## SIEMENS

## Data sheet

## 6ES7288-1ST40-0AA2



SIMATIC S7-200 SMART, CPU ST40, CPU V3.0, DC/DC/DC, onboard I/O: 24 DI 24 V DC; 16 DO 24 V DC; power supply: DC 20.4 - 28.8 V DC, program/data memory 80 KB motion function, CAM, gear, web server support

Product type designation     CPU ST40 DC/DC/DC       Engineering with     Installation type/mounting       Rail mounting     Yes; Standard - DIN rail       Supply voltage     Installation type/mounting       permissible range, lower limit (DC)     20.4 V       permissible range, upper limit (DC)     20.4 V       installation type/mounting     Installation type/mounting       Permissible range, upper limit (DC)     20.4 V       permissible range, upper limit (DC)     20.4 V       installation type/mounting     Installation type/mounting       Permissible range, upper limit (DC)     20.4 V       installation type/mounting     Installation type/mounting       installation type/mounting     Installation type/mounting       Port of State     82.0 V       Current consumption, max.     620 mA; 24 V DC       Insush current, max.     149 mA; at 28.8 V       Output current     Installation type for the type fo	General information	
• Programming package         STEP7 Micro / Wiln SMART V3.0           Instalation type/mounting         Ves: Standard - DIN rail           Supply voltage         Permissible range, ower limit (DC)         20.4 V           permissible range, ower limit (DC)         20.4 V         Standard - DIN rail           Permissible range, ower limit (DC)         20.4 V         Standard - DIN rail           Permissible range, ower limit (DC)         20.4 V         Standard - DIN rail           Permissible range, ower limit (DC)         20.4 V         Standard - DIN rail           Part curront         Standard - DIN rail         Standard - DIN rail           Current consumption, max.         620 mA; 24 V DC         Instandard - DIN rail           Output current         Total max.         149 mA; at 28.8 V           Output current         Total Pam; at 28.8 V         DC           Current output, max.         100 mA; 24 V DC Sensor Power         Standard - DIN rail           Power loss, max.         24 W         DC         Standard - DIN rail           Memory         DDR         Prover loss         Standard - DIN rail         Standard - DIN rail           Micro Memory         DDR         Standard - DIN rail         Standard - DIN rail         Standard - DIN rail           Micro Memory Size         80 ktyte <t< td=""><td>Product type designation</td><td>CPU ST40 DC/DC/DC</td></t<>	Product type designation	CPU ST40 DC/DC/DC
Installation type/mounting       Yes; Standard - DIN rail         Supply voltage	Engineering with	
Rail mounting     Yes; Standard - DIN rail       Supply voltage       permissible range, lower limit (DC)     20.4 V       permissible range, upper limit (DC)     28.8 V       Rated value (AC)     • 120 V AC       • 120 V AC     No       • 230 V AC     No       Inrush current     620 mA; 24 V DC       Current consumption, max.     620 mA; 24 V DC       Inrush current     620 mA; 24 V DC       Current output, max.     149 mA; at 28.8 V       Output current     000 mA; 24 V DC Sensor Power       Current output, max.     300 mA; 24 V DC Sensor Power       for backplane bus (5 V DC), max.     1.8 mA; max. 5 V DC for EM bus       Power loss, max.     24 W       Memory     DDR       Flash     Yes       RAM     No       Memory size     80 kbyte       Memory size     80 kbyte       e present     Yes; microSDHC Card (optional)       Backup     •       • present     Yes; / instruction       for bit operations, typ.     90 ns; / instruction       for bit operations, typ.     90 ns; / instruction       for bit operations, typ.     0.7 rs; / instruction       for bit operations, typ.     0.7 rs; / instruction       for bit operations, typ.     0.7 rs; / instruction	<ul> <li>Programming package</li> </ul>	STEP7 Micro / WIN SMART V3.0
Supply voltage         permissible range, lower limit (DC)       20.4 V         permissible range, upper limit (DC)       28.8 V         Rated value (AC)       No         • 120 V AC       No         Power consumption, max.       620 mA; 24 V DC         Inrush current       28.8 V         Current consumption, max.       620 mA; 24 V DC         Inrush current, max.       149 mA; at 28.8 V         Output curront       Current output, max.         Current output, max.       300 mA; 24 V DC Sensor Power         for backplane bus (5 V DC), max.       1.8 mA; max. 5 V DC for EM bus         Power loss.       Power loss.	Installation type/mounting	
permissible range, lower limit (DC)         20.4 V           permissible range, upper limit (DC)         28.8 V           Rated value (AC)         28.8 V           • 120 V AC         No           • 230 V AC         No           Input current         620 mA; 24 V DC           Inrush current, max.         620 mA; 24 V DC           Inrush current, max.         149 mA; at 28.8 V           Output current         000 mA; 24 V DC Sensor Power           for backplane bus (5 V DC), max.         1.8 mA; max.5 V DC for EM bus           Power loss, max.         24 W           Memory         DDR           Flash         Yes           RAM         No           Mernory size         80 kbyte           Mernory size         80 kbyte; Pogram memory           Micro Memory Card         Yes; microSDHC Card (optional)           Backup         Yes; Maintenance free, RTC requires 7 days.           CPU processing times         07 by to; instruction           for bit operations, typ.         0, 7 ns; / instruction           for bit operations, typ.         0, 7 ns; / instruction           for bit operations, typ.         0, 7 ns; / instruction           for bit operations, typ.         0, 7 ns; / instruction           for bit o	Rail mounting	Yes; Standard - DIN rail
