

Data sheet

CPU 315SN/PN ECO (315-4PN33)

Technical data

Type	Order no.	315-4PN33
Note	Туре	CPU 315SN/PN ECO
Note	General information	
Features SPEED7 technology ST2 KB work memory ST2 KB ST2 K		
DC 24 V		512 KB work memory PtP PROFINET controller integrated
Power supply (rated value) DC 24 V Power supply (permitted range) DC 20.428.8 V Reverse polarity protection yes Current consumption (no-load operation) 200 mA Current consumption (rated value) 0.7 A Inrush current 11 A Pt 0.4 A²s Max. current drain at backplane bus 2 A Max. current drain load supply - Power loss 5.5 W Load and working memory Load memory, integrated 512 KB Load memory, maximum 512 KB Work memory, integrated 512 KB Work memory, maximal 512 KB Memory divided in 50% program / 50% data yes Memory card slot MMC-Card with max. 1 GB Hardware configuration MMC-Card with max. 1 GB Hardware configuration 8 in multiple-, 32 in a single-rack configuration Number of integrated DP master 0 Number of DP master via CP 4 Operable function modules 8 Operable communication modules LAN 8 Command processing times	SPEED-Bus	-
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Power loss 5.5 W Load and working memory Load memory, integrated 512 KB Load memory, maximum 512 KB Work memory, integrated 512 KB Work memory, maximal 512 KB Work memory, maximal 512 KB Memory divided in 50% program / 50% data yes Memory card slot MMC-Card with max. 1 GB Hardware configuration Racks, max. 4 Modules per rack, max. 8 in multiple-, 32 in a single-rack configuration Number of integrated DP master 0 Number of DP master via CP 4 Operable function modules 8 Operable communication modules PtP 8 Operable communication modules LAN 8 Command processing times Bit instructions, min. 0.01 µs Word instruction, min. 0.01 µs Double integer arithmetic, min. 0.01 µs	Max. current drain at backplane bus	2 A
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Work memory, integrated Work memory, maximal S12 KB 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. Modules per rack, max. 8 in multiple-, 32 in a single-rack configuration Number of integrated DP master 0 Number of DP master via CP 4 Operable function modules 8 Operable communication modules PtP 8 Operable communication modules LAN 8 Command processing times Bit instructions, min. 0.01 µs Word instruction, min. 0.01 µs Double integer arithmetic, min. 0.01 µs	Load memory, integrated	512 KB
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Modules per rack, max. 8 in multiple-, 32 in a single-rack configuration Number of integrated DP master 0 Number of DP master via CP 4 Operable function modules 8 Operable communication modules PtP 8 Operable communication modules LAN 8 Command processing times Bit instructions, min. 0.01 μs Word instruction, min. 0.01 μs Double integer arithmetic, min. 0.01 μs	Hardware configuration	
Number of integrated DP master 0 Number of DP master via CP 4 Operable function modules 8 Operable communication modules PtP 8 Operable communication modules LAN 8 Command processing times Bit instructions, min. 0.01 μs Word instruction, min. 0.01 μs Double integer arithmetic, min. 0.01 μs	Racks, max.	4
Number of DP master via CP Operable function modules 8 Operable communication modules PtP 8 Operable communication modules LAN 8 Command processing times Bit instructions, min. 0.01 µs Word instruction, min. 0.01 µs Double integer arithmetic, min. 0.01 µs	Modules per rack, max.	8 in multiple-, 32 in a single-rack configuration
Operable function modules 8 Operable communication modules PtP 8 Operable communication modules LAN 8 Command processing times Bit instructions, min. 0.01 µs Word instruction, min. 0.01 µs Double integer arithmetic, min. 0.01 µs	Number of integrated DP master	0
Operable communication modules PtP 8 Operable communication modules LAN 8 Command processing times Bit instructions, min. 0.01 μs Word instruction, min. 0.01 μs Double integer arithmetic, min. 0.01 μs	Number of DP master via CP	4
Operable communication modules LAN Command processing times Bit instructions, min. 0.01 µs Word instruction, min. 0.01 µs Double integer arithmetic, min. 0.01 µs	Operable function modules	8
Command processing times Bit instructions, min. 0.01 μs Word instruction, min. 0.01 μs Double integer arithmetic, min. 0.01 μs	Operable communication modules PtP	8
