YASKAWA

Data sheet
CPU 315PN (315-4PN23)

Technical data

Order no.	315-4PN23
Type	CPU 315PN
General information	
Note	-
Features	Powered by SPEED7 Work memory [KB]: 1.024...4.096 Integrated: PROFINET IO controller Interface [RJ45]: PROFINET Interface [RJ45]: Ethernet PG/OP communication Interface [RS485]: MPI Interface [RS485]: PROFIBUS master/slave, PtP: ASCII, STX/ETX, 3964(R), USS master, Modbus master/slave SD/MMC card slot with locking, up to 32 modules stackable, programmable with WinPLC7, SIMATIC Manager and TIA Portal
SPEED-Bus	-
Technical data power supply	
Power supply (rated value)	DC 24 V
Power supply (permitted range)	DC 20.4...28.8 V
Reverse polarity protection	yes
Current consumption (no-load operation)	270 mA
Current consumption (rated value)	1.1 A
Inrush current	6 A
I^2t	0.28 A^2s
Max. current drain at backplane bus	2.5 A
Max. current drain load supply	-
Power loss	8.5 W
Load and working memory	
Load memory, integrated	4 MB
Load memory, maximum	4 MB
Work memory, integrated	1 MB
Work memory, maximal	4 MB
Memory divided in 50% program / 50% data	yes
Memory card slot	SD/MMC-Card with max. 2 GB
Hardware configuration	
Racks, max.	4
Modules per rack, max.	8 in multiple-, 32 in a single-rack configuration
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	no
Process alarm	no
Diagnostic interrupt	no

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Diagnostic functions	yes
Diagnostics information read-out	possible
Supply voltage display	green LED
Group error display	red SF LED
Channel error display	none
Command processing times	
Bit instructions, min.	0.01 µs
Word instruction, min.	0.01 µs
Double integer arithmetic, min.	0.01 µs
Floating-point arithmetic, min.	0.06 µs
Timers/Counters and their retentive characteristics	
Number of S7 counters	512
S7 counter remanence	adjustable 0 up to 512
S7 counter remanence adjustable	C0 .. C7
Number of S7 times	512
S7 times remanence	adjustable 0 up to 512
S7 times remanence adjustable	not retentive
Data range and retentive characteristic	
Number of flags	8192 Byte
Bit memories retentive characteristic adjustable	adjustable 0 up to 8192
Bit memories retentive characteristic preset	MB0 .. MB15
Number of data blocks	4095
Max. data blocks size	64 KB
Number range DBs	1 ... 4095
Max. local data size per execution level	3072 Byte
Max. local data size per block	3072 Byte
Blocks	
Number of OBs	24
Maximum OB size	64 KB
Total number DBs, FBs, FCs	-
Number of FBs	2048
Maximum FB size	64 KB
Number range FBs	0 ... 2047
Number of FCs	2048
Maximum FC size	64 KB
Number range FCs	0 ... 2047
Maximum nesting depth per priority class	8
Maximum nesting depth additional within an error OB	4
Time	
Real-time clock buffered	yes
Clock buffered period (min.)	6 w
Type of buffering	Vanadium Rechargeable Lithium Battery
Load time for 50% buffering period	20 h
Load time for 100% buffering period	48 h
Accuracy (max. deviation per day)	10 s
Number of operating hours counter	8
Clock synchronization	yes

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Synchronization via MPI	Master/Slave
Synchronization via Ethernet (NTP)	Slave
Address areas (I/O)	
Input I/O address area	2048 Byte
Output I/O address area	2048 Byte
Process image adjustable	yes
Input process image preset	256 Byte
Output process image preset	256 Byte
Input process image maximal	2048 Byte
Output process image maximal	2048 Byte
Digital inputs	16384
Digital outputs	16384
Digital inputs central	1024
Digital outputs central	1024
Integrated digital inputs	-
Integrated digital outputs	-
Analog inputs	1024
Analog outputs	1024
Analog inputs, central	256
Analog outputs, central	256
Integrated analog inputs	-
Integrated analog outputs	-
Communication functions	
PG/OP channel	yes
Global data communication	yes
Number of GD circuits, max.	8
Size of GD packets, max.	22 Byte
S7 basic communication	yes
S7 basic communication, user data per job	76 Byte
S7 communication	yes
S7 communication as server	yes
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	yes
MPI	yes
MP²I (MPI/RS232)	-
DP master	-
DP slave	-
Point-to-point interface	-
5V DC Power supply	max. 90mA, isolated
24V DC Power supply	max. 100mA, non-isolated
Type	X3

