

S7-200 SMART Programmable Controllers

product sample • 09.2020

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Siemens has been committed to the development, promotion and application of the latest technologies in industrial automation for over 160 years.

In the meantime, it has brought reliable and efficient automation products to the vast number of industrial customers, and improved automation solutions.

The customer's production efficiency enhances the customer's market competitiveness.

The Siemens SIMATIC controller family is a complete product portfolio, from the most basic intelligent logic controllers

LOGO! And the S7 series of high-performance programmable controllers, and then to the PC-based automation control system. No matter how

With stringent requirements, it can be flexibly combined, customized, and met according to specific application needs and budget.

SIMATIC S7-200 SMART is a tailor-made company for Siemens customers after extensive market research.

Cost-effective small PLC products. Combined with Siemens SINAMICS drive products and SIMATIC HMI products,

Small automation solutions centered on the S7-200 SMART will create more value for Indian customers.

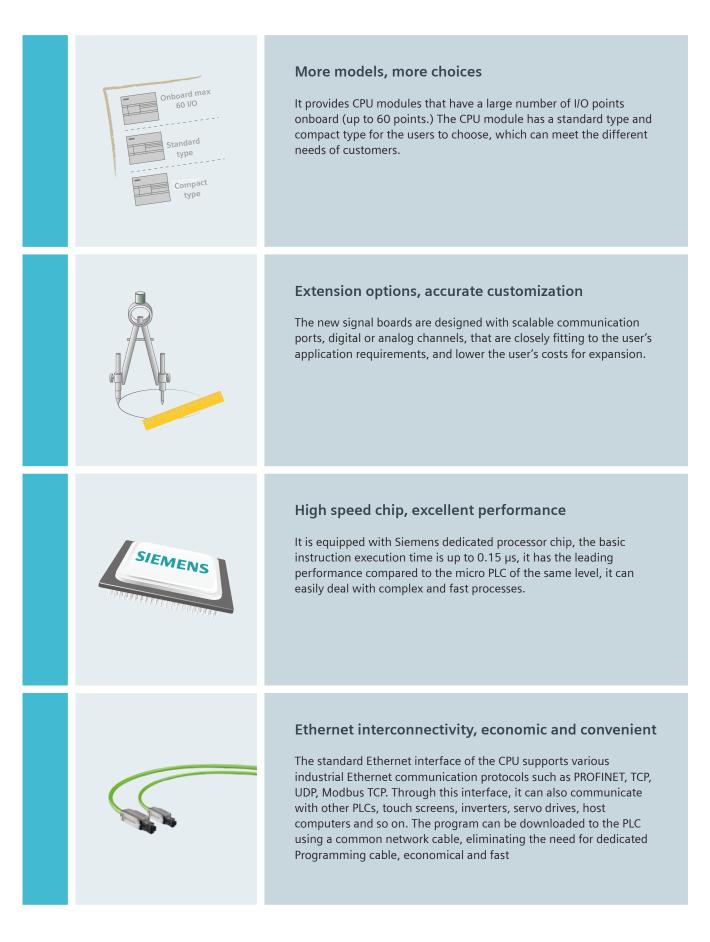


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SIMATIC S7-200 SMART Product Highlights



Tri-axial pulse, freedom in motion

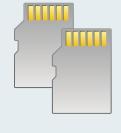
Provides powerful functions of speed and positioning control, the CPU module can maximally integrate three 100 kHz high speed pulse outputs, and support PWM/PTO.

The CPU-integrated PROFINET interface allows you to connect multiple servo drives with easy-to-use SINAMICS motion library commands for fast control of the machine's speed control and positioning.

Common SD card, fast update

This PLC integrates Micro SD card slot, supports common Micro SD card, can be used to update the program or device firmware, and can provide great convenience to the engineer who conducts the field service.





User-friendly software, programming efficiency

Based on the powerful functions inherited from the Siemens programming software, it has absorbed more humanized design which has enhanced the user friendliness of the software greatly. Improved the efficiency in developing the program.



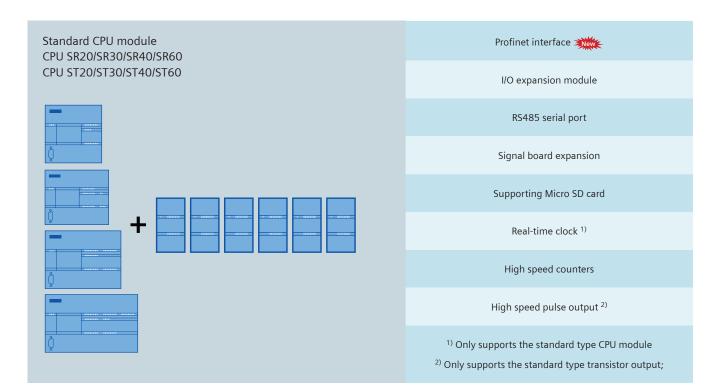
Perfect integration, seamless integration

The perfect integration of SIMATIC S7-200 SMART, Basic HMI and SINAMICS V20/V90, forms the micro automation solutions that is cost-effective; meeting the OEM customer's full range of demand.



SR/ST CPU Module

The new S7-200 SMART CPU module can meet the needs of different industries, different customers and different equipment. The SR/ST standard CPU can expand 6 expansion modules and 1 signal board for applications with more I/O points and more complex logic control.



Туре	CR40	CR60	SR20	SR30	SR40	SR60	ST20	ST30	ST40	ST60
High speed counter	4 at 100 single		6							
High speed pulse output			— 2 at 100							
Number of communication ports	2	2	2 ~ 4							
Number of Expansion modules	-	_	6							
Maximum I/O handling capacity ³⁾	40	60	216	226	236	256	216	226	236	256
Maximum analogue I/O ³⁾	_	_	49							

³⁾ The maximum I/O handling capacity is considering I/O expansion with Signal boards.



Communication and running state indicator, the PLC state can be seen easily.



Convenient installation, support rail type and screw type installation



The input and output terminals of all modules are removable.



Integrated PROFINET interface, Program downloading and device networking are more convenient



Pin plug connection, module can be connected more closely



Signal board extension achieves accurate configuration, without occupying space in the electric control cabinet.



Siemens dedicated high speed chip is incorporated, with basic instruction execution time up to 0.15 µs

Generic Micro SD card supports program downloading and PLC firmware updating

It is equipped with super

capacitor, when the power is

down, it still can guarantee

the normal work of the clock

Signal board

The signal board is mounted directly on the front of the CPU body; without occupying the cabinet space, its installation and disassembly are convenient and quick. For a small amount of I/O points extension and more demand for communication ports, the signal board with new design can provide more economical and flexible solutions.



	Module	Version
CPU	CPU ST40 (DC/DC/DC)	V02.01.00_00.00.
SB		•
EM O	SB DT04 (2DI / 2DQ Transistor)	
EM 1	SB AE01 (1AI) SB AQ01 (1AQ)	
EM 2	SB BA01 (Battery)	
EM 3	SB CM01 (RS485/RS232)	

Basic information of the signal board

Model	Specification	Description
SB DT04	2DI/2DO transistor output	It provides additional digital I/O extensions, and support 2 digital inputs and 2 digital transistor outputs.
SB AQ01	1AO	It provides additional analogue I/O extension, and support 1 analogue output, with a precision 12 bits.
SB CM01	RS232/RS485	It provides additional RS232 or RS485 serial communication interface, the conversion can be realized via simple configuration in the software.
SB BA01	Battery module	It supports the generic CR1025 cell (battery), which can drive the clock for about 1 year.
SB AE01	1AI	It Provides additional analog I/O expansion to support 1. Al with 12 bits of precision

Signal board configuration

When the standard CPU module is selected in the system block, the aforementioned four signal boards will display the SB options:

- When SB DT04 is selected, the system can automatically distribute I7.0 and Q7.0 as the beginning of the I/O image area
- When SB AE01 is selected, the system automatically assigns AIW12 as the I/O image area.
- When SB AQ01 is selected, the system can automatically allocates AQW12 as the I/O image area
- When SB CM01is selected, it can be done via selecting the RS232 or RS485 in the port type setting box.
- When SB BA01 is selected, the low power consumption alarm can be initialized or the power consumption state can be monitored via I7.0.

Installation steps



Remove the cover board of terminal



Remove the cover board with Screw driver



No fastening screw is required, gently insert it



The installation is complete

Network communication

The S7-200 SMART SR/ST CPU module body integrates 1 PROFINET interface and 1 RS485 interface. By expanding the CM01 signal board or EM DP01 module, the number of communication ports can be increased to up to 4, which can meet small automation devices and touch screens. Inverters, servo drives and third-party devices

The need for communication.



Ethernet communication

SR/ST CPU integrated PROFINET interface, supports multiple protocols, and efficiently connects various devices:

- PROFINET communication: communication with the drive or servo drive, supporting up to 8 devices
- Can be used as a program download port (using a normal network cable)
- Supports Ethernet communication between multiple PLCs: Supports 8 active and 8 passive PUT/GET connections
- Open Ethernet communication: supports various communication protocols such as TCP, UDP, ISO_on_TCP, Modbus TCP, etc. Support 8 active and 8 passive connections

Profibus communication

The S7-200 SMART SR/ST CPU can be connected as a PROFIBUS-DP slave to the PROFIBUS communication network using the EM DP01 expansion module. The PROFIBUS-DP slave address can be set via the rotary switch on the module. The module Supports any PROFIBUS baud rate between 9600 baud and 12 M baud, allowing up to 244 input bytes and 244 output bytes.

The following protocols are supported:

- MPI slave
- PROFIBUS-DP slave

Serial communication

The S7-200 SMART CPU modules are integrated with one RS485 interface and can communicate with third-party devices such as inverters and touch screens. If an additional serial port is required, it can be realized by extending the CM01 signal board, and the signal board supports RS232/RS485 free conversion.

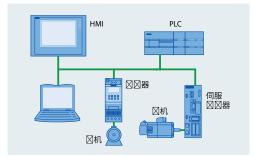
The serial port supports the following protocols:

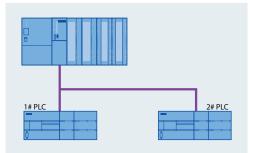
- Modbus RTU
- USS
- Free port communication

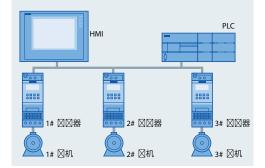
Communication with the host computer

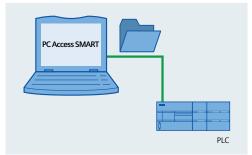
Using Siemens PC Access tool, it is possible to read the data from S7-200 SMART on to the host computer. This can be used for simple GUI requirements for data monitoring or data archiving.