Bit instructions, min. 0.01 µs Word instruction, min. 0.01 µs Double integer arithmetic, min. 0.01 µs	Operable communication modules LAN	8
Word instruction, min. 0.01 μs Double integer arithmetic, min. 0.01 μs	Command processing times	
Double integer arithmetic, min. 0.01 μs	Bit instructions, min.	0.01 µs
	Word instruction, min.	0.01 µs
Floating-point arithmetic, min. 0.06 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	1024 Byte
Max. local data size per block	1024 Byte
Blocks	
Number of OBs	20
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
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
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Input process image maximal	2048 Byte	A YASKAWA COMPANY
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		
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		
Туре	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-isolat	red
Туре	Х3	
Type of interface	RS485	
Connector	Sub-D, 9-pin, female	
Electrically isolated	yes	
MPI	-	
MP²l (MPI/RS232)	-	
DP master	-	
DP slave	-	



24V DC Power supply max. 100mA, non-isolated Functionality MPI Number of connections, max. 32 PGOP channel yes Routing yes Global data communication yes S7 basic communication yes S7 communication as server yes S7 communication as elient - Transmission speed, min. 19.2 kbi/s Transmission speed, min. 19.2 kbi/s Functionality PROFIBUS master PG/OP channel PG/OP channel - Routing - S7 basic communication - S7 communication - S7 communication as server - S7 communication as server - S7 communication as server - S7 communication as elient - Activation/deactivation of DP slaves - DPV1 - Transmission speed, min. - Transmission speed, min. - Transmission speed, max. - Number of DP slaves, max. - </th <th>Point-to-point interface</th> <th>yes</th> <th>A YASKAWA COMPANY</th>	Point-to-point interface	yes	A YASKAWA COMPANY
Number of connections, max. 32	5V DC Power supply	max. 90mA, isolated	
Number of connections, max. 32 PG/OP channel yes Routing yes Global data communication yes S7 basic communication yes S7 communication as server yes S7 communication as defent - Transmission speed, min. 19.2 kbit/s Transmission speed, max. 12 Mbit/s Functionality PROFIBUS master PROOP channel PG/OP channel - Routing - S7 communication - S7 communication as server - S7 communication as client - Activation/deactivation of DP slaves - Direct data exchange (slave-to-slave communication) - DPV1 - Transmission speed, min. - Transmission speed, max. - Address range outputs, max. - Very data faults per slave, max. -	24V DC Power supply	max. 100mA, non-isolated	
Number of connections, max. 32 PG/OP channel yes Routing yes Global data communication yes S7 basic communication yes S7 communication as server yes S7 communication as defent - Transmission speed, min. 19.2 kbit/s Transmission speed, max. 12 Mbit/s Functionality PROFIBUS master PROOP channel PG/OP channel - Routing - S7 communication - S7 communication as server - S7 communication as client - Activation/deactivation of DP slaves - Direct data exchange (slave-to-slave communication) - DPV1 - Transmission speed, min. - Transmission speed, max. - Address range outputs, max. - Very data faults per slave, max. -	Eurotionality MDI		
PGIOP channel yes Routing yes Global data communication yes S7 basic communication yes S7 communication as server yes S7 communication speed, min. 19.2 kbit/s Transmission speed, max. 12 Mbit/s Functionality PROFIBUS master Performance PGIOP channel - Routing - S7 communication - S7 communication as server - S7 communication as server - S7 communication as client - Activation/deactivation of DP slaves - Direct data exchange (slave-to-slave communication) - PDY1 - Transmission speed, min. - Transmission speed, max. - Number of DP slaves, max. - User data outputs per slave, max. - User data inputs per slave, max. - <		00	
Routing			