permissible range, upper limit (DC)     28.8 V       Rated value (AC)     No       • 120 V AC     No       • 230 V AC     No       Input current     620 mA; 24 V DC       Inrush current, max.     149 mA; at 28.8 V       Output current     300 mA; 24 V DC       Current output, max.     300 mA; 24 V DC Sensor Power       for backplane bus (6 V DC), max.     1.8 mA; max. 5 V DC for EM bus       Power loss.     Power loss, max.       Power loss, max.     24 W       Memory     DDR       Flash     Yes       RAM     No       Memory available for user data     80 kbyte       Memory size     80 kbyte; Program memory       Micro Memory Card     Yes; Maintenance free, RTC requires 7 days.       CPU processing times     for bit operations, typ.       of rot sto operations, typ.     0.7 ns; / instruction       for word operations, typ.     0.7 ns; / instruction       for dodress area     100 address area       I/O address area     10 byte; 584 bit digital input 266 words analog input       i Outputs     73 byte; 584 bit digital output 266 words analog outputput	Supply voltage	
Rated value (AC)       No         • 120 V AC       No         • 230 V AC       No         Input current       620 mA; 24 V DC         Current consumption, max.       620 mA; 24 V DC         Inrush current, max.       149 mA; at 28.8 V         Output, max.       300 mA; 24 V DC Sensor Power         Current output, max.       300 mA; 24 V DC Sensor Power         Current output, max.       1.8 mA; max. 5 V DC for EM bus         Power loss, max.       24 W         Memory       DR         Flash       Yes         RAM       No         Memory available for user data       80 kbyte         Memory size       80 kbyte; Program memory         Micro Memory Card       Yes; microSDHC Card (optional)         Backup       -         • present       Yes; Maintenance free, RTC requires 7 days.         CPU processing times       -         for bit operations, typ.       90 ns; / instruction         for dising point arithmetic, typ.       2.2 ns; / instruction         Address area       -         inputs       73 byte; 584 bit digital input 266 words analog outputput         Time of day       -         Clock       -	permissible range, lower limit (DC)	20.4 V
• 120 V AC     No       • 230 V AC     No       Input current     Current consumption, max.       620 mA; 24 V DC       Inrush current, max.     149 mA; at 28.8 V       Output current       Current output, max.     300 mA; 24 V DC Sensor Power       for backplane bus (5 V DC), max.     1.8 mA; max. 5 V DC for EM bus       Power loss, max.     24 W       Memory     DDR       Flash     Yes       RAM     No       Memory size     80 kbyte       Micro Memory Card     Yes; microSDHC Card (optional)       Backup     -       • present     Yes; Maintenance free, RTC requires 7 days.       CPU processing times     00 ns; / instruction       for bit operations, typ.     0.7 ns; / instruction       for doing onin arithmetic, typ.     2.2 ns; / instruction       for doing onin arithmetic, typ.     2.2 ns; / instruction       for doing contartimetic, typ.     73 byte; 584 bit digital input 266 words analog outputput       Time of day     Clock	permissible range, upper limit (DC)	28.8 V
• 230 V AC       No         Input current       E         Current consumption, max.       620 mA; 24 V DC         Inrush current, max.       149 mA; at 28.8 V         Output current       300 mA; 24 V DC Sensor Power         Current output, max.       300 mA; 24 V DC Sensor Power         for backplane bus (5 V DC), max.       1.8 mA; max. 5 V DC for EM bus         Power loss       24 W         Memory       DR         Flash       Yes         RAM       No         Memory svallable for user data       80 kbyte         Memory Size       80 kbyte; Program memory         Micro Memory Card       Yes; microSDHC Card (optional)         Backup       •         • present       Yes; Maintenance free, RTC requires 7 days.         CPU processing times       07 ns; / instruction         for hit operations, typ.       07 ns; / instruction         for word operations, typ.       0.7 ns; / instruction         for word operations, typ.       1.9 byte; 584 bit digital input 266 words analog outputput         Vine of ay       Ving byte; 584 bit digital input 266 words analog outputput	Rated value (AC)	
Input current         Current consumption, max.         Inrush current, max.         Output current         Current output, max.         Gurrent output, max.         for backplane bus (5 V DC), max.         1.8 mA; max. 5 V DC for EM bus         Power loss         Power loss, max.         Power loss         Power loss, max.         Power loss, max.         Power loss, max.         Power loss         Power loss, max.         Power loss         Power demony         DDR         Flash         Ves         Memory size         No	• 120 V AC	No
Current consumption, max.       620 mA; 24 V DC         Inrush ourrent, max.       149 mA; at 28.8 V         Output current       300 mA; 24 V DC Sensor Power         for backplane bus (6 V DC), max.       300 mA; 24 V DC Sensor Power         for backplane bus (5 V DC), max.       1.8 mA; max. 5 V DC for EM bus         Power loss, max.       24 W         Memory       DDR         Flash       Yes         RAM       No         Memory valiable for user data       80 kbyte; Program memory         Micro Memory Card       Yes; microSDHC Card (optional)         Backup       • present         • present       Yes; Maintenance free, RTC requires 7 days.         CPU processing times       0 ns; / instruction         for bit operations, typ.       0.7 ns; / instruction         for duiting point arithmetic, typ.       2.2 ns; / instruction         for doting point arithmetic, typ.       7.3 byte; 584 bit digital input 266 words analog input         inputs       73 byte; 584 bit digital output 266 words analog outputput         Time of day       Clock	• 230 V AC	No