(PC Access is an OPC server protocol specifically developed for S7-200 series PLC, an OPC software dedicatedly developed for interaction between the micro PLC and host computer)





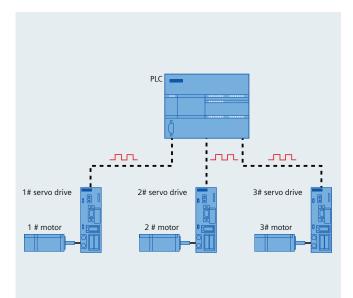




Motion control

S7-200 SMART CPU provides maximum three 100KHz high speed pulse outputs, it can be configured for PWM output or motion control output through the powerful and flexible setup wizard, providing a unified solution for speed and position control of both the stepper motor or servo motor, satisfying the precise positioning requirements of the small mechanical equipment.

The S7-200 SMART SR/ST CPU uses an integrated PROFINET interface to control the servo drive by means of communication, further reducing the inter-devicennWiring reduces the response time of the equipment to meet the positioning requirements of small mechanical equipment.



Basic functions of motion control

The S7-200 SMART CPU offers three open loop motion control methods:

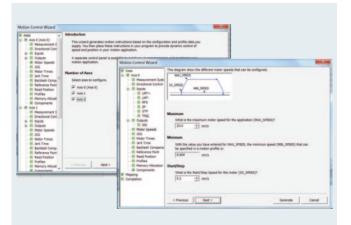
- Pulse train output (PTO): Built-in speed and position control of the CPU. This feature is only available Pulse train output is provided, and direction and limit control must be provided by the application using I/O integrated in the PLC or provided by the expansion module. See Pulse Output PLS Instruction
- Pulse Width Modulation (PWM): Built into the CPU's speed, position, or duty cycle control. If the PWM output is configured, the CPU will fix the cycle time of the output, controlling the duration of the pulse or the duty cycle through the program. The speed or position of the application can be controlled by changes in pulse duration. See pulse output PLS instruction
- Motion axis: Built into the CPU for speed and position control. This feature provides a single burst output with integrated directional control and disabled outputs, as well as programmable inputs and offers a variety of operating modes including automatic reference point search.

PWM and motion control wizard settings

In order to simplify the control functions in your application, the position control wizard provided by the STEP 7- Micro/ WIN SMART can help you complete the PWM and the PTO configuration in a few minutes. The wizard can generate the position instructions, you can dynamically control the speed and position in your application with these instructions.

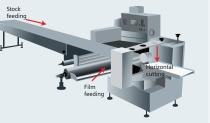
According to the user selected PWM pulse number, the PWM wizard can generate PWMx_RUN subroutine frame corresponding to editing.

Motion control wizards can maximally provide the settings for three pulse outputs, the pulse output speed is adjustable from 20 Hz to 100 kHz.



Typical applications





Pillow-type packaging machine



Woodworking machinery

Control of SINAMICS servo drives with PROFINET

In order to simplify the control program and programming steps, STEP 7- Micro/WIN SMART integrates two sets of SINAMICS library instructions for easy PROFINET control servo positioning:

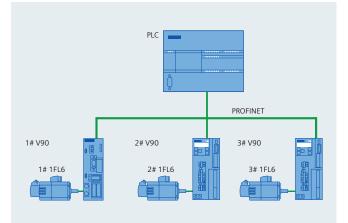
- SINAMICS_Control:
 - SINA_POS: Controls drive position via 8 different operating modes
 - SINA_SPEED : Control drive speed
- SINAMICS_Parameter:
 - SINA_PARA_S: read drive parameters or modify drive parameters

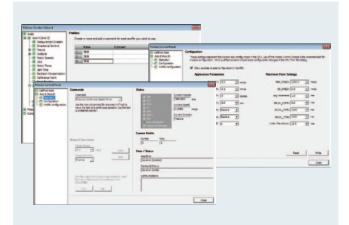
Note: Supported by STEP 7-Micro/WIN SMART V2.4 and above

PROFINET wizard and SINAMICS library make programming easier

Steps for connecting the S7-200 SMART CPU to the SINAMICS V90 PN servo drive:

- The SINAMICS V90 PN drive and servo motor are ready
- The drive and the S7-200 SMART CPU are connected to the PROFINET network
- The V-assistant software is connected to the SINAMICS V90 PN and has been configured for the V90PN Set relevant parameters (V-assistant software is V90PN debugging software)
- Add the GSDML file of the corresponding device to the STEP 7-Micro/WIN SMART software. Use the PROFINET wizard to set drive related parameters and configuration
- Call the SINAMICS library program and write the relevant program according to the control requirements





User-friendly software improves programming efficiency

STEP 7- Micro/WIN SMART is a programming configuration software for S7-200 SMART that runs smoothly on Windows 7 or Windows 10 operating systems and supports LAD (Ladder Diagram), STL (Statement List), FBD (Function Block Diagram) Programming language, freely convertible between some languages, the installation file is less than 200 MB. While using the excellent programming philosophy of STEP 7-Micro/WIN, more user-friendly design makes programming easier to use.

Project development is more efficient.

Full support for Windows 7 and Windows 10 operating systems

- Operating system: Windows 7 or Windows 10 (both 32-bit and 64-bit versions)
- At least 350 Mbytes of free hard disk space

New menu design

It has no more traditional drop-down menu. It has adopted the band-type menu design, all menu options can be seen completely. The image of the icon display makes the operation more convenient.

By double clicking on the menu, it can be hidden so as to provide more space for a visual programming window.

Fully movable window design

All windows in the software interface can move freely, and provide eight kinds of drag and drop methods.

The main window, the program editor, the output window, variable table, state diagram etc. windows can be combined according to the user's habits, maximally improve the programming efficiency.

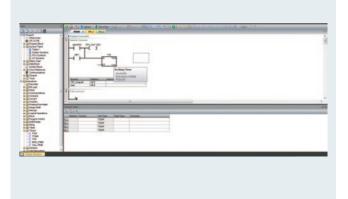
The definitions of variables and program notes

The users can define the variable name according to the process flow, and can call through the variable name directly, allowing users to fully enjoy the convenience of high-level programming language. A special function registers the address call, automatically naming the variable, which can now be called directly the next time.

Micro/WIN SMART provides a perfect function for annotation, can add annotations to program block, programming network and variables, with its readability greatly improved. When the mouse is moved to the instruction block, data types supported by each pin are automatically displayed.







STEP 7-Micro/WIN SMART Software features:

- 1. New menu design
- 2. Fully movable window design
- 3. Variable definitions and notes
- 5. Status monitoring
- 6. Convenient command Library

4. Novel wizard setting

7. Powerful password protection functions

For detailed information about the software, consult the S7-200 SMART System Manual.

Setup wizard

Micro/WIN SMART integrates the quick and easy wizard setup function, just follow the wizard prompts to set the parameters of each step to complete the complex function settings. The new wizard feature allows the user to directly set the function of one of the steps, and the modified wizard does not need to reset each step.

The wizard settings support the following features:

- HSC (High Speed Counting)
- sport control
- PID
- PWM (Pulse Width Modulation)
- Text display
- GET/PUT
- Data log
- PROFINET

Status monitoring

In the Micro/WIN SMART status graph, it can monitor the current values of each input / output channel of PLC, at the same time, it can conduct the mandatory input operation to test the program logic for each channel.

Status monitoring value can be displayed in numerical form, and can also be directly displayed in the waveform, the aforementioned two can also be switched each other.

In addition, the Micro/WIN SMART system can monitor the PID and motion control operation, equipment operation status through the dedicate operation panel.

Convenient command Library

In PLC programming, the same tasks that are repetitively executed will be generally included in a subprogram, which can be directly used in the future. The use of subroutines can better organize the program structure, facilitate the debugging and reading.

Micro/WIN SMART provides the command library functions, converting the subroutine into a block of instructions, as a common block of instructions, which will be directly dragged and dropped into the programming interface to complete the call. The command library function provides password protection function, preventing the database files from being randomly reviewed or modified.

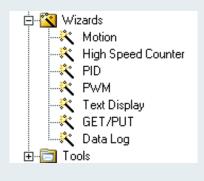
The Micro/WIN SMART software automatically integrates the Modbus RTU communication library, the Modbus TCP communication library, the open user communication library, the PN Read Write Record library, the SINAMICS library, and the USS communication library.

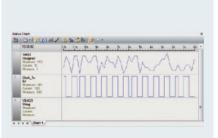
In addition, Siemens offers a large instruction library to complete a variety of functions, which can be easily added into the software.

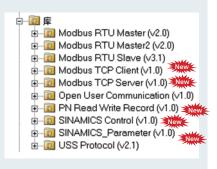
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STEP 7-Micro/WIN SMART





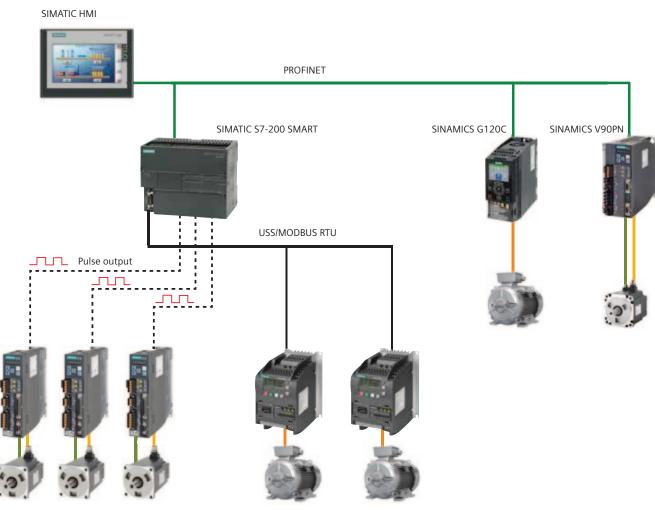




SMART Automation Solution

The combination of Siemens SIMATIC automation products and SINAMICS drive products, the cost-effective SIMATIC S7-200 SMART PLC, SIMATIC SMART LINE touch screen, SINAMICS V20 inverter and SINAMICS V90 servo system bring perfect machine builders

A small automation solution that covers the full range of user needs for human-computer interaction, automation and drive. This solution helps users improve the performance of machinery and equipment, reduce development costs, significantly reduce the time-to-market of machinery and equipment, and effectively



SINAMICS V90

SINAMICS V20

For any information about SMART's small automation solutions, please visit https://w3.siemens.co.in/automation/in/en/automation-systems/industrialautomation/ s7-200-smart-plc/pages/default.aspx

S7-200 SMART Recommendations:

- When programming and debugging, it is recommended to have one ordinary switch to connect related equipment (including PLC, touch screen, computer, inverter, servo drive, etc.) to the switch. After downloading the PLC or touch screen program, you can directly perform the touch test on the touch screen to check the working status of the PLC without connecting the PLC and the touch screen with cables.
- Quick and batch download of PLC programs using the Micro SD card. The produced source card can be sent to the end user via courier. When the customer puts forward various urgent needs on site, the source files in the card are directly sent to the on-site users via Email. After receiving, the source files can be copied to the Micro SD card for use.