Global data communication yes S7 basic communication yes S7 communication as server yes S7 communication as dilent - Transmission speed, min. 19.2 kbb/s Transmission speed, max. 12 Mbit/s Functionality PROFIBUS master PC/OP channel Routing - S7 basic communication - S7 basic rounding as a client - S7 communication as server - S7 communication as delent - S7 communication as delent - S8 contractive and communication of DP slaves - Direct data exchange (slave-to-slave communication) - DPV1 - Transmission speed, min. - Transmission speed, max. - Number of DP slaves, max. - User data inputs per slave, max. - User data inputs per slave, max. - User data inputs per slave, max. - Punctionality PROFIBUS slave - PG/OP channel - Routing a scenario asc		*	
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 PC/OP channel - Routing - S7 basic communication - S7 communication as server - S7 communication as client - Activation/deactivation of DP slaves - Direct data exchange (slave-to-slave communication) - DPV1 - Transmission speed, min. - Transmission speed, max. - Number of DP slaves, max. - Address range inputs, max. - User data inputs per slave, max. - User data outputs per slave, max. - PC/OP channel - Routing - S7 communication as client - Direct data exchange (slave-to-slave communication) - S7 communication as client - Direct data exchange (slave-to-slave communication) - S7 communication as client <t< td=""><td></td><td></td><td></td></t<>			
Transmission speed, min. 19.2 kbit/s Functionality PROFIBUS master PG/OP channel		yes	
Transmission speed, max. 12 Mbit/s Functionality PROFIBUS master PG/OP channel	S7 communication as client	-	
Functionality PROFIBUS master PG/OP channel Routing S7 basic communication S7 communication S7 communication as server S7 communication as server S7 communication as selient Activation/deactivation of DP slaves Direct data exchange (slave-to-slave communication) DPV1 Transmission speed, min. Transmission speed, max. Number of DP slaves, max. Address range inputs, max. Address range outputs, max. User data outputs per slave, max. Functionality PROFIBUS slave PG/OP channel S7 communication S7 communication S7 communication as dient Direct data exchange (slave-to-slave communication) DPV1 Transmission speed, min. Transmismin speed, min.	Transmission speed, min.	19.2 kbit/s	
PG/OP channel - Routing - S7 basic communication - S7 communication - S7 communication - S7 communication as server - S7 communication as elient - S7 communication as client - S7 communication as client - S7 communication as client - S7 communication of DP slaves - S7 communication of DP slaves, max S7 communication of DP slaves, max S7 communication - S7 communication as server - S7 communication as client - S7 communication as client - S7 communication -	Transmission speed, max.	12 Mbit/s	
PG/OP channel - Routing - S7 basic communication - S7 communication - S7 communication - S7 communication as server - S7 communication as elient - S7 communication as client - S7 communication as client - S7 communication as client - S7 communication of DP slaves - S7 communication of DP slaves, max S7 communication of DP slaves, max S7 communication - S7 communication as server - S7 communication as client - S7 communication as client - S7 communication -	Functionality PROFIBUS master		
S7 basic communication - S7 communication - S7 communication as server - S7 communication as client - Activation/deactivation of DP slaves - Direct data exchange (slave-to-slave communication) - DPV1 - Transmission speed, min Transmission speed, max Number of DP slaves, max Address range inputs, max Address range outputs, max User data outputs per slave, max User data outputs per slave, max Functionality PROFIBUS slave PG/OP channel - Routing - S7 communication as server - S7 communication as server - S7 communication as server - S7 communication as client - Direct data exchange (slave-to-slave communication) - DPV1 - Transmission speed, min Transmission speed, min Transmission speed, min Transmission speed, min Transmission speed, max Address areas, max Address areas, max		-	
S7 communication - S7 communication as server - S7 communication as client - Activation/deactivation of DP slaves - Direct data exchange (slave-to-slave communication) - DPV1 - Transmission speed, min Transmission speed, max Number of DP slaves, max Address range inputs, max User data inputs per slave, max User data outputs per slave, max User data outputs per slave, max Functionality PROFIBUS slave PG/OP channel - Routing - S7 communication - S7 communication as server - S7 communication as server - S7 communication as server - S7 communication as slient - Direct data exchange (slave-to-slave communication) - DPV1 - Transmission speed, min Transmission speed, min Transmission speed, max Automatic detection of transmission speed - Transfer memory inputs, max Address areas, max Address areas, max	Routing	-	