Inrush current, max.       149 mA; at 28.8 V         Output current       300 mA; 24 V DC Sensor Power         Current output, max.       300 mA; 24 V DC Sensor Power         for backplane bus (5 V DC), max.       1.8 mA; max. 5 V DC for EM bus         Power loss       Power loss         Power loss, max.       24 W         Memory       DDR         Flash       Yes         RAM       No         Memory available for user data       80 kbyte         Memory size       80 kbyte? Program memory         Micro Memory Card       Yes; microSDHC Card (optional)         Backup       • present         • present       Yes; Maintenance free, RTC requires 7 days.         CPU processing times       00 ns; / instruction         for bit operations, typ.       0.7 ns; / instruction         for dogenations, typ.       0.7 ns; / instruction         for dogenations, typ.       2.2 ns; / instruction         Address area       I/O address area         • Inputs       73 byte; 584 bit digital input 266 words analog outputput         Time of day       Clock	Input current	
Output current         Current output, max.       300 mA; 24 V DC Sensor Power         for backplane bus (5 V DC), max.       1.8 mA; max. 5 V DC for EM bus         Power loss       24 W         Memory       24 W         Power loss, max.       24 W         Memory       DDR         Flash       Yes         RAM       No         Memory available for user data       80 kbyte         Memory size       80 kbyte; Program memory         Micro Memory Card       Yes; microSDHC Card (optional)         Backup       • present         • present       Yes; Maintenance free, RTC requires 7 days.         CPU processing times       0.7 ns; / instruction         for bit operations, typ.       90 ns; / instruction         for dod operations, typ.       0.7 ns; / instruction         for dod operations, typ.       2.2 ns; / instruction         Address area       10 address area         • Inputs       73 byte; 584 bit digital input 266 words analog outputput         • Outputs       73 byte; 584 bit digital output 266 words analog outputput         Time of day       Clock	Current consumption, max.	620 mA; 24 V DC
Current output, max.       300 mA; 24 V DC Sensor Power         for backplane bus (5 V DC), max.       1.8 mA; max. 5 V DC for EM bus         Power loss.       24 W         Memory       DDR         Type of memory       DDR         Flash       Yes         RAM       No         Memory size       80 kbyte         Memory Size       80 kbyte; Program memory         Micro Memory Card       Yes; microSDHC Card (optional)         Backup       -         • present       Yes; Maintenance free, RTC requires 7 days.         CPU processing times       0.7 ns; / instruction         for bit operations, typ.       0.7 ns; / instruction         for dodress area       73 byte; 584 bit digital input 266 words analog outputput         Time of day       Time of day         Clock       -	Inrush current, max.	149 mA; at 28.8 V
for backplane bus (5 V DC), max.       1.8 mA; max. 5 V DC for EM bus         Power loss       24 W         Memory       24 W         Memory       DDR         Flash       Yes         RAM       No         Memory size       80 kbyte         Memory size       80 kbyte; Program memory         Micro Memory Card       Yes; microSDHC Card (optional)         Backup       • present         • present       Yes; Maintenance free, RTC requires 7 days.         CPU processing times       0.7 ms; / instruction         for bit operations, typ.       0.7 ms; / instruction         for for floating point arithmetic, typ.       2.2 ms; / instruction         Address area       -         IVO address area       73 byte; 584 bit digital input 266 words analog outputput         Time of day       -         Clock       -	Output current	
Power loss       24 W         Memory       DDR         Type of memory       DDR         Flash       Yes         RAM       No         Memory available for user data       80 kbyte         Memory size       80 kbyte; Program memory         Micro Memory Card       Yes; microSDHC Card (optional)         Backup       • present         • present       Yes; Maintenance free, RTC requires 7 days.         CPU processing times       0.7 ns; / instruction         for bit operations, typ.       0.7 ns; / instruction         for folding point arithmetic, typ.       2.2 ns; / instruction         Address area       I/O address area         I/O address area       73 byte; 584 bit digital input 266 words analog outputput         Time of day       Clock	Current output, max.	300 mA; 24 V DC Sensor Power
Power loss, max.       24 W         Memory       DDR         Type of memory       DDR         Flash       Yes         RAM       No         Memory available for user data       80 kbyte         Memory size       80 kbyte; Program memory         Micro Memory Card       Yes; microSDHC Card (optional)         Backup       • present         • present       Yes; Maintenance free, RTC requires 7 days.         CPU processing times       0.7 ns; / instruction         for bit operations, typ.       90 ns; / instruction         for doting point arithmetic, typ.       2.2 ns; / instruction         Address area       I/O address area         I/O address area       73 byte; 584 bit digital input 266 words analog input         Outputs       73 byte; 584 bit digital output 266 words analog outputput	for backplane bus (5 V DC), max.	1.8 mA; max. 5 V DC for EM bus
Memory       DDR         Type of memory       DDR         Flash       Yes         RAM       No         Memory available for user data       80 kbyte         Memory size       80 kbyte; Program memory         Micro Memory Card       Yes; microSDHC Card (optional)         Backup       • present         • present       Yes; Maintenance free, RTC requires 7 days.         CPU processing times       • for bit operations, typ.         for bit operations, typ.       90 ns; / instruction         for word operations, typ.       0.7 ns; / instruction         for dating point arithmetic, typ.       2.2 ns; / instruction         Address area       I/O address area         • Inputs       73 byte; 584 bit digital input 266 words analog input         • Outputs       73 byte; 584 bit digital output 266 words analog outputput         Time of day       Clock	Power loss	