	• SR/ST CPU module with 20I/O, 30I/O, 40I/O, 60I/O configurations
	- Integrated high-speed processor chip with bit instruction execution time of up to $0.15 \mu s$
	• Expandable communication port, analog channel, digital channel and clock hold function via signal board
	• SR/ST CPU module body integrates PROFINET interface and RS485 serial port, supports PROFINET interface download program
	• Supports communication such as PROFINET, TCP, Modbus TCP, UDP, Modbus RTU, USS, PROFIBUS-DP
SIMATIC S7-200 SMART	• The body integrates up to 3 100KHz high-speed pulse outputs And 6-channel 200KHz highspeed pulse input
	PN devices such as servo drives and inverters can be connected via the PROFINET network
	Support universal Micro SD card download program, update PLC firmware and restore factory settings
	• PM207 provides high quality DC power to the entire system
	• 1/3 phase 220V power supply, covering power range from 0.05 kW to 2 kW
	• 3-phase 380 V power supply covering power ranges from 0.4 kW to 7 kW
	One drive system for external pulse position control, internal setpoint position control, speed control and torque control System, accurate and efficient
	USS, Modbus RTU communication
	Full power standard brake resistor
	Real-time automatic optimization and harmonic suppression
	Supports high speed pulse input up to 1 MHz
SINAMICS V90 SIMOTICS S-1FL6	• 20 bit high precision encoder
	 Powerful and convenient debugging software, user-friendly design, rich debugging functions, and more efficient development
	 Single-phase 230 V power range from 0.12 to 3 kW, three-phase 400 V power range from 0.37 to 30 kW, integrated V/f, V2/f, FCC control mode
And the second sec	• ECO energy saving mode, energy saving effect is visible in real time through parameters
	Integrated USS, Modbus RTU communication
(d)	Built-in common connection macros and application macros
	Parameter cloning and version upgrade without power supply
and the second sec	• Special features such as frost protection, hibernation, capture restart, auto restart
SINAMICS V20	+ 7.5 \sim 30 kW integrated brake module, other power supply brake options SINAMICS V20
	• V20 with the same power supports a common DC busbar connection, energy sharing

Technical specifications

Technical specification for CPU SR20/ST20

Model	CPU SR20 AC/DC/RLY	CPU ST20 DC/DC/DC
Order No.:	6ES7 288-1SR20-0AA0	6ES7 288-1ST20-0AA0
Standard		
Dimension W x H x D (mm)	90 x 100 x 81	
Weight	367.3 g	320 g
Power consumption	14 W	20W
Available current (EM bus)	Max. 740 mA (5 V DC)	Max. 1110 mA (5 V DC)
Available current (24 V DC)		
	Max. 300 mA (sensor power source)	
Digital input current consumption (24 V DC)	4mA for each input point used	
CPU features		
User memory	12 KB program memory /8 KB data memory /max. 10 KB retentive memory	
On board digital I/O	12 input points / 8 output points	
Process image size	256 bits input (I) / 256 bits output (Q)	
Analog image	56 words input (AI) / 56 words output (AQ)	
Bit memory (M)	256 bits	
Temporary (local) memory	The main program has 64 bytes, each subroutine and interrupt program ha	as 64 bytes
I/O module extension	6 extension modules	
Signal board extension	Max. 1 signal board	
High speed counters	4 in total	
	Single phase: 4 of 200 kHz	
	Quadrature phase: 2 of 100 kHz	
Pulse output	-	2 of 100 kHz
Pulse capture input	12	
Cycle interrupt	2 in total, resolution is of 1ms.	
Interrupt Edge	4 rising edges and 4 falling edges (when using optional signal board, there	are 6 edges each)
Memory	Micro SDHC card (optional)	
Precision of real-time clock	120 seconds/month	
Real-time clock hold time		voitox)
	In general 7 days, or min. 6 days when 25 °C (Maintenance free super capa	icitor)
Performance/ Processing Time		
Boolean	0.15 µs/instruction	
Moving word operations	1.2 µs/instruction	
Real mathematical operations	3.6 µs/instruction	
The user's program elements supported b POUs	y the S7-200 SMART type/quantity	
	 main program: 1 sub-program: 128 (0 to 127) interrupt program: 128 (0 to 127) Nesting depth from main program: 8 sub-program level from interrupt program: 4 sub-program level 	
Accumulators	4	
Timer	• non-holding (or not retained) (TON, TOF) : 192 • holding (or retained) (TONR) : 64	
Counters	256	
Communications		
Number of ports	1 PROFINET port/ 1 serial (RS485) /1 additional serial (optional RS232/485	signal board) port
HMI equipment	max. 4 connection on serial port & max. 8 connections on PROFINET port	
Programming equipment (PG)	PROFINET: 1 & Serial Port: 1	
CPU PUT/GET	PROFINET (LAN): 8 clients and 8 server connections	
PROFINET communication		
PROFINET controller/device	Yes/No	
Maximum number of PROFINET devices that		
can be connected to RT		
Maximum number of modules	64	
Open user communication	PROFINET (LAN): 8 active and 8 passive connections	
Data transmission rate	Profinet: 10/100 Mb/s RS485 system protocol: 9600, 19200 and 187500 b/s	
Isolation (external signal and PLC logic side)	RS485 free port: 1200 to 115200 b/s Profinet: Transformer isolation, 1500 V AC RS485: none	
Type of cable	Profinet: CAT5e shielded cable RS485: PROFIBUS network cable	
Power source		
Voltage range	85 ~ 264 V AC	20.4 ~ 28.8 V DC
Power supply frequency	47 ~ 63 Hz –	
Power supply frequency	47 ~ 63 H2 – When the maximum load is reached, only CPU is included 210 mA when voltage is 120 V AC (with a 300 mA sensor power output) 90 mA when voltage is 120 V AC (without a 300 mA sensor power output) 120 mA when voltage is 240 V AC (with a 300 mA sensor power output) 60 mA when voltage is 240 V AC (without a 300 mA sensor power output) When the max load is reached, it CPU and all the scalable extensions are included 290 mA when voltage is 120 V AC	When the maximum load is reached, only CPU is included 160 mA when voltage is 24 V DC (without a 300 mA sensor power output) 430 mA when voltage is 24 V DC (with a 300 mA sensor power output) When the max load is reached, CPU and all the scalable extensions are included
	170 mA when voltage is 240 V AC	720 mA when voltage is 24 V DC

Model	CPU SR20 AC/DC/RLY	CPU ST20 DC/DC/DC
Inrush current (max)	9.3 A when voltage is 264 V AC	11.7 A when voltage is 28.8 DC
Isolation (input power with the logic side)	1500 V AC	-
Leakage current, AC line for functional earthing	Max 0. 5 mA	-
Hold time (power off)	30 ms when voltage is 120 V AC 200 ms when voltage is 240 V AC	20 ms when voltage is 24 V DC
Internal fuse (cannot be replaced by the user)	3 A, 250 V, Slow-blow fuse	3 A, 250 V, Slow-blow fuse
•		
Sensor power source		
Voltage range	20.4 ~ 28.8 V DC	
Rated output current (max)	300 mA (short circuit protection)	
Maximum ripple noise (<10 MHz)	<1 V peak-peak value	
Isolation (CPU logic side and sensor power source)	Not isolated	
Digital input		
Number of input points	12	
Туре	The sinking / sourcing type (IEC type 1 sinking)	The sinking/sourcing type (IEC type 1 sinking excluding I0.0 to I0.3)
Rated voltage	It is 24V DC when the current is 4 mA, nominal value	
Allowable continuous voltage	Max 30 V DC	
Surge voltage	35 V DC, lasting 0.5 s	
Logic 1 signal (min)	It is 15 V DC when the current is 2.5 mA	The voltage is 4 V DC when it ranges from I0.0 to I0.3, I0.6 to I0.7: 8 mA Other input: 15 V DC when it is 2.5 mA
Logic 0 signal (min)	It is 5 V DC when the current is 1 mA	The voltage is 1 V DC when it ranges from I0.0 to I0.3, I0.6 to I0.7: 1 mA Other input: 5 V DC when it is 1 mA.
Isolation (field side and logic side)	500 V AC, lasting 1 min	
Isolation group	1	
Filter time	Each channel can be separately selected (point I0.0 to 11.3) : 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 μs 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 ms	
HSC clock input frequency (max)	Single phase: 4 200 KHz + 2 30 KHz	
(Logic 1 battery = $15 \sim 26$ V DC)	Quadrature phase: 2 100 KHz + 2 20 KHz	
Number of inputs that connect at the same time	12	
Cable length (max), its unit is meter	Shielded: 500m (normal input), 50m (HSC input); non shielded: 300m (normal input)	 10.0 to 10.3, shielded (only limited to this category) 500 m (normal input), 50 m (HSC input) 10.6 to 10.7, shielded (only limited to this category) 500 m (normal input), All other inputs: shielded: 500 m (normal input); non shielded: 300 m (normal input)
Digital output		non sinclucu. Soo in (normal input)
Number of output	8	
Type	Relay, dry contact	Solid state-MOSFET (source-type)
Voltage range	5 ~ 30 V DC or 5 ~ 250 V AC	20.4 ~ 28.8 V DC
Logic 1 signal when the current is max.	-	Min. 20 V DC
Logic 0 signal when the load is KG	-	Max. 0.1 V DC
Rated current at each point (max)	2.0 A	0.5 A
Rated current at each public end (max)	10.0 A	6 A
Lamp load	30 W DC/200 W AC	5 W
On state resistance	New equipment is 0.2 Ω maximally	Max. 0.6 Ω
Leakage current at each point	-	Max. 10 μ A
Surge current	It is 7A when the contact is closed	8 A, max. lasting 100 ms
Overload protection	none	
Isolation (field side and logic side)	1500 V AC, lasting 1 min (coil and contact) none, (coil and logic side)	500 V AC, lasting 1 min
Isolation resistance	New equipment is 100 M Ω minimally	-
Disconnect the insulation between the contacts	750 V AC, lasting 1 min	-
Isolated group	1	2
Inductive voltage clamp	Not recommended	L+ - 48 V DC, 1 W loss
Relay max. on/off frequency	Not recommended	
Switching delay (Qa.0-Qa.3)	Max. 10 ms	From the disconnection to connection max.1 µs from the connection to disconnection is 3 µs max.
Switching delay (Qa.0-Qa.7)	Max. 10 ms	From the disconnection to connection max. 50 μ s from the connection to disconnection is 200 μ s max.
		-
Mechanical life (no load)	10.000.000 break/close cycles	
Mechanical life (no load) Contact life under the rated load	10,000,000 break/close cycles	
Contact life under the rated load	100,000 break/close cycles	-
Mechanical life (no load) Contact life under the rated load Output state under the STOP mode Number of output that are connected at the	100,000 break/close cycles Last value or replicable value (The default value is 0)	
Contact life under the rated load Output state under the STOP mode	100,000 break/close cycles Last value or replicable value (The default value is 0)	