S7 communication as server - S7 communication as client - Activation/deactivation of DP slaves - Direct data exchange (slave-to-slave communication) - DPV1 - Transmission speed, min Transmission speed, max Number of DP slaves, max Address range inputs, max Address range outputs, max User data inputs per slave, max User data outputs per slave, max Functionality PROFIBUS slave PG/OP channel - Routing - S7 communication as server - S7 communication as server - S7 communication as client - Direct data exchange (slave-to-slave communication) - DPV1 - Transmission speed, min Transmission speed, min Transmission speed, max Automatic detection of transmission speed - Transfer memory inputs, max Address areas, max Address areas, max	S7 basic communication	-	
S7 communication as client Activation/deactivation of DP slaves Direct data exchange (slave-to-slave communication) DPV1	S7 communication	-	
Activation/deactivation of DP slaves Direct data exchange (slave-to-slave communication) DPV1 Transmission speed, min. Transmission speed, max. Number of DP slaves, max. Address range inputs, max. Address range outputs, max. User data inputs per slave, max. 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. Transmission speed, min. Transmission speed, max. Address areas, max. - Address areas, max. - Address areas, max.	S7 communication as server	-	
Direct data exchange (slave-to-slave communication) DPV1 Transmission speed, min. Transmission speed, max. Number of DP slaves, max. Address range inputs, max. Address range outputs, max. - Ruser data inputs per slave, max. User data outputs per slave, max. - 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. Transmission speed, max. Automatic detection of transmission speed Transfer memory inputs, max. Address areas, max. - Address areas, max.	S7 communication as client	-	
DPV1 - Transmission speed, min. - Transmission speed, max. - Number of DP slaves, max. - Address range inputs, max. - Address range outputs, max. - User data inputs per slave, max. - User data outputs per slave, max. - 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. - Transmission speed, max. - Automatic detection of transmission speed - Transfer memory inputs, max. - Transfer memory outputs, max. - Address areas, max. -	Activation/deactivation of DP slaves	-	
DPV1 - Transmission speed, min. - Transmission speed, max. - Number of DP slaves, max. - Address range inputs, max. - Address range outputs, max. - User data inputs per slave, max. - User data outputs per slave, max. - 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. - Transmission speed, max. - Automatic detection of transmission speed - Transfer memory inputs, max. - Transfer memory outputs, max. - Address areas, max. -	Direct data exchange (slave-to-slave communication)	-	
Transmission speed, max. Number of DP slaves, max. Address range inputs, max. Address range outputs, max. User data inputs per slave, max. User data outputs per slave, max. Functionality PROFIBUS slave FUNCTIO	DPV1	-	
Transmission speed, max. Number of DP slaves, max. Address range inputs, max. Address range outputs, max. User data inputs per slave, max. User data outputs per slave, max. Functionality PROFIBUS slave FUNCTIO	Transmission speed, min.	-	
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Address range inputs, max. Address range outputs, max. User data inputs per slave, max. User data outputs per slave, max. Functionality PROFIBUS slave PG/OP channel Routing 7 communication 7 communication as server 7 communication as client Direct data exchange (slave-to-slave communication) DPV1 Transmission speed, min. Transmission speed, max. Automatic detection of transmission speed Transfer memory inputs, max. Transfer memory outputs, max. Address areas, max. -	Number of DP slaves, max.	-	