Type of memory     DDR       Flash     Yes       RAM     No       Memory available for user data     80 kbyte       Memory size     80 kbyte; Program memory       Micro Memory Card     Yes; microSDHC Card (optional)       Backup     • present       • present     Yes; Maintenance free, RTC requires 7 days.       CPU processing times     90 ns; / instruction       for bit operations, typ.     90 ns; / instruction       for bot operations, typ.     0.7 ns; / instruction       for dateresa area     1/O address area       I/O address area     73 byte; 584 bit digital input 266 words analog input       Time of day     Clock	Power loss, max.	24 W
Flash       Yes         RAM       No         Memory available for user data       80 kbyte         Memory size       80 kbyte; Program memory         Micro Memory Card       Yes; microSDHC Card (optional)         Backup       • present         • present       Yes; Maintenance free, RTC requires 7 days.         CPU processing times       90 ns; / instruction         for bit operations, typ.       90 ns; / instruction         for loating point arithmetic, typ.       2.2 ns; / instruction         Address area       //O address area         • Inputs       73 byte; 584 bit digital input 266 words analog input         • Outputs       73 byte; 584 bit digital output 266 words analog outputput         Time of day       Clock	Memory	
RAM       No         Memory available for user data       80 kbyte         Memory size       80 kbyte; Program memory         Micro Memory Card       Yes; microSDHC Card (optional)         Backup       • present         • present       Yes; Maintenance free, RTC requires 7 days.         CPU processing times       90 ns; / instruction         for bit operations, typ.       90 ns; / instruction         for noard operations, typ.       0.7 ns; / instruction         for floating point arithmetic, typ.       2.2 ns; / instruction         Address area       I/O address area         • Inputs       73 byte; 584 bit digital input 266 words analog input         • Outputs       73 byte; 584 bit digital output 266 words analog outputput         Time of day       Clock	Type of memory	DDR
Memory available for user data       80 kbyte         Memory size       80 kbyte; Program memory         Micro Memory Card       Yes; microSDHC Card (optional)         Backup       • present         • present       Yes; Maintenance free, RTC requires 7 days.         CPU processing times       90 ns; / instruction         for bit operations, typ.       90 ns; / instruction         for loating point arithmetic, typ.       0.7 ns; / instruction         Address area       VO address area         I/O address area       73 byte; 584 bit digital input 266 words analog input         • Outputs       73 byte; 584 bit digital output 266 words analog outputput         Time of day       Clock	Flash	Yes
Memory size     80 kbyte; Program memory       Micro Memory Card     Yes; microSDHC Card (optional)       Backup     • present       • present     Yes; Maintenance free, RTC requires 7 days.       CPU processing times     90 ns; / instruction       for bit operations, typ.     90 ns; / instruction       for word operations, typ.     0.7 ns; / instruction       for floating point arithmetic, typ.     2.2 ns; / instruction       Address area     I/O address area       I/O address area     73 byte; 584 bit digital input 266 words analog input       • Inputs     73 byte; 584 bit digital output 266 words analog outputput       Time of day     Clock	RAM	No
Micro Memory Card       Yes; microSDHC Card (optional)         Backup       • present         • present       Yes; Maintenance free, RTC requires 7 days.         CPU processing times       90 ns; / instruction         for bit operations, typ.       90 ns; / instruction         for word operations, typ.       0.7 ns; / instruction         for floating point arithmetic, typ.       2.2 ns; / instruction         Address area       I/O address area         • Inputs       73 byte; 584 bit digital input 266 words analog input         • Outputs       73 byte; 584 bit digital output 266 words analog outputput         Time of day       Clock	Memory available for user data	80 kbyte
Backup       Yes; Maintenance free, RTC requires 7 days.         CPU processing times       90 ns; / instruction         for bit operations, typ.       90 ns; / instruction         for word operations, typ.       0.7 ns; / instruction         for floating point arithmetic, typ.       2.2 ns; / instruction         Address area       I/O address area         I/O address area       73 byte; 584 bit digital input 266 words analog input         • Inputs       73 byte; 584 bit digital output 266 words analog outputput         Time of day       Clock	Memory size	80 kbyte; Program memory
	Micro Memory Card	Yes; microSDHC Card (optional)
CPU processing times         for bit operations, typ.       90 ns; / instruction         for word operations, typ.       0.7 ns; / instruction         for floating point arithmetic, typ.       2.2 ns; / instruction         Address area       2.2 ns; / instruction         I/O address area       73 byte; 584 bit digital input 266 words analog input         • Inputs       73 byte; 584 bit digital output 266 words analog outputput         Time of day       Clock	Backup	
for bit operations, typ.       90 ns; / instruction         for word operations, typ.       0.7 ns; / instruction         for floating point arithmetic, typ.       2.2 ns; / instruction         Address area       2.2 ns; / instruction         I/O address area       -         • Inputs       73 byte; 584 bit digital input 266 words analog input         • Outputs       73 byte; 584 bit digital output 266 words analog outputput         Time of day       -         Clock       -	• present	Yes; Maintenance free, RTC requires 7 days.