Technical specification or CPU SR30/ST30

<table-container>IndexSelected and a standard of the selected and a standard of the</table-container>	Model	CPU SR30 AC/DC/RLY	CPU ST30 DC/DC/DC
James of With 9 Unit	Order No.:		
<table-container>$Weinit of the sector o$</table-container>	Standard		
New manuplem140140140Walde Correll (V UC)As: 300 m (Somo power suice)Walde Correll (V UC)As: 300 m (Somo power suice)Biologic correll (V UC)Biologic correll (V UC)Correll (V UC	Dimension W x H x D (mm)	110 x 100 x 81	
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Walde ConstructionMax 300 media opport shore shore digital back (Mo evan injust paint used part opport 1 (Status paint used (Status pain	Power consumption	14 W	12W
Bighlingthammed and selected	Available current (EM bus)	Max. 740 mA (5 V DC)	
p2 V h6 due 2 User meroy 0 18 B prop book 1/2 doubt points 18 B prop book 1/2 doubt points 19 B b b b b b b b b b b b b b b b b b b	Available current (24 V DC)	Max. 300 mA (sensor power source)	
<table-container>CPU elementy 12/E data memory inau: 10 KB elementy inau: 10 KB elements inau: 10 KB e</table-container>	Digital input current consumption	4mA for each input point used	
Jösen and nögen i 18 18 jöruge nörsen 2000 (2000 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300 - 300	(24 V DC)		
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Data transmission ratePROFINET: 10/100 Mb/s RS485 system protocol: 9600, 19200 and 187500 b/s RS485 free port: 1200 to 115200 b/sIsolation (external signal and PLC logicPROFINET: Transformer isolation, 1500 V AC RS485: noneType of cablePROFINET: CAT5e shielded cable RS485: PROFIBUS network cablePower sourcePower sourceVoltage range85 - 264 V ACPower supply frequency47 - 63 HzInput currentWhen the maximum load is reached, only CPU is included 40 mA (excluding power source of the sensor) when the voltage is 120 V AC 52 mA (including power source of the sensor) when the voltage is 120 V AC 52 mA (including power source of the sensor) when the voltage is 240 V ACWhen the maximum load is reached, it CPU and all the scalable extensions are included and sensor power output)365 mA when voltage is 120 V AC 72 mA when voltage is 240 V AC365 mA when voltage is 24 V DC (with a 300 mA sensor power output)When the max load is reached, it CPU and all the scalable extensions are included in Gad mA when voltage is 240 V AC365 mA when voltage is 24 V DC (with a 300 mA sensor power output)When the max load is reached, it CPU and all the scalable extensions are included in Gad mA when voltage is 240 V AC365 mA when voltage is 24 V DC (with a 300 mA sensor power output)			
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RS485: PROFIBUS network cablePower source20.4 ~ 28.8 V DCVoltage range85 ~ 264 V AC20.4 ~ 28.8 V DCPower supply frequency47 ~ 63 Hz-Input currentWhen the maximum load is reached, only CPU is includedWhen the maximum load is reached, only CPU is includedWhen the maximum load is reached, only CPU is includedNow (including power source of the sensor) when the voltage is 120 V AC40 mA (excluding power source of the sensor) when the voltage is 120 V AC64 mA when voltage is 24 V DC (without a 300 mA sensor power output)27 mA (excluding power source of the sensor) when the voltage is 240 V AC365 mA when voltage is 24 V DC (with a 300 mA sensor power output)When the max load is reached, it CPU and all the scalable extensions are includedSensor power output)136 mA when voltage is 120 V AC72 mA when voltage is 240 V ACScalable extensions are included20.4 mA when voltage is 240 V AC624 mA when voltage is 24 V DC (with a 300 mA sensor power output)	Isolation (external signal and PLC logic side)	PROFINET: Transformer isolation, 1500 V AC	
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Power supply frequency47 ~ 63 Hz–Input currentWhen the maximum load is reached, only CPU is included 92 mA (including power source of the sensor) when the voltage is 120 V AC 40 mA (excluding power source of the sensor) when the voltage is 120 V AC 52 mA (including power source of the sensor) when the voltage is 240 V AC 27 mA (excluding power source of the sensor) when the voltage is 240 V AC 27 mA (excluding power source of the sensor) when the voltage is 240 V AC 27 mA (excluding power source of the sensor) when the voltage is 240 V AC 27 mA (excluding power source of the sensor) when the voltage is 240 V AC 27 mA (excluding power source of the sensor) when the voltage is 240 V AC 27 mA (excluding power source of the sensor) when the voltage is 240 V AC 27 mA (when voltage is 120 V AC 365 mA when voltage is 24 V DC (with a 300 mA sensor power output) When the max load is reached, CPU and all the scalable extensions are included 624 mA when voltage is 24 V DC	Power source		
Input currentWhen the maximum load is reached, only CPU is includedWhen the maximum load is reached, only CPU is includedWhen the maximum load is reached, only CPU is included92 mA (including power source of the sensor) when the voltage is 120 V AC 40 mA (excluding power source of the sensor) when the voltage is 120 V AC 52 mA (including power source of the sensor) when the voltage is 240 V AC 27 mA (excluding power source of the sensor) when the voltage is 240 V AC 27 mA (excluding power source of the sensor) when the voltage is 240 V AC When the max load is reached, it CPU and all the scalable extensions are included 136 mA when voltage is 120 V AC 72 mA when voltage is 240 V ACWhen the maximum load is reached, only CPU is included 365 mA when voltage is 24 V DC (without a 300 mA sensor power output)When the max load is reached, it CPU and all the scalable extensions are included 72 mA when voltage is 240 V ACWhen the max load is reached, CPU and all the scalable extensions are included 624 mA when voltage is 24 V DC	Voltage range	85 ~ 264 V AC	20.4 ~ 28.8 V DC
92 mA (including power source of the sensor) when the voltage is 120 V ACincluded40 mA (excluding power source of the sensor) when the voltage is 120 V AC64 mA when voltage is 24 V DC (without a 30052 mA (including power source of the sensor) when the voltage is 240 V AC64 mA when voltage is 24 V DC (without a 30027 mA (excluding power source of the sensor) when the voltage is 240 V AC365 mA when voltage is 24 V DC (with a 300 mA27 mA (excluding power source of the sensor) when the voltage is 240 V AC365 mA when voltage is 24 V DC (with a 300 mAwhen the max load is reached, it CPU and all the scalable extensions are includedsensor power output)136 mA when voltage is 120 V ACscalable extensions are included72 mA when voltage is 240 V AC624 mA when voltage is 24 V DC	Power supply frequency	47 ~ 63 Hz	-
	Input current	92 mA (including power source of the sensor) when the voltage is 120 V AC 40 mA (excluding power source of the sensor) when the voltage is 120 V AC 52 mA (including power source of the sensor) when the voltage is 240 V AC 27 mA (excluding power source of the sensor) when the voltage is 240 V AC When the max load is reached, it CPU and all the scalable extensions are included	included 64 mA when voltage is 24 V DC (without a 300 mA sensor power output) 365 mA when voltage is 24 V DC (with a 300 mA sensor power output) When the max load is reached, CPU and all the
Inrush current (max) 8.9 A when voltage is 264 V AC 6 A when voltage is 28.8 V DC			-
	Inrush current (max)	8.9 A when voltage is 264 V AC	6 A when voltage is 28.8 V DC

Madal		
Model	CPU SR30 AC/DC/RLY	CPU ST30 DC/DC/DC
Isolation (input power with the logic side) Leakage current, AC line for functional	1500 V AC Max 0. 5 mA	
earthing	Max U. 5 mA	-
Hold time (power off)	30 ms when voltage is 120 V AC	20 ms when voltage is 24 V DC
	200 ms when voltage is 240 V AC	
Internal fuse (cannot be replaced by the user)	3 A, 250 V, Slow-blow fuse	
Sensor power source		
Voltage range	20.4 ~ 28.8 V DC	
Rated output current (max)	300 mA (short circuit protection)	
Maximum ripple noise (<10 MHz)	<1 V peak-peak value	
Isolation (CPU logic side and sensor	Not isolated	
power source)		
Digital input		
Number of input points	18	
Туре	The sinking / sourcing type (IEC type 1 sinking)	The sinking/sourcing type (IEC type 1 sinking excluding I0.0 to I0.3)
Rated voltage	It is 24 V DC when the current is 4 mA, rated value	
Allowable continuous voltage	Max 30 V DC	
Surge voltage	35 V DC, lasting 0.5 s	
Logic 1 signal (min)	It is 15 V DC when the current is 2.5 mA	The voltage is 4 V DC when it ranges from 10.0 to 10.3, 10.6 to 10.7: 8 mA Other input: 15 V DC when it is 2.5 mA
Logic 0 signal (min)	It is 5 V DC when the current is 1 mA	The voltage is 1 V DC when it ranges from I0.0 to I0.3, I0.6 to I0.7: 1 mA Other input: 5 V DC when it is 1 mA.
Isolation (field side and logic side)	500 V AC, lasting 1 min	
Isolation group	1	
Filter time	Each channel can be separately selected (point I0.0 to I1.5): 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 μs 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 ms Each channel can be separately selected (I0.6) : 0, 6.4, 12.8 ms	
HSC clock input frequency (max)	Single phase: 5 200 KHz + 1 30 KHz	
(Logic 1 battery = 15 ~ 26 V DC)	Quadrature phase: 3 100 KHz + 1 20 KHz	
Number of inputs that connect at the same time	18	
Cable length (max), its unit is meter	Shielding: 500m (normal input), 50m (HSC input) ; non shielding: 300m (normal input)	 I0.0 to I0.3, shielding (only limited to this category): 500 m (normal input), 50 m (HSC input) I0.6 to I0.7, shielding (only limited to this category): 500 m (normal input), All other inputs: shielding: 500 m (normal input); non shielding: 300 m (normal input)
Digital output		
Number of output	12	
Туре	Relay, dry contact	Solid state-MOSFET (source-type)
Voltage range	5 ~ 30 V DC or 5 ~ 250 V AC	20.4 ~ 28.8 V DC
Logic 1 signal when the current is max.	-	Min. 20 V DC
Logic 0 signal when the load is 10 K Ω	-	Max. 0.1 V DC
Rated current at each point (max)	2.0 A	0.5 A
Rated current at each public end (max)	10.0 A	6 A
Lamp load	30 W DC/200 W AC	5 W
On state resistance	New equipment is 0.2 Ω maximally	Max. 0.6 Ω
Leakage current at each point	- It is 74 when the contact is alored	Max. 10 µ A
Surge current Overload protection	It is 7A when the contact is closed none	8 A, max. lasting 100 ms
Isolation (field side and logic side)	none 1500 V AC, lasting 1 min (coil and contact) none, (coil and logic side)	500 V AC lasting 1 min
Isolation resistance	New equipment is 100 M Ω minimally	500 V AC, lasting 1 min
Disconnect the insulation between the	750 V AC, lasting 1 min	-
contacts	1	
Isolated group Inductive voltage clamp	Not recommended	L+ - 48 V DC, 1 W loss
Switching delay (Qa.0-Qa.3)	Max. 10 ms	From the disconnection to connection max.1 µs from the connection to disconnection is 3 µs max.
Switching delay (Qa.4-Qb.7)	Max. 10 ms	From the disconnection to connection max. 50 μs from the connection to disconnection is 200 μs max.
Mechanical life (no load)	10,000,000 break/close cycles	-
Contact life under the rated load	100,000 break/close cycles	-
Output state under the STOP mode Number of output that are connected at	Last value or replicable value (The default value is 0) 12	
the same time		
Cable length	Shielded: 500 m; non shielded: 150 m	