Address range outputs, max. User data inputs per slave, max. User data outputs per slave, max. Functionality PROFIBUS slave Functionality PROFIBUS slave PG/OP channel Routing 57 communication 57 communication as server 57 communication as client Direct data exchange (slave-to-slave communication) DPV1 Transmission speed, min. Transmission speed, max. Automatic detection of transmission speed Transfer memory inputs, max. Transfer memory outputs, max. Transfer memory outputs, max. Address areas, max.		-	
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User data outputs per slave, max. 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. Transmission speed, max Automatic detection of transmission speed - Transfer memory inputs, max Transfer memory outputs, max Address areas, max		-	
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 Transmission speed, max Automatic detection of transmission speed - Transfer memory inputs, max Transfer memory outputs, max Address areas, max		-	
PG/OP channel - Routing - S7 communication - S7 communication as server - S7 communication as client - S8 communication - S8 client			
Routing - S7 communication - S7 communication as server - S7 communication as client - S7 communication			
S7 communication s server - S7 communication as client - S7 communication	PG/OP channel	-	
S7 communication as server - S7 communication as client - Direct data exchange (slave-to-slave communication) - DPV1 - Transmission speed, min Transmission speed, max Automatic detection of transmission speed - Transfer memory inputs, max Transfer memory outputs, max Address areas, max	Routing	-	
S7 communication as client Direct data exchange (slave-to-slave communication) DPV1 Transmission speed, min. Transmission speed, max. Automatic detection of transmission speed Transfer memory inputs, max. Transfer memory outputs, max. Address areas, max. - Address areas, max.		-	
Direct data exchange (slave-to-slave communication) - DPV1		-	
DPV1	S7 communication as client	-	
Transmission speed, min. Transmission speed, max. Automatic detection of transmission speed Transfer memory inputs, max. Transfer memory outputs, max. Address areas, max. -	Direct data exchange (slave-to-slave communication)	-	
Transmission speed, max. Automatic detection of transmission speed - Transfer memory inputs, max. Transfer memory outputs, max. Address areas, max. - - - - - - - - - - - - -	DPV1	-	
Automatic detection of transmission speed - Transfer memory inputs, max Transfer memory outputs, max Address areas, max	Transmission speed, min.	-	
Transfer memory inputs, max Transfer memory outputs, max Address areas, max	Transmission speed, max.	-	
Transfer memory outputs, max Address areas, max	Automatic detection of transmission speed	-	
Address areas, max	Transfer memory inputs, max.	-	
	Transfer memory outputs, max.	-	
User data per address area, max.	Address areas, max.	-	
	User data per address area, max.	-	



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\Box	oint-to-	.noint	communication
	OIIIL-LO	DOILL	Communication

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	-
Functionality PROFINET I/O controller	
Realtime Class	-
Conformance Class	PROFINET IO
Number of PN IO devices	128
IRT support	-
Prioritized start-up	-
Number of PN IO lines	1
Address range inputs, max.	2 KB
Address range outputs, max.	2 KB
Transmiting clock	1 ms
Update time	1 ms 512 ms
Isochronous mode	-
Functionality RJ45 interfaces	
Туре	X5
Type of interface	Ethernet 10/100 MBit
Connector	RJ45
Electrically isolated	yes
PG/OP channel	yes
Number of connections, max.	4
Productive connections	-
Туре	X8
Type of interface	Ethernet 10/100 MBit
Connector	RJ45
Electrically isolated	yes
PG/OP channel	yes



Number of connections, max.	8 A YASKAWA COMPANY
Productive connections	yes
Ethernet communication CP	
Number of productive 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
User data per ISO on TCP connection, max.	8 KB
User data per native TCP connection, max.	8 KB
User data per ad hoc TCP connection, max.	1460 Byte
User data per UDP connection, max.	1472 Byte
Housing	
Material	PPE
Mounting	Rail System 300
Mechanical data	
Dimensions (WxHxD)	80 mm x 125 mm x 120 mm
Weight	380 g
Environmental conditions	
Operating temperature	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C
Certifications	
UL certification	in preparation
KC certification	yes