for word operations, typ.       0.7 ns; / instruction         for floating point arithmetic, typ.       2.2 ns; / instruction         Address area       2.2 ns; / instruction         I/O address area       1/O address area         • Inputs       73 byte; 584 bit digital input 266 words analog input         • Outputs       73 byte; 584 bit digital output 266 words analog outputput         Time of day       Clock	CPU processing times	
for floating point arithmetic, typ.     2.2 ns; / instruction       Address area     I/O address area       I/O address area     73 byte; 584 bit digital input 266 words analog input       • Inputs     73 byte; 584 bit digital output 266 words analog outputput       Time of day     Clock	for bit operations, typ.	90 ns; / instruction
Address area         I/O address area         • Inputs       73 byte; 584 bit digital input 266 words analog input         • Outputs       73 byte; 584 bit digital output 266 words analog outputput         Time of day       Clock	for word operations, typ.	0.7 ns; / instruction
I/O address area         • Inputs       73 byte; 584 bit digital input 266 words analog input         • Outputs       73 byte; 584 bit digital output 266 words analog outputput         Time of day       Clock	for floating point arithmetic, typ.	2.2 ns; / instruction
• Inputs         73 byte; 584 bit digital input 266 words analog input           • Outputs         73 byte; 584 bit digital output 266 words analog outputput           Time of day         Clock	Address area	
Outputs     73 byte; 584 bit digital output 266 words analog outputput Time of day Clock	I/O address area	
Time of day Clock	Inputs	73 byte; 584 bit digital input 266 words analog input
Clock	Outputs	73 byte; 584 bit digital output 266 words analog outputput
	Time of day	
Type     Hardware clock, no battery backup	Clock	
	• Туре	Hardware clock, no battery backup

	Vac
Hardware clock (real-time)	Yes
Backup time	7 d
Deviation per day, max.	120 s; within 120s/month at 25 °C
Digital inputs	
Number of digital inputs	24; Integrated
<ul> <li>of which inputs usable for technological functions</li> </ul>	8; HSC (High Speed Counting)
Source/sink input	Yes
Number of simultaneously controllable inputs	
all mounting positions	
— up to 40 °C, max.	24
Input voltage	
Type of input voltage	DC
Rated value (DC)	24 V
• for signal "0"	10.0 to 10.3 < 1 V DC; 10.4 to 12.7 < 5 V DC
• for signal "1"	10.0 to 10.3 > 4V; 10.4 to 12.7 > 15V
Input current	
• for signal "0", max. (permissible quiescent current)	1 mA
• for signal "1", typ.	4 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— parameterizable	Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four
— at "0" to "1", min.	0.2 ms
— at "0" to "1", max.	12.8 ms
for interrupt inputs	12.01115
— parameterizable	Yes
for technological functions	165
— parameterizable	Yes; 8 HSCs at 200 kHz for both signal phase and A/B phase
Cable length	res, o hous at 200 km2 for both signal phase and Arb phase
shielded, max.	500 m; 50 m for technological functions
• unshielded, max.	300 m; for technological functions: No
Digital outputs	
Digital outputs	16: Transistor
Number of digital outputs	16; Transistor
Number of digital outputs <ul> <li>of which high-speed outputs</li> </ul>	16; Transistor 5; max. 200 kHz pulse train output
Number of digital outputs <ul> <li>of which high-speed outputs</li> </ul> Switching capacity of the outputs	5; max. 200 kHz pulse train output
Number of digital outputs • of which high-speed outputs Switching capacity of the outputs • with resistive load, max.	5; max. 200 kHz pulse train output 0.5 A
Number of digital outputs • of which high-speed outputs Switching capacity of the outputs • with resistive load, max. • on lamp load, max.	5; max. 200 kHz pulse train output
Number of digital outputs • of which high-speed outputs Switching capacity of the outputs • with resistive load, max. • on lamp load, max. Output voltage	5; max. 200 kHz pulse train output 0.5 A 5 W
Number of digital outputs • of which high-speed outputs Switching capacity of the outputs • with resistive load, max. • on lamp load, max. Output voltage • for signal "0", max.	5; max. 200 kHz pulse train output 0.5 A 5 W 0.1 V
Number of digital outputs • of which high-speed outputs Switching capacity of the outputs • with resistive load, max. • on lamp load, max. Output voltage • for signal "0", max. • for signal "1", min.	5; max. 200 kHz pulse train output 0.5 A 5 W
Number of digital outputs • of which high-speed outputs Switching capacity of the outputs • with resistive load, max. • on lamp load, max. Output voltage • for signal "0", max. • for signal "1", min. Output current	5; max. 200 kHz pulse train output 0.5 A 5 W 0.1 V 20 V DC
Number of digital outputs • of which high-speed outputs Switching capacity of the outputs • with resistive load, max. • on lamp load, max. Output voltage • for signal "0", max. • for signal "0", min. Output current • for signal "1" rated value	5; max. 200 kHz pulse train output 0.5 A 5 W 0.1 V 20 V DC 0.5 A
Number of digital outputs • of which high-speed outputs Switching capacity of the outputs • with resistive load, max. • on lamp load, max. • on lamp load, max. Output voltage • for signal "0", max. • for signal "0", max. • for signal "1", min. Output current • for signal "1" rated value • for signal "0" residual current, max.	5; max. 200 kHz pulse train output 0.5 A 5 W 0.1 V 20 V DC
Number of digital outputs • of which high-speed outputs Switching capacity of the outputs • with resistive load, max. • on lamp load, max. • on lamp load, max. Output voltage • for signal "0", max. • for signal "0", max. • for signal "1", min. Output current • for signal "1" rated value • for signal "0" residual current, max. Output delay with resistive load	5; max. 200 kHz pulse train output 0.5 A 5 W 0.1 V 20 V DC 0.5 A 10 μA
Number of digital outputs • of which high-speed outputs Switching capacity of the outputs • with resistive load, max. • on lamp load, max. • on lamp load, max. Output voltage • for signal "0", max. • for signal "1", min. Output current • for signal "1" rated value • for signal "0" residual current, max. Output delay with resistive load • "0" to "1", max.	5; max. 200 kHz pulse train output 0.5 A 5 W 0.1 V 20 V DC 0.5 A 10 μA 50 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max.