Technical specification for CPU SR40/ST40/CR40

Model		CPU SR40 AC/DC/RLY	CPU ST40 DC/DC/DC	CPU CR40 AC/DC/RLY	
Order No.:		6ES7 288-1SR40-0AA0	6ES7 288-1ST40-0AA0	6ES7 288-1CR40-0AA0	
Standard				0257 200 10110 07010	
Dimension W x H >	(D (mm)	125 x 100 x 81			
Weight		441.3 g	410.3 g	440 g	
Power consumptio	n	23 W	18 W	18 W	
Available current (Max. 740 mA (5 V DC)			
Available current (,	Max. 300 mA (sensor power source)	-		
	nt consumption (24 V DC)	4mA for each input point used			
CPU features		mixtor each input point used			
User memory		24 KB program memory /16 KB data memory /max. 10 KB retentive memory 12 KB program memory /8 KI memory /max. 10 KB retentive			
On board digital I/	0	24 input points / 16 output points			
Process image size		256 bits input (I) / 256 bits output (Q)			
Analog image		56 words input (AI) / 56 words output (AQ)		
Bit memory (M)		256 bits			
Temporary (local)	memory	The main program has 64 bytes, each sub	routine and interrupt program has 64 by	tes	
I/O module extens	ion	6 extension modules		-	
Signal board exter	ision	Max. 1 signal board		-	
High speed counte	ers	4 in total Single phase: 4 of 200 kHz Quadrature phase: 2 of 100 kHz		4 in total Single phase: 4 of 100 kHz Quadrature phase: 2 of 50 kHz	
Pulse output		3, 100 kHz		-	
Pulse capture inpu	t	14			
Cycle interrupt		2 in total, resolution is of 1ms,			
Interrupt Edge		4 rising edges and 4 falling edges (when u 6 edges each)	ising optional signal module, there are	4 rising edges and 4 falling edges	
Memory		Micro SDHC card (optional)			
Precision of real-tin		120 seconds/month		-	
Real-time clock ho	ld time	In general 7 days, or min. 6 days when 25	°C (Maintenance free super capacitor)	-	
Performance/ Pro	cessing Time				
Boolean		0.15 µs/instruction			
Moving word oper	ations	1.2 μs/instruction			
Real mathematical		3.6 µs/instruction			
The user's progra	m elements supported by	the S7-200 SMART			
		 sub-program: 128 (0 to 127) interrupt program: 128 (0 to 127) Nesting depth from main program: 8 sub-program leve from interrupt program: 4 sub-program 			
Accumulators		4			
Timer		type/quantity • non-holding (or not retained) (TON, TOF • holding (or retained) (TONR): 64): 192		
Counters		256			
Communications	New				
Number of ports		1 PROFINET port/ 1 serial (RS485) /1 addition	onal serial (optional RS232/485 signal be	oard) port	
HMI equipment		max. 4 connection on serial port & max. 8	connection on PROFINET port		
Programming equi	ipment (PG)	PROFINET: 1 & Serial Port: 1			
CPU (PUT/GET)		PROFINET (LAN): 8 clients and 8 server co	nnections		
PROFINET commu	nication				
PROFINET controll		Yes/No			
	of PROFINET devices that	8			
can be connected					
Maximum number		64			
Open user commu Data transmission		PROFINET (LAN): 8 active and 8 passive co PROFINET: 10/100 Mb/s			
Isolation (ovtornal	signal and PLC logic side)	RS485 system protocol: 9600, 19200 and RS485 free port: 1200 to 115200 b/s			
	signal and PLC logic side)	PROFINET: Transformer isolation, 1500 V / RS485: none PROFINET: CAT5e shielded cable			
Type of cable PROFINET: CAT5e shielded cable RS485: PROFIBUS network cable					
Power source					
Voltage range		85 ~ 264 V AC	20.4 ~ 28.8 V DC	85 ~ 264 V AC	
Power supply frequencies		47 ~ 63 Hz	-	47 ~ 63 Hz	
Input current	Only includes the CPU	130 mA when voltage is 120 V AC (without a 300 mA sensor power output) 250 mA when voltage is 120 V AC (with a 300 mA sensor power output) 80 mA when voltage is 240 V AC (without a 300 mA sensor power output) 150 mA when voltage is 240 V AC (without a 300 mA sensor power output)	190 mA when voltage is 24 V DC (without a 300 mA sensor power output) 470 mA when voltage is 24 V DC (with a 300 mA sensor power output)	(without a 300 mA sensor power output) 150 mA when voltage is 240 V AC	
	Includes CPU and all	(with a 300 mA sensor power output)	680 mA when voltage is 24 V DC	(with a 300 mA sensor power output)	
	extension accessories	300 mA when voltage is 120 V AC 190 mA when voltage is 240 V AC	680 mA when voltage is 24 V DC		