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Type of interface	RS485
Connector	Sub-D, 9-pin, female
Electrically isolated	yes
MPI	-
MP²I (MPI/RS232)	-
DP master	yes
DP slave	yes
Point-to-point interface	yes
5V DC Power supply	max. 90mA, isolated
24V DC Power supply	max. 100mA, non-isolated
Functionality MPI	
Number of connections, max.	32
PG/OP channel	yes
Routing	yes
Global data communication	yes
S7 basic communication	yes
S7 communication	yes
S7 communication as server	yes
S7 communication as client	-
Transmission speed, min.	19.2 kbit/s
Transmission speed, max.	12 Mbit/s
Functionality PROFIBUS master	
Number of connections, max.	32
PG/OP channel	yes
Routing	yes
S7 basic communication	yes
S7 communication	yes
S7 communication as server	yes
S7 communication as client	-
Activation/deactivation of DP slaves	yes
Direct data exchange (slave-to-slave communication)	-
DPV1	yes
Transmission speed, min.	9.6 kbit/s
Transmission speed, max.	12 Mbit/s
Number of DP slaves, max.	124
Address range inputs, max.	8 KB
Address range outputs, max.	8 KB
User data inputs per slave, max.	244 Byte
User data outputs per slave, max.	244 Byte
Functionality PROFIBUS slave	
Number of connections, max.	32
PG/OP channel	yes
Routing	yes
S7 communication	yes
S7 communication as server	yes
S7 communication as client	-
Direct data exchange (slave-to-slave communication)	-
DPV1	yes

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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
Functionality RJ45 interfaces	
Type	X5
Type of interface	Ethernet 10/100 MBit
Connector	RJ45
Electrically isolated	yes
PG/OP channel	yes
Number of connections, max.	4
Productive connections	-
Fieldbus	-
Type	X8
Type of interface	Ethernet 10/100 MBit
Connector	RJ45
Electrically isolated	yes
PG/OP channel	yes
Number of connections, max.	8
Productive connections	yes
Fieldbus	-
Point-to-point communication	
PtP communication	yes
Interface isolated	yes
RS232 interface	-
RS422 interface	-
RS485 interface	yes
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	yes
STX/ETX protocol	yes
3964(R) protocol	yes
RK512 protocol	-
USS master protocol	yes
Modbus master protocol	yes
Modbus slave protocol	-
Special protocols	-
Properties PROFINET I/O controller	
Realtime Class	-
Conformance Class	PROFINET IO
Number of PN IO devices	128

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IRT support	-
Shared Device supported	-
MRP Client supported	-
Prioritized start-up	-
Number of PN IO lines	1
Address range inputs, max.	2 KB
Address range outputs, max.	2 KB
Transmitting clock	1 ms
Update time	1 ms .. 512 ms
Isochronous mode	-
Parallel operation as controller and I-Device	-
Ethernet communication CP	
Number of configurable connections, max.	8
Number of productive connections by Siemens NetPro, max.	8
S7 connections	BSEND, BRCV, GET, PUT, Connection of active and passive data handling
User data per S7 connection, max.	32 KB
TCP-connections	FETCH PASSIV, WRITE PASSIV, Connection of passive data handling
User data per TCP connection, max.	64 KB
ISO-connections	-
User data per ISO connection, max.	-
ISO on TCP connections (RFC 1006)	FETCH PASSIV, WRITE PASSIV, Connection of passive data handling
User data per ISO on TCP connection, max.	32 KB
UDP-connections	-
User data per UDP connection, max.	-
UDP-multicast-connections	-
UDP-broadcast-connections	-
Ethernet open communication	
Number of connections, max.	8
ISO on TCP connections (RFC 1006)	TSEND, TRCV, TCON, TDISCON
User data per ISO on TCP connection, max.	8 KB
TCP-Connections native	TSEND, TRCV, TCON, TDISCON
User data per native TCP connection, max.	8 KB
User data per ad hoc TCP connection, max.	1460 Byte
UDP-connections	TUSEND, TURCV
User data per UDP connection, max.	1472 Byte
Management & diagnosis	
Protocols	ICMP DCP
Web based diagnosis	-
NCM diagnosis	yes
Housing	
Material	PPE
Mounting	Rail System 300
Mechanical data	
Dimensions (WxHxD)	80 mm x 125 mm x 120 mm
Net weight	430 g
Weight including accessories	-

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Gross weight	-
Environmental conditions	
Operating temperature	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C
Certifications	
UL certification	yes
KC certification	yes

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