Number of digital outputs • of which high-speed outputs Switching capacity of the outputs • with resistive load, max. • on lamp load, max. • on lamp load, max. Output voltage • for signal "0", max. • for signal "1", min. Output current • for signal "1" rated value • for signal "1" rated value • for signal "0" residual current, max. Output delay with resistive load • "0" to "1", max. • "1" to "0", max.	5; max. 200 kHz pulse train output 0.5 A 5 W 0.1 V 20 V DC 0.5 A 10 μA
Number of digital outputs         • of which high-speed outputs         Switching capacity of the outputs         • with resistive load, max.         • on lamp load, max.         • on lamp load, max.         Output voltage         • for signal "0", max.         • for signal "1", min.         Output current         • for signal "1" rated value         • for signal "0" residual current, max.         Output delay with resistive load         • "0" to "1", max.         • "1" to "0", max.         Cable length	5; max. 200 kHz pulse train output 0.5 A 5 W 0.1 V 20 V DC 0.5 A 10 μA 50 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max. 200 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max.
Number of digital outputs         • of which high-speed outputs         Switching capacity of the outputs         • with resistive load, max.         • on lamp load, max.         • on lamp load, max.         Output voltage         • for signal "0", max.         • for signal "1", min.         Output current         • for signal "1" rated value         • for signal "0" residual current, max.         Output delay with resistive load         • "0" to "1", max.         • "1" to "0", max.         Cable length         • shielded, max.	5; max. 200 kHz pulse train output 0.5 A 5 W 0.1 V 20 V DC 0.5 A 10 μA 50 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max. 200 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max.
Number of digital outputs         • of which high-speed outputs         Switching capacity of the outputs         • with resistive load, max.         • on lamp load, max.         • on lamp load, max.         Output voltage         • for signal "0", max.         • for signal "1", min.         Output current         • for signal "1" rated value         • for signal "0" residual current, max.         Output delay with resistive load         • "0" to "1", max.         • "1" to "0", max.         Cable length         • shielded, max.         • unshielded, max.	5; max. 200 kHz pulse train output 0.5 A 5 W 0.1 V 20 V DC 0.5 A 10 μA 50 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max. 200 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max.
Number of digital outputs • of which high-speed outputs Switching capacity of the outputs • with resistive load, max. • on lamp load, max. • on lamp load, max. Output voltage • for signal "0", max. • for signal "1", min. Output current • for signal "1" rated value • for signal "1" rated value • for signal "0" residual current, max. Output delay with resistive load • "0" to "1", max. • "1" to "0", max. Cable length • shielded, max. • unshielded, max. Interfaces	5; max. 200 kHz pulse train output 0.5 A 5 W 0.1 V 20 V DC 0.5 A 10 μA 50 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max. 200 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max.
Number of digital outputs         • of which high-speed outputs         Switching capacity of the outputs         • with resistive load, max.         • on lamp load, max.         • on lamp load, max.         • on signal "0", max.         • for signal "1", min.         Output current         • for signal "1" rated value         • for signal "0" residual current, max.         Output delay with resistive load         • "0" to "1", max.         • "1" to "0", max.         Cable length         • shielded, max.         • unshielded, max.         • Number of industrial Ethernet interfaces	5; max. 200 kHz pulse train output 0.5 A 5 W 0.1 V 20 V DC 0.5 A 10 μA 50 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max. 200 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max. 200 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max. 200 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max.
Number of digital outputs         • of which high-speed outputs         Switching capacity of the outputs         • with resistive load, max.         • on lamp load, max.         • on lamp load, max.         Output voltage         • for signal "0", max.         • for signal "1", min.         Output current         • for signal "1" rated value         • for signal "0" residual current, max.         Output delay with resistive load         • "0" to "1", max.         • "1" to "0", max.         Cable length         • shielded, max.         • unshielded, max.         Number of industrial Ethernet interfaces         Number of RS 485 interfaces	5; max. 200 kHz pulse train output 0.5 A 5 W 0.1 V 20 V DC 0.5 A 10 μA 50 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max. 200 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max.
Number of digital outputs         • of which high-speed outputs         Switching capacity of the outputs         • with resistive load, max.         • on lamp load, max.         • on lamp load, max.         • on lamp load, max.         • on signal "0", max.         • for signal "1", min.         Output current         • for signal "1" rated value         • for signal "0" residual current, max.         Output delay with resistive load         • "0" to "1", max.         • "1" to "0", max.         • shielded, max.         • unshielded, max.         • unshielded, max.         • unshielded, max.         • unshielded, max.         • Interfaces         Number of industrial Ethernet interfaces         Number of RS 485 interfaces         1. Interface	5; max. 200 kHz pulse train output 0.5 A 5 W 0.1 V 20 V DC 0.5 A 10 μA 50 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max. 200 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max. 200 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max. 200 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max. 200 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max.