Intrudy19.5 Alwanova (space 324 VAC)17.4 Alwanova (space 324 VAC)7.4 Alwanova (space 324 VAC)Isolation (space off)5000 VAC <th>Model</th> <th>CPU SR40 AC/DC/RLY</th> <th>CPU ST40 DC/DC/DC</th> <th>CPU CR40 AC/DC/RLY</th>	Model	CPU SR40 AC/DC/RLY	CPU ST40 DC/DC/DC	CPU CR40 AC/DC/RLY
Induition (paper park with the logic value)1500 VAC Mark 0.5 mA an information of the functional and the space of the space				
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enting bit into the registery of the second				
1000 ms when voltage is 240 VAC 400 ms when voltage is 240 VAC Sense puer source 20.4 - 20.8 V UC Sense puer source 001 ms when voltage is 240 VAC Sense puer source 001 ms when voltage is 240 VAC Sense puer source 001 ms when voltage is 240 VAC Sense puer source 011 ms sinking voltage is 240 VAC Sense puer source 011 ms voltage is 240 VAC Sense puer source 011 ms voltage is 240 VAC Sense puer source 011 ms voltage is 240 VAC Sense puer source 011 ms voltage is 240 VAC Sense puer source 111 ms voltage is 240 VAC Sense puer source 111 ms voltage is 240 VAC Sense voltage is 240 VAC 111 ms voltage is 240 VAC Sense voltage is 240 VAC 111 ms voltage is 240 VAC Sense voltage is 240 VAC 111 ms voltage is 240 VAC Sense voltage is 240 VAC 111 ms voltage is 240 VAC Sense voltage is 240 VAC 111 ms voltage is 240 VAC Sense voltage is 240 VAC 111 ms voltage is 240 VAC Sense voltage is 240 VAC 111 ms voltage is 240 VAC Sense voltage is 240 VAC 111 ms voltage is 240 VAC	earthing		-	
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Voltage image204.7.8.8.V DCMaximum (may)00 mA (doth cital patietation)Maximum (may)00 mA (doth cital patietation)Solaton (CPU logis and sensor patietation)Not balanceSolaton (CPU logis and sensor patietation)24Number of input pairs24Solaton (CPU logis and sensor patietation)Solaton (CPU logis and sensor patietation)Solaton (CPU logis and sensor patietation)Max 30 VCSolaton (CPU logis and sensor patietation)Solaton (CPU logis and Patietation)Solaton (CPU logis and Patietation)Solaton (CPU logi	Internal fuse (cannot be replaced by the user)	3 A, 250 V, Slow-blow fuse		
RandOwn (short circuit protection)U = U = U = U = U = U = U = U = U = U =	Sensor power source			
Maximum pipe noise (<10 Mp pipe pack valueUSourceNot serviceSourceNot serviceSourceTessing serviceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceTessing serviceSourceTessing serviceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSource	Voltage range	20.4 ~ 28.8 V DC		
Maximum pipe noise (<10 Mp pipe pack valueUSourceNot serviceSourceNot serviceSourceTessing serviceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceTessing serviceSourceTessing serviceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSourceSource	Rated output current (max)	00 mA (short circuit protection)		
Ioalation (PV) logic side and sensor power Biptia Input Net isolated Survey Net isolated Survey Digita Input Survey The Sinking / Sourcing type (IEC type 1 isinking) The Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) In the Sinking / Sourcing type (IEC type 1 isinking) Logic O digul (In the Concent (I		<1 V peak-peak value		
Digital product by US	Isolation (CPU logic side and sensor power			
<table-container>Number of pique prime24Type of sing in sourcing type (EVp) in a sing accular (0.0 to 0.3)Sing in accular (</table-container>				
TypeThe sinking/sourcing type (EC type 1 sinking/sourcing type (EC type 1)Stape sourcesEst Sty Chene the current is 1 m type (EC type 1)Internation (EC type 1) type (EC type 1)Internation (EC type 1)Color (Signal (nin)Est Sty Chene the current is 1 m color (Signal (nin))Est Sty Chene the current is 1 m type (EC type 1)Internation (EC type 1)Est Sty Chene the current is 1 m color (Signal (nin))Est Sty Chene the current is 1 m color (Signal (nin))Internation (Signal (Nin))Internation (Signal (Nin))Est Sty Chene the current is 1 m color (Signal (Nin))Est Sty Chene the current is 1 m color (Signal		24		
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Allowable continuous voltageMax 30 V DCSurge voltage392C	Туре			
Surge voltage35 V DC, laking 0.5 iLogic 1 signal (min)35 V DC, laking 0.5 iThe voltage is 4 V DC when it names is 2.5 m, inform 0.0 to 0.3 : 8 m, inform 0.0 to	Rated voltage	It is 24 V DC when the current is 4 mA, no	minal value	
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In 0.0 to 10.4 V DC at 8 mAfrom 0.0 to 10.3 : 8 mA of the input: 15 V DC when it is 2.5 mAfrom 0.0 to 10.3 : 8 mA of the input: 5 V DC when it is 1 mALogic 0 signal (min)It is 5 V DC when the current is 1 mAThe voltage is 1 V DC when it is 1 mA from 10.0 to 10.3 : 1 mA from 10.0 to 10.3 : 1 mA from 10.0 to 10.3 : 1 mA form 10.0 to 10.0 to 10.3 : 1 mA form 10 the signal bacrit 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 is 10.0 to 10.3 : 1 mA form 10 the signal bacrit 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 is 10.0 to 10.3 : 1 mA form 10 the signal bacrit 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 is 10.0 to 10.3 : 1 mA form 10 the signal bacrit 10.0 to 10.3 : 1 mA form 10 the signal bacrit 10.0 to 10.3 : 1 mA form 10 the signal bacrit 10.0 to 10.3 : 1 mA form 10 the signal bacrit 10.0 to 10.3 : 1 mA form 10 the signal bacrit 10.0 to 10.3 : 1 mA form 10 the signal bacrit 10.0 to 10.3 : 1 mA form 10 the signal bacrit 10.0 to 10.3 : 1 mA 10.0 to 10.3 : 1	Surge voltage	35 V DC, lasting 0.5 s		
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Isolation (rield side and logic side)500 VX A, Issing 1 minIsolation group1Iter timeEach channel can be separately selected (JX J) iss 114 input loads on board, including the digital input of the signal board) 0.2, 0.4, 0.8, 1, 6, 3.2, 6.4 and 1.2 8 µs 0.2, 0.4, 0.8, 1, 6, 3.2, 6.4 and 1.2 8 µs 0.2, 0.4, 0.8, 1, 6, 3.2, 6.4 and 1.2 8 µs 	Logic 0 signal (min)	It is 5 V DC when the current is 1 mA	The voltage is 1 V DC when it ranges from I0.0 to I0.3: 1 mA	Other input: 5 V DC when it is 1 mA
Isolation group 1 Filter time Each channel can be separately selected (only first 14 input loads on board, including the digital input of the signal board) O2, 0-4, 0.8, 1.6, 3.2, 6.4 and 12.8 µs 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 µs HSC clock input frequency (max) Single phase: 2.0 0K ktz + 2.20 KHz Number of inputs that connect at the same time 24 Cable length (max) 10.0 to 10.3: Shielding: 500m (normal input), 50m (HSC input); All other inputs: shielding 500m (normal input); non shielding: 500m (normal input); 50m (HSC input); All other inputs: shielding 500m (normal input); 50m (HSC input); All other inputs: shielding 500m (normal input); 50m (HSC input); All other inputs: shielding 500m (normal input); 50m (HSC input); All other inputs: shielding 500m (normal input); 50m (HSC input); All other inputs: shielding 500m (normal input); 50m (HSC input); All other inputs: shielding 500m (normal input); 50m (HSC input); All other inputs: shielding 500m (normal input); 50m (HSC input); All other inputs: shielding 500m (normal input); 50m (HSC input); All other inputs: shielding 500m (normal input); 50m (HSC input); All other inputs: shielding 500m (normal input); 50m (HSC input); All other inputs: shielding 500m (normal input); 50m (HSC input); All other inputs: shielding 500m (normal input); 50m (HSC input); All other inputs: shielding 500m (normal input); 50m (HSC input); All other inputs: shielding 500m (normal input); 50m (HSC input); All other inputs: shielding 500m (normal input); 50m (HSC input); All other inputs: shielding 500m (normal input); 50m (HSC input); All other inputs: shielding 500m (Normal Input); 50m (HSC input); All other inputs: shielding 500m (Normal Input); 50m (HSC input); All other inputs: shielding	Isolation (field side and logic side)	500 V AC, lasting 1 min		
Filter time Each channel can be separately selected (only first 14 input loads on board, including the digital input of the signal board) MSC clock input frequency (max) Single phase: 4200 KHz + 230 KHz Ucgic 1 battery - 15 - 26 V DC Quadrature phase: 2100 KHz + 230 KHz Ucgic 1 battery - 15 - 26 V DC Quadrature phase: 2100 KHz + 230 KHz Cable length (max) 10.0 to 10.3: Shielding: 500m (normal input), 50m (HSC input); All other inputs: shielding 500m (normal input); non shielding: 300m (normal input). Digita output 7 Number of output 16 Type Relay, dry contact Solid state-MOSFET (source-type) Relay, dry contact Voltage range 5 - 30 V DC or 5 - 250 V AC 20.4 - 28.8 V DC - 30 V DC or 5 - 250 V AC Logic 0 signal when the load is KG - Max, 0.1 V DC - Largel Colginal each point (max) 2.0 A 5.5 W 30 V DC 200 W AC On state resistance New equipment is 0.2 O maximally Max, 10 µ A - Surge current 1 New equipment is 10.0 M minimally - New equipment is 0.2 O maximally Leadge current at each point (max) 1500 V AC, lasting 1 min (coil and contact) none, (coil and logic side) Solid V C, lasting 1 min (coil and contact) none, (coil and logic side) Soli	_	. 5		
HSC dock input frequency (max) (ogic 1 battery 15 ~ 26 V DC)Single phase: 2 00 KHz + 2 20 KHz variable phase: 2 100 KHz + 2 20 KHzNumber of inputs hat connect at the sam time2Cable length (max)10.0 to 10.3: Shielding: 500m (normal input): Som (HSC input); All other inputs: shielding 500m (normal input): som (HSC input); All other inputs: shielding 500m (normal input): som (HSC input); All other inputs: shielding 500m (normal input): som (HSC input); All other inputs: shielding 500m (normal input): som (HSC input); All other inputs: shielding 500m (normal input): som (HSC input); All other inputs: shielding 500m (normal input): som (HSC input); All other inputs: shielding 500m (normal input): som (HSC input); All other inputs: shielding 500m (normal input): som (HSC input); All other inputs: shielding 500m (normal input): som (HSC input); All other inputs: shielding 500m (normal input): som (HSC input); All other inputs: shielding 500m (normal input): som (HSC input); All other inputs: shielding 500m (normal input): som (HSC input); All other inputs: shielding 500m (normal input); som (HSC input); All other inputs: shielding 500m (normal input); som (HSC input); All other inputs: shielding 500m (NSC input); All other inpu	5 1	Each channel can be separately selected ($0.2,0.4,0.8,1.6,3.2,6.4$ and 12.8 μs	only first 14 input loads on board, includi	ng the digital input of the signal board)
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Leakage current at each point - Max. 10 μ A - Surge current It is 7A when the contact is closed 8 A, max. lasting 100 ms It is 7A when the contact is closed Overload protection none - - - Isolation (field side and logic side) 1500 V AC, lasting 1 min (coil and contact) none, (coil and logic side) 500 V AC, lasting 1 min 1500 V AC, lasting 1 min (coil and contact) none, (coil and logic side) Isolation resistance New equipment is 100 MΩ minimally - New equipment is 100 MΩ minimally Disconnect the insulation between the contacts 750 V AC, lasting 1 min - 750 V AC, lasting 1 min Solated group 4 2 4 4 Inductive voltage clamp Not recommended L+ - 48 V DC, 1 W loss - Switching delay (Qa.0-Qa.3) Max. 10 ms From the disconnection to connection max. 1 μs from the connection to disconnection is 3 μs max. Max. 10 ms Switching delay (Qa.4-Qb.7) Max. 10 ms From the disconnection to disconnection is 200 μs max. Max. 10 ms Mechanical life (no load) 10,000,000 break/close cycles - 10,000,000 break/close cycles - Output state under the Tated load 100,000 break/close cycles <t< td=""><td>Lamp load</td><td>30 W DC/200 W AC</td><td>5 W</td><td>30 W DC/200 W AC</td></t<>	Lamp load	30 W DC/200 W AC	5 W	30 W DC/200 W AC
Surge current It is 7A when the contact is closed 8 A, max. lasting 100 ms It is 7A when the contact is closed Overload protection none - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -<	On state resistance	New equipment is 0.2Ω maximally	Max. 0.6 Ω	New equipment is 0.2 Ω maximally
Overload protectionnoneIsolation (field side and logic side)1500 V AC, lasting 1 min (coil and contact) none, (coil and logic side)500 V AC, lasting 1 min1500 V AC, lasting 1 min (coil and contact) none, (coil and logic side)Isolation resistanceNew equipment is 100 MΩ minimally–New equipment is 100 MΩ minimallyDisconnect the insulation between the contacts750 V AC, lasting 1 min–AIsolated group424Inductive voltage clampNot recommendedL+ -48 V DC, 1 W loss–Switching delay (Qa.0-Qa.3)Max. 10 ms max. 1 µs from the connection to connection is 3 µs max.Max. 10 ms max. 1 µs from the connection to disconnection is 3 µs max.Max. 10 ms max. 50 µs from the connection to disconnection is 200 µs max.Max. 10 ms max. 50 µs from the connection to disconnection is 200 µs max.Max. 10 ms max. 50 µs from the connection to disconnection is 200 µs max.Max. 10 ms max. 50 µs from the connection to disconnection is 200 µs max.Max. 10 ms max. 10 msMeter the rated load10,000,000 break/close cycles–10,000,000 break/close cyclesOutput state under the STOP modeLast value or replicable value (The default-ture is 0)UUNumber of output that are connected at the same time16III	Leakage current at each point	-	Max. 10 μ A	-
Isolation (field side and logic side)1500 V AC, lasting 1 min (coil and contact) none, (coil and logic side)500 V AC, lasting 1 min1500 V AC, lasting 1 min (coil and contact) none, (coil and logic side)Isolation resistanceNew equipment is 100 MΩ minimally-New equipment is 100 MΩ minimallyDisconnect the insulation between the contacts750 V AC, lasting 1 min-New equipment is 100 MΩ minimallyIsolated group424Inductive voltage clampNot recommendedL+ · 48 V DC, 1 W loss-Switching delay (Qa.0-Qa.3)Max. 10 msmax. 1 µs from the disconnection to connection is 3 µs max.Max. 10 msSwitching delay (Qa.4-Qb.7)Max. 10 msFrom the disconnection to connection is 200 µs max.Max. 10 msMechanical life (no load)10,000,000 break/close cycles-10,000,000 break/close cyclesOutput state under the FSTOP modeLast value or replicable value (The default +u is s)10,000 break/close cyclesNumber of output that are connection the same time16	Surge current	It is 7A when the contact is closed	8 A, max. lasting 100 ms	It is 7A when the contact is closed
Isolation (field side and logic side)1500 V AC, lasting 1 min (coil and contact) none, (coil and logic side)500 V AC, lasting 1 min1500 V AC, lasting 1 min (coil and contact) none, (coil and logic side)Isolation resistanceNew equipment is 100 MΩ minimally-New equipment is 100 MΩ minimallyDisconnect the insulation between the contacts750 V AC, lasting 1 min-New equipment is 100 MΩ minimallyIsolated group424Inductive voltage clampNot recommendedL+ · 48 V DC, 1 W loss-Switching delay (Qa.0-Qa.3)Max. 10 msmax. 1 µs from the disconnection to connection is 3 µs max.Max. 10 msSwitching delay (Qa.4-Qb.7)Max. 10 msFrom the disconnection to connection is 200 µs max.Max. 10 msMechanical life (no load)10,000,000 break/close cycles-10,000,000 break/close cyclesOutput state under the FSTOP modeLast value or replicable value (The default +u is s)10,000 break/close cyclesNumber of output that are connection the same time16				
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Disconnect the insulation between the contacts750 V AC, lasting 1 min-750 V AC, lasting 1 minIsolated group424Inductive voltage clampNot recommendedL+ - 48 V DC, 1 W loss-Switching delay (Qa.0-Qa.3)Max. 10 msFrom the disconnection to connection max.1 µs from the connection to disconnection is 3 µs max.Max. 10 msSwitching delay (Qa.4-Qb.7)Max. 10 msFrom the disconnection to connection is 200 µs max.Max. 10 msMechanical life (no load)10,000,000 break/close cycles-10,000,000 break/close cyclesOutput state under the sTOP modeLast value or replicable value (The default value is 0)100,000 break/close cyclesNumber of output that are connected at the same time1616	Isolation resistance	-	_	-
Isolated group424Inductive voltage clampNot recommendedL+ - 48 V DC, 1 W loss-Switching delay (Qa.O-Qa.3)Max. 10 msFrom the disconnection to connection max. 1 µs from the connection to disconnection is 3 µs max.Max. 10 msSwitching delay (Qa.4-Qb.7)Max. 10 msFrom the disconnection to disconnection is 3 µs max.Max. 10 msSwitching delay (Qa.4-Qb.7)Max. 10 msFrom the disconnection to disconnection is 3 µs max.Max. 10 msSwitching delay (Qa.4-Qb.7)Max. 10 msFrom the disconnection to disconnection is 20 µs max.Max. 10 msMechanical life (no load)10,000 break/close cycles-10,000 break/close cyclesOutput state under the stoP mode100,000 break/close cycles-10,000 break/close cyclesNumber of output that are connected at the same time16IfIf	Disconnect the insulation between the		-	
Inductive voltage clampNot recommendedL+ - 48 V DC, 1 W loss-Switching delay (Qa.0-Qa.3)Max. 10 msFrom the disconnection to connection max.1 µs from the connection to disconnection is 3 µs max.Max. 10 msSwitching delay (Qa.4-Qb.7)Max. 10 msFrom the disconnection to disconnection is 3 µs max.Max. 10 msSwitching delay (Qa.4-Qb.7)Max. 10 msFrom the disconnection to disconnection is 20 µs max.Max. 10 msMechanical life (no load)10,000,000 break/close cycles-10,000,000 break/close cyclesOutput state under the rated load100,000 break/close cycles-10,000 break/close cyclesOutput state under the STOP modeLat value or replicable value (The default us is 0)10,000 break/close cyclesNumber of output that are connected at the same time1616			2	1
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max. 50 µs from the connection to disconnection is 200 µs max.max. 50 µs from the connection to disconnection is 200 µs max.Mechanical life (no load)10,000,000 break/close cycles–10,000,000 break/close cyclesContact life under the rated load100,000 break/close cycles–100,000 break/close cyclesOutput state under the STOP modeLast value or replicable value (The default value is 0)100,000 break/close cyclesNumber of output that are connected at the same time16	Switching delay (Qa.0-Qa.3)	Max. 10 ms	max.1 µs from the connection to disconnection	Max. 10 ms
Mechanical life (no load) 10,000,000 break/close cycles - 10,000,000 break/close cycles Contact life under the rated load 100,000 break/close cycles - 100,000 break/close cycles Output state under the STOP mode Last value or replicable value (The default value is 0) - - Number of output that are connected at the same time 16 - - -	Switching delay (Qa.4-Qb.7)	Max. 10 ms	From the disconnection to connection max. 50 μs from the connection to disconnection	Max. 10 ms
Contact life under the rated load 100,000 break/close cycles – 100,000 break/close cycles Output state under the STOP mode Last value or replicable value (The default value is 0) 100,000 break/close cycles Number of output that are connected at the same time 16	Mechanical life (no load)	10,000,000 break/close cycles	-	10,000,000 break/close cvcles
Output state under the STOP mode Last value or replicable value (The default value is 0) Number of output that are connected at the same time 16		-	-	-
Number of output that are connected at the same time 16			value is 0)	
	Number of output that are connected at the			
Cable length Shielded: 500 m; non shielded: 150 m		Shielded: 500 m; non shielded: 150 m		

