Technical Data

CPU 312SC

Module name	312-5BE03
Dimensions and weight	
Dimensions W x H x D	80 x 125 x 120mm
Weight	410g
Voltages, Currents, Potentials	
Power supply (rated value) - Permitted range - Reverse polarity protection	DC 24V 20.4 ... 28.8V yes
Current consumption (no-load operation)	135mA
Inrush current typ.	11A
Power consumption (nominal value)	1.0A
I^2t	$500mA^2s$
External fusing of power supply lines (recommended)	2A
Power loss	14W
Accumulator - Clock back up period	Lithium 30 days
Memory	
Work memory - integrated - expandable	 32kByte up to 512kByte
Processing times	
Processing times for - Bit instructions - Word instructions - Double integer arithmetic - Floating-point arithmetic	 0.021µs 0.021µs 0.021µs 0.125µs
Timers/Counters and their retentive characteristics	
S7 counters - Retentivity - Preset - Count value	512 adjustable up C0 to C7 0 up to 999
IEC counters - Type - Number	yes SFB unlimited (limited only by RAM size)
S7 timers - Retentivity - Preset - Time value	512 adjustable not retentive 10ms up to 9990s
ICE timers - Type - Number	yes SFB unlimited (limited only by RAM size)
Data areas and their retentive characteristics	
Bit memories - Adjustable retentivity - Preset	8192Byte adjustable up MB0 to MB15
Clock memories	8 (1 flag byte)
Data blocks - Size	max. 4095 64kByte
Local data - per priority class	 510Byte

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Module name	312-5BE03
Blocks	
OBs	see the instruction list
- Size	64kByte
Nesting dept	
- per priority class	8
- additional levels within an error OB	4
FBs	2048
- Size	64kByte
FCs	2048
- Size	64kByte
Address areas (I/O)	
Total address areas	1024Byte/1024Byte
I/O Process image	128Byte/128Byte
Digital channels	272/264
- centralized	272/264
- integrated channels	16DI/8DO
Analog channels	64/64
- centralized	64/64
- integrated channels	no
Configuration	
Modules via back plane bus	8
Time	
Real-time clock	yes (HW clock)
- Backed-up	yes
- buffered period	6 Weeks
- Accuracy	Deviation per day < 10s
Operating hours counter	1
- Number	0
- Value range	2^{15}
- Selectivity	1hour
- Retentive	yes, must be manually restarted after every restart
Testing and commissioning functions	
Status/Modify Variables	yes
- Variable	E, A, M, DB, T, Z
- Number of variables	30
of those as status variable	30
of those as control variable	14
Force	yes
- Variable	I, O
- Number of Variables	10
Block status	yes
Single step	yes
Break points	3
Diagnostic buffer	yes
- Number of entries (not configurable)	100

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Module name	312-5BE03
Communication functions	
PG/OP communication	yes
Global Data communication - Number of GD circuit - Number of GD circuit Sending stations Receiving stations - Length of GD packets	yes 4 4 4 4 22Byte
S7 basic communication - User data per job consistent data	yes 76Byte 76Byte (for X_SEND or X_RCV) 64Byte (for X-PUT or X_GET as the Server)
Interfaces	
Hardware description 1. interface	
Physics	RS 485
electrically isolated	no
Interface power supply (15 up to 30V DC)	200mA
Functionality 1. interface	
MPI	yes
Profibus DP	no
Point-to-Point connection	no
MPI 1. interface	
Services - PG-/OP communication - Global data communication - S7 basis communication - S7 Communication as Server as Client - Transmission rates	 yes yes yes yes no 187.5kbit/s
Hardware description 2. interface	
Physics	RS 485
Electrically isolated	yes
Interface power supply (15 up to 30V DC)	200mA
Functionality 2. interface	
MPI	no
Profibus DP	no
Point-to-Point connection - Transmission rate half duplex - Protocols - ASCII - STX/ETX - 3964(R) - USS - Modbus Master	yes max. 115.2kbit/s yes yes yes yes yes
Hardware description 3. interface	
Physics	RJ45
Functionality 3. interface	
Profinet	Ethernet
Services - PG-/OP communication	 yes

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Integrated functions	
Number of counters - Counter frequency max.	2 10kHz
Programming	
Programming language	KOP/FUP/AWL
Instruction set	see the instruction list
Nesting levels	8
System functions (SFC)	see the instruction list
System function blocks (SFB)	see the instruction list
User program protection	yes

Digital Input	312-5BE03
Data for specific module	
Number of inputs	16
Length of cable - unshielded - shielded	 600m 1000m
Voltages, Currents, Potentials	
Rated load voltage L+	DC 24V
Reverse polarity protection	yes
Isolation - between channels and backplane bus - between channels	 yes no
permitted potential difference - between the different circuits	 DC 75V / AC 60V
Isolation tested with	DC 500V
Current consumption - from the power supply L+	 70mA
Status, Interrupts, Diagnostics	
Status display	green LED per channel
Interrupts	none
Diagnostic functions	none
Data for selecting a Sensor	
Input voltage - Rated value - for Signal "1" - for Signal "0"	 DC 24V 15V to 28.8V 0V to 5V
Input current - for Signal "1"	 6mA
Input delay (at nominal value of the input voltage range) - Inputs parameterizable	 0.1ms-0.35ms
Input characteristic curve according	to IEC 1131, Type 1
Connection of 2-wire-BEROs - permitted bias current	possible max. 1.5mA

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Digital Output	312-5BE03
Data for specific module	
Number of outputs	8
Length of cable - unshielded - shielded	 600m 1000m
Voltages, Currents, Potentials	
Rated load voltage L+	DC 24V
Reverse polarity protection	no
Total current of the outputs - horizontal configuration up to 40°C - horizontal configuration up to 60°C - vertical configuration up to 40°C	 3A 2A 2A
Isolation - Between the channels and backplane bus - Between the channels in groups of 8	 yes no yes
Permitted potential difference - between the different circuits	 DC 75V / AC 60V
Insulation tested with	DC 500V
Current consumption - from load voltage L+	 100mA
Status, Interrupts, Diagnostics	
Status display	green LED per channel
Interrupts	none
Diagnostic functions - Group error display - supply voltage display - Channel error display	 red F-LED per group green LED per group none
Data for selecting an actuator	
Output voltage - for Signal "1"	 min. L+ (-0.8V)
Output current - at Signal "1" Rated value - at Signal "0"	 0.5A 5mA to 0.6A 0.5mA
Load resistor range	48Ω to 4kΩ
Lamp load	5W
Parallel connection of 2 outputs - for redundant triggering of a load - to increase performance	 possible not possible
Actuation of digital input	possible
Switch rate - for resistive load - for inductive load (IEC 947-5 DC 13) - for lamp load	 2.5kHz 0.5Hz 2.5kHz
Limitation (internal) voltage induced on circuit interruption at	typ. L+ (-52V)
Short-circuit protection of the outputs - Threshold on	yes, electronic typ. 1A