Number of digital outputs         • of which high-speed outputs         Switching capacity of the outputs         • with resistive load, max.         • on lamp load, max.         • on signal "0", max.         • for signal "1", min.         Output current         • for signal "1" rated value         • for signal "0" residual current, max.         Output delay with resistive load         • "0" to "1", max.         • "1" to "0", max.         • unshielded, max.         • unshielded, max.         • unshielded, max.         Number of industrial Ethernet interfaces         Number of RS 485 interfaces         Interface         Interface type	5; max. 200 kHz pulse train output 0.5 A 5 W 0.1 V 20 V DC 0.5 A 10 μA 50 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max. 200 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max. 200 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max. 500 m 150 m 2 2 1 PROFINET
Number of digital outputs         • of which high-speed outputs         Switching capacity of the outputs         • with resistive load, max.         • on lamp load, max.         • or signal "0", max.         • for signal "1", min.         Output current         • for signal "1" rated value         • for signal "0" residual current, max.         Output delay with resistive load         • "0" to "1", max.         • "1" to "0", max.         • shielded, max.         • unshielded, max.         • unshielded, max.         Number of industrial Ethernet interfaces         Number of RS 485 interfaces         Interface type         Isolated	5; max. 200 kHz pulse train output 0.5 A 5 W 0.1 V 20 V DC 0.5 A 10 μA 50 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max. 200 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max. 200 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max. 500 m 150 m 2 2 1 PROFINET Yes; Transformer isolated, 1,500V AC
Number of digital outputs         • of which high-speed outputs         Switching capacity of the outputs         • with resistive load, max.         • on lamp load, max.         • on lamp load, max.         Output voltage         • for signal "0", max.         • for signal "1", min.         Output current         • for signal "1" rated value         • for signal "0" residual current, max.         Output delay with resistive load         • "0" to "1", max.         • "1" to "0", max.         • "1" to "0", max.         • shielded, max.         • unshielded, max.         • unshielded, max.         • Interfaces         Number of industrial Ethernet interfaces         Number of RS 485 interfaces         Interface type         Isolated         automatic detection of transmission rate	5; max. 200 kHz pulse train output         0.5 A         5 W         0.1 V         20 V DC         0.5 A         10 μA         50 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max.         200 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max.         500 m         150 m         2         1         PROFINET         Yes; Transformer isolated, 1,500V AC         Yes; 100 Mbit/s
Number of digital outputs         • of which high-speed outputs         Switching capacity of the outputs         • with resistive load, max.         • on lamp load, max.         • on lamp load, max.         • on lamp load, max.         • or signal "0", max.         • for signal "1", min.         Output current         • for signal "1" rated value         • for signal "0" residual current, max.         Output delay with resistive load         • "0" to "1", max.         • "1" to "0", max.         • shielded, max.         • unshielded, max.         • unshielded, max.         • unshielded, max.         • Interfaces         Number of industrial Ethernet interfaces         Number of RS 485 interfaces         1. Interface         Interface type         Isolated         automatic detection of transmission rate         Autonegotiation	5; max. 200 kHz pulse train output         0.5 A         5 W         0.1 V         20 V DC         0.5 A         10 μA         50 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max.         200 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max.         500 m         150 m         2         1         PROFINET         Yes; Transformer isolated, 1,500V AC         Yes; 100 Mbit/s         Yes
Number of digital outputs         • of which high-speed outputs         Switching capacity of the outputs         • with resistive load, max.         • on lamp load, max.         • on lamp load, max.         • or signal "0", max.         • for signal "1", min.         Output current         • for signal "1" rated value         • for signal "0" residual current, max.         Output delay with resistive load         • "0" to "1", max.         • "1" to "0", max.         • "1" to "0", max.         • shielded, max.         • unshielded, max.         • unshielded, max.         • unshielded, max.         • Interfaces         Number of industrial Ethernet interfaces         Number of RS 485 interfaces         1. Interface         Interface type         Isolated         automatic detection of transmission rate         Autonegotiation         Autocrossing	5; max. 200 kHz pulse train output         0.5 A         5 W         0.1 V         20 V DC         0.5 A         10 μA         50 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max.         200 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max.         500 m         150 m         2         1         PROFINET         Yes; Transformer isolated, 1,500V AC         Yes; 100 Mbit/s
Number of digital outputs         • of which high-speed outputs         Switching capacity of the outputs         • with resistive load, max.         • on lamp load, max.         • on lamp load, max.         • for signal "0", max.         • for signal "1", min.         Output current         • for signal "1" rated value         • for signal "0" residual current, max.         Output delay with resistive load         • "0" to "1", max.         • "1" to "0", max.         • shielded, max.         • unshielded, max.         • unshielded, max.         • Interfaces         Number of industrial Ethernet interfaces         Number of RS 485 interfaces         1. Interface         Interface type         Isolated         automatic detection of transmission rate         Autocrossing         Interface types	5; max. 200 kHz pulse train output         0.5 A         5 W         0.1 V         20 V DC         0.5 A         10 μA         50 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max.         200 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max.         500 m         150 m         2         1         PROFINET         Yes; Transformer isolated, 1,500V AC         Yes; 100 Mbit/s         Yes
Number of digital outputs         • of which high-speed outputs         Switching capacity of the outputs         • with resistive load, max.         • on lamp load, max.         • on lamp load, max.         • or signal "0", max.         • for signal "1", min.         Output current         • for signal "1" rated value         • for signal "0" residual current, max.         Output delay with resistive load         • "0" to "1", max.         • "1" to "0", max.         • "1" to "0", max.         • shielded, max.         • unshielded, max.         • unshielded, max.         • unshielded, max.         • Interfaces         Number of industrial Ethernet interfaces         Number of RS 485 interfaces         1. Interface         Interface type         Isolated         automatic detection of transmission rate         Autonegotiation         Autocrossing	5; max. 200 kHz pulse train output         0.5 A         5 W         0.1 V         20 V DC         0.5 A         10 μA         50 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max.         200 μs; of standard DQ, for Qa.0 to Qa.7 0.5 μs max.         500 m         150 m         2         1         PROFINET         Yes; Transformer isolated, 1,500V AC         Yes; 100 Mbit/s         Yes

Protocols	
PROFINET IO Controller	Yes; Since V2.4
PROFINET IO Device	Yes; I-Device since V2.5
PROFINET IO Controller	
<ul> <li>Transmission rate, max.</li> </ul>	100 Mbit/s
Services	
- Number of connectable IO Devices, max.	8
— Updating time	4 ms; The minimum value of the update time also depends on the communication component set for PROFINET IO, on the number of IO devices and the quantity of configured user data.
