	
UL508 certification	in preparation