Technical specification for CPU SR60/ST60/CR60

Model		CPU SR60 AC/DC/RLY	CPU ST60 DC/DC/DC	CPU CR60 AC/DC/RLY		
Order No.:		6ES7 288-1SR60-0AA0	6ES7 288-1ST60-0AA0	6ES7 288-1CR60-0AA0		
Standard						
Dimension W x H x	D (mm)	175 x 100 x 81				
Weight		611.5 g	528.2 g	620 g		
Power consumptio	n	25 W	20 W			
Available current (I	EM bus)	Max. 740 mA (5 V DC)	-			
Available current (2	24 V DC)	Max. 300 mA (sensor power source)				
Digital input current consumption (24 V DC)		4 mA for each input point used				
CPU features						
User memory		30 KB program memory /20 KB data memo	ory /max. 10 KB retentive memory	12 KB program memory / 8 KB data memory / max. 10 KB retentive memory		
On board digital I/O)	36 input points / 24 output points				
Process image size		256 bits input (I) / 256 bits output (Q)				
Analogue image		56 words input (AI) / 56 words output (AQ				
Bit memory (M)		256 bits				
Temporary (local) r		The main program has 64 bytes, each sub	routine and interrupt program has 64 by	tes		
I/O module extensi	on	6 extension modules		-		
Signal board exten	sion	Max. 1 signal board		-		
High speed counte	rs	4 in total Single phase: 4 of 200 kHz Quadrature phase: 2 of 100 kHz		4 in total Single phase: 4 of 100 kHz Quadrature phase: 2 of 50 kHz		
Pulse output		3, 100 kHz		-		
Pulse capture input	t	14				
Cycle interrupt		2 in total, resolution is of 1ms,				
Interrupt Edge		4 rising edges and 4 falling edges (when u 6 edges each)	ising optional signal module, there are	4 rising edges and 4 falling edges		
Memory		Micro SDHC card (optional)				
Precision of real-tir		120 seconds/month		-		
Real-time clock hol		In general 7 days, or min. 6 days when 25	°C (Maintenance free super capacitor)	-		
Performance/ Proc	cessing Time					
Boolean		0.15 µs/instruction				
Moving word opera		1.2 µs/instruction				
Real mathematical	operations m elements supported by	3.6 µs/instruction				
POUs		type/quantity • main program: 1 • sub-program: 128 (0 to 127) • interrupt program: 128 (0 to 127) Nesting depth • from main program: 8 sub-program leve • from interrupt program: 4 sub-program l				
Accumulators		4				
Timer		type/quantity • non-holding (or not retained) (TON, TOF) : 192 • holding (or retained) (TONR) : 64				
Counters		256				
Communications				N .		
Number of ports		1 PROFINET port/ 1 serial (RS485) /1 additi		oard) port		
HMI equipment		max. 4 connection on serial port & max. 8 connection on PROFINET port				
Programming equi CPU (PUT/GET)	pinelit (PG)	PROFINET: 1 & Serial Port: 1 PROFINET (LAN): 8 clients and 8 server connections				
PROFINET commun	nication	PROFINET (LAN): 8 clients and 8 server connections				
PROFINET controlle		Yes/No				
	of PROFINET devices that	Yes/No 8				
Maximum number	of modules	64				
Open user commu	nication	PROFINET (LAN): 8 active and 8 passive connections				
Data transmission rate		PROFINET: 10/100 Mb/s RS485 system protocol: 9600, 19200 and 187500 b/s RS485 free port: 1200 to 115200 b/s				
Isolation (external signal and PLC logic side)		PROFINET: Transformer isolation, 1500 V AC RS485: none				
Type of cable		PROFINET: CAT5e shielded cable RS485: PROFIBUS network cable				
Power source						
Voltage range		85 ~ 264 V AC	20.4 ~ 28.8 V DC	85 ~ 264 V AC		
Power supply frequ	iency	47 ~ 63 Hz	-	47 ~ 63 Hz		
Power input when max. load of the input current is reached	Only includes the CPU	160 mA when voltage is 120 V AC (without a 300 mA sensor power output) 280 mA when voltage is 120 V AC (with a 300 mA sensor power output) 90 mA when voltage is 240 V AC (without a 300 mA sensor power output) 160 mA when voltage is 240 V AC (with a 300 mA sensor power output)	220 mA when voltage is 24 V DC (without a 300 mA sensor power output) 500 mA when voltage is 24 V DC (with a 300 mA sensor power output)	160 mA when voltage is 120 V AC (without a 300 mA sensor power output) 280 mA when voltage is 120 V AC (with a 300 mA sensor power output) 90 mA when voltage is 240 V AC (without a 300 mA sensor power output) 160 mA when voltage is 240 V AC (with a 300 mA sensor power output)		
	Includes CPU and all	370 mA when voltage is 120 V AC	710 mA when voltage is 24 V DC	-		
	extension accessories	220 mA when voltage is 240 V AC	3			

Model	CPU SR60 AC/DC/RLY	CPU ST60 DC/DC/DC	CPU CR60 AC/DC/RLY		
Inrush current (max)	16.3 A when voltage is 264 V AC	11.5 A when voltage is 28.8 V DC	7.3 A when voltage is 264 V AC		
Isolation (input power with the logic side)	1500 V AC	none	1500 V AC		
Leakage current, AC line for functional	none				
earthing					
Hold time (power off)	30 ms when voltage is 120 V AC 200 ms when voltage is 240 V AC	20 ms when voltage is 24 V DC	50 ms when voltage is 120 V AC 400 ms when voltage is 240 V AC		
Internal fuse (cannot be replaced by the user)	3 A, 250 V, Slow-blow fuse				
Sensor power source					
Voltage range	20.4 ~ 28.8 V DC				
Rated output current (max)	300 mA (short circuit protection)				
Maximum ripple noise (<10 MHz)	<1 V peak-peak value				
Isolation (CPU logic side and sensor power	Not isolated				
source)					
Digital input					
Number of input points	36				
Туре	The sinking / sourcing type (IEC type 1	The sinking/sourcing type (IEC type 1	The sinking/ sourcing type (IEC type 1		
Dated voltage	sinking)	sinking excluding I0.0 to I0.3)	sinking)		
Rated voltage	It is 24 V DC when the current is 4 mA, rate	ed value			
Allowable continuous voltage	Max 30 V DC				
Surge voltage	35 V DC, lasting 0.5 s				
Logic 1 signal (min)	The voltage is 4 V DC when it ranges from Other input: 15 V DC when it is 2.5 mA	10.0 to 10.3 : 8 mA	Other input: 15 V DC when it is 2.5 mA		
Logic 0 signal (min)	It is 5 V DC when the current is 1 mA	The voltage is 1 V DC when it ranges	Other input: 5 V DC when it is 1 mA		
		from I0.0 to I0.3: 1 mA Other input: 5 V DC when it is 1 mA			
Isolation (field side and logic side)	500 V AC, lasting 1 min				
Isolation group	1				
Filter time	Each channel can be separately selected (II $0.2, 0.4, 0.8, 1.6, 3.2, 6.4$ and $12.8 \ \mu s$ $0.2, 0.4, 0.8, 1.6, 3.2, 6.4$ and $12.8 \ m s$ Each channel can be separately selected (II				
HSC clock input frequency (max)	Single phase: 4 200 KHz + 2 30 KHz & Qua				
(Logic 1 battery = $15 \sim 26$ V DC)					
Number of inputs that connect at the same time	36				
Cable length (max)	Shielded: 500m (normal input), 50m (HSC input) ; non shielded: 300m (normal input)	50 m (HSC input) All other inputs: shielded: 500 m (normal input) ; non shielded: 300 m	Shielded: 500m (normal input), 50m (HSC input) ; non shielded: 300m (norma input)		
		(normal input)			
Digital output					
Number of output	24				
Туре	Relay, dry contact	Solid state-MOSFET (source-type)	Relay, dry contact		
Voltage range	5 ~ 30 V DC or 5 ~ 250 V AC	20.4 ~ 28.8 V DC	5 ~ 30 V DC or 5 ~ 250 V AC		
Logic 1 signal when the current is max.	-	Min. 20 V DC	-		
Logic 0 signal when the load is KG	-	Max. 0.1 V DC	-		
Rated current at each point (max)	2.0 A	0.5 A	2.0 A		
Lamp load	30 W DC/200 W AC	5 W	30 W DC/200 W AC		
On state resistance	New equipment is 0.2 Ω maximally	Max. 0.6 Ω	New equipment is 0.2Ω maximally		
Leakage current at each point	-	Max. 10 µ A	-		
Surge current	It is 7A when the contact is closed	8 A, max. lasting 100 ms	It is 7A when the contact is closed		
Overload protection	none				
Isolation (field side and logic side)	1500 V AC, lasting 1 min (coil and contact)	500 V AC, lasting 1 min	1500 V AC, lasting 1 min (coil and contact)		
	none, (coil and logic side)		none, (coil and logic side)		
Isolation resistance	New equipment is 100 M Ω minimally	-	New equipment is 100 MΩ minimally		
Disconnect the insulation between the	750 V AC, lasting 1 min	-	750 V AC, lasting 1 min		
contacts Isolated group	6	3	6		
5			b _		
Inductive voltage clamp	Not recommended	L+ - 48 V DC, 1 W loss From the disconnection to connection			
Switching delay (Qa.0-Qa.3)	Max. 10 ms	from the disconnection to connection max.1 µs from the connection to disconnection is 3 µs max.	Max. 10 ms		
Switching delay (Qa.4-Qb.7)	Max. 10 ms	From the disconnection to connection max. 50 µs from the connection to disconnection is 200 µs max.	Max. 10 ms		
Mechanical life (no load)	10,000,000 break/close cycles	-	10,000,000 break/close cycles		
Contact life under the rated load	100,000 break/close cycles	-	100,000 break/close cycles		
Output state under the STOP mode	Last value or replicable value (The default	value is 0)			
Number of output that are connected at the	16				
same time Cable length					
	Shielded: 500 m; non shielded: 150 m				

Technical specification for digital input modules

Model	EM DE08	EM DE16	Model	EM DE08	EM
Order No.	6ES7 288-2DE08-0AA0	6ES7 288-2DE16-0AA0	Allowable continuous	Max 30 V DC	
Standard			voltage		
Dimension W x H x D	45 x 100 x 81		Surge voltage	35 V DC, lasting 0.5 s	
(mm)			Logic 1 signal (min)	It is 15 V DC when the cur	rent
Weight	141.4 g	176g	Logic 0 signal (max)	It is 5 V DC when the curre	ent i
Power consumption	1.5 W	2.3 W	Isolation (field side and	500 V AC, lasting 1 min	
Current consumption	tion 105 mA		logic side)		
(SM bus)			Isolation group	2	4
Current consumption	4 mA for each input point used		Filter time	0.2, 0.4, 0.8, 1.6, 3.2, 6.4	, 12.
(24 V DC)				(optional 4 inputs form or	ne gro
Digital input			Number of inputs that	8	16
Number of input points	8	16	connect at the same		
Туре	The sinking / sourcing type (IEC type 1 sinking)		time		
Rated voltage	It is 24 V DC when the current is 4 mA, nominal		Cable length (max)	500m (Shielded), 300m (I	non s
5	value				

Technical specification for digital output modules

Model	EM DR08	EM DT08	EM QR16	EM QT16	
Order number	6ES7 288-2DR08-0AA0	6ES7 288-2DT08-0AA0	6ES7 288-2QR16-0AA0	6ES7 288-2QT16-0AA0	
Standard					
Size W x H x D(mm)	45 x 100 x 81				
Weight	166.3 g	147 g	221g	186g	
Power consumption	4.5 W	1.5 W	4.5W	1.7W	
Current consumption (SM bus)	120 mA		110 mA	120 mA	
Digital output					
Number of outputs	8		16		
Types	Relay, dry contact	Solid-MOSFET (source type)	Relay, dry contact	Solid state	
MOSFET (source type) voltage range	5 ~ 30 V DC Or 5 ~ 250 V AC	20.4 ~ 28.8 V DC	5 ~ 30 V DC or 5 ~ 250 V AC	20.4 ~ 28.8 V DC	
Logic 1 signal at maximum current	-	20 V	-	20 V	
Logic 0 signal with 10 K Ω load	-	0.1 V	-	0.1 V	
Rated current per point (maximum)	2.0 A	0.75 A	2.0 A	0.75 A	
Lamp load	30 W DC/200 W AC	5 W	30 W DC/200 W AC	5 W	
On-state contact resistance	New equipment is 0.2 Ω maximally	0.6 Ω	New equipment is 0.2 Ω maximally	0.6 Ω	
Leakage current at each point	-	10 µA	-	10 µA	
Inrush current	When the contact is closed 7 A	8 A, continued 100 ms	When the contact is closed 7 A	8 A, continued 100 ms	
Overload protection	no				
Isolation (field side and logic side)	1500 V AC, Lasts 1 min (coil and contacts) None (coil and logic side)	500 V AC, Lasting 1 min	1500 V AC, Lasts 1 min (coil and contacts) None (coil and logic side)	500 V AC, lasting 1 min	
Isolation resistance	New equipment min100M Ω	-	xNew equipment min 100 MΩ	-	
Disconnect the insulation between the contacts	750 V AC, Lasting 1 min	-	750 V AC,Lasting 1 min	-	
Isolation group	2	2	4	4	
Current of each public end (max)	8 A	3 A	8 A	3 A	
Switching delay	Max10 ms	Disconnect to the maximum I max of 200 µs	length of 50 µs and Switch ti	switch to the max of 200 μs	
Contact life at rated load	100,000 open/close cycle	-	100,000 open/close cycle	-	
Output status in STOP mode	Previous value or replacement	value (default is 0)			
Number of outputs simultaneously turned on	8 16		16	16	
cable length	Shielded: 500 m; non shielded	1: 300 m			

Technical specification for digital input/output modules

5ES7 288-2DR16-0AA0 45 x 100 x 81 201.9 g 5.5 W 145 mA 4 mA for each input point used	6ES7 288-2DT16-0AA0 179.7 g	6ES7 288-2DR32-0AA0 70 x 100 x 81	6ES7 288-2DT32-0AA0
45 x 100 x 81 201.9 g 5.5 W 145 mA	179.7 g		
5.5 W 145 mA	-	205.4 ~	
145 mA		295.4 g	257.3 g
	2.5 W	10 W	4.5 W
4 mA for each input point used	145 mA	180 mA	185 mA
Each relay coil used is 11 mA	-	Each relay coil used is 11 mA	-
3		16	
The sinking / sourcing type (IEC	type 1 sinking)		
t is 24V DC when the current is	s 4 mA, nominal value		
Max 30 V DC			
35 V DC, lasting 0.5 s			
15 V DC			
5 V DC			
500 V AC, lasting 1 min			
2			
0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and	12.8 ms (optional, 4 form on	e group)	
3		16	
500 m (Shielded), 150 m (non	shielded)		
3		16	
Relay, dry contact	Solid