Address area	
— Inputs, max.	73.7 byte; Per device
— Outputs, max.	73.7 byte; Per device
2. Interface	
Interface type	RS 485 (max. 187.5 kbps)
Interface types	
• RS 485	Yes
PROFIBUS DP master	
Services	
- S7 communication	Yes
Protocols	
Supports protocol for PROFINET IO	Yes; RT Controller (since FW V2.4) & I-Device (since FW V2.5)
PROFIBUS	
	Yes; Via CM DP module
Protocols (Ethernet)	Vee
• TCP/IP	Yes
communication functions / header	
S7 communication	
supported	Yes
as server	Yes
as client	Yes
Test commissioning functions	
Status/control	
<ul> <li>Status/control variable</li> </ul>	Yes
Forcing	
Forcing	Yes
Integrated Functions	
Counter	
Number of counters	8
PID controller	Yes; PID closed-loop control function: continuous controller outputs, binary controller outputs, automatic/manual mode, max. 16 loops
Number of pulse outputs	5
Potential separation	
Potential separation digital inputs	
between the channels, in groups of	1
Potential separation digital outputs	
between the channels	No
<ul> <li>between the channels, in groups of</li> </ul>	2
EMC	
Interference immunity against discharge of static electricity	
Interference immunity against discharge of static	Yes
<ul> <li>Interference infinulity against discharge of static electricity acc. to IEC 61000-4-2</li> </ul>	
— Test voltage at air discharge	8 kV
Test voltage at contact discharge	4 kV
Interference immunity against high-frequency electromagnetic field	
<ul> <li>Interference immunity against high-frequency radiation acc. to IEC 61000-4-3</li> </ul>	Yes; 80 to 1 000 MHz, 10 V/m, 80 % AM at 1 kHz 1.4 to 6.0 GHz, 3 V/m, 80 % AM a 1 kHz
Interference immunity to cable-borne interference	
Interference immunity or supply lines acc. to IEC 61000- 4-4	Yes; 2 kV acc. to IEC 61000-4-4, burst
Interference immunity on signal cables acc. to IEC 61000- 4-4	Yes; ±2 kV acc. to IEC 61000-4-4, Burst
Interference immunity against voltage surge	

<ul> <li>Interference immunity on supply lines acc. to IEC 61000- 4-5</li> </ul>	Yes		
Interference immunity against conducted variable disturbance indu	uced by high-frequency fields		
Interference immunity against high frequency current feed acc. to IEC 61000-4-6	Yes; 10 V, 150 kHz to 80 MHz (to IEC 61000-4-6)		
Emission of radio interference acc. to EN 55 011			
<ul> <li>Limit class A, for use in industrial areas</li> </ul>	Yes; EN 61000-6-4, interference emission: Intended for use in industrial areas.		
Emission of conducted and non-conducted interference			
<ul> <li>Interference emission via line/AC current cables</li> </ul>	EN 61000-6-4, interference emission: Intended for use in industrial areas.		
Degree and class of protection			
IP degree of protection	IP20		
Standards, approvals, certificates			
CE mark	Yes		
Ambient conditions			
Free fall			
<ul> <li>Fall height, max.</li> </ul>	0.3 m; five times, in product package		
Ambient temperature during operation			
• min.	-20 °C		
• max.	60 °C		
<ul> <li>horizontal installation, min.</li> </ul>	-20 °C		
<ul> <li>horizontal installation, max.</li> </ul>	60 °C		
• vertical installation, min.	-20 °C		
• vertical installation, max.	50 °C		
Ambient temperature during storage/transportation			
• min.	-40 °C		
• max.	70 °C		
Air pressure acc. to IEC 60068-2-13			
<ul> <li>Storage/transport, min.</li> </ul>	795 hPa		
Storage/transport, max.	1 139 hPa		
Altitude during operation relating to sea level			
<ul> <li>Installation altitude, min.</li> </ul>	-1 000 m		
<ul> <li>Installation altitude, max.</li> </ul>	2 000 m		
Relative humidity			
<ul> <li>Operation at 25 °C without condensation, max.</li> </ul>	95 %		
configuration / header			
configuration / programming / header			
Programming language			
— LAD	Yes		
— FBD	Yes		
— STL	Yes		
Dimensions			
Width	125 mm		
Height	100 mm		
Depth	81 mm		
Weights			
Weight, approx.	422.8 g		
Classifications			

	Version	Classification
eClass	14	27-24-22-07
eClass	12	27-24-22-07
eClass	9.1	27-24-22-07
eClass	9	27-24-22-07
eClass	8	27-24-22-07
eClass	7.1	27-24-22-07
eClass	6	27-24-22-07
ETIM	9	EC000236
ETIM	8	EC000236
ETIM	7	EC000236

Approvals / Certificates

General Product Approval





last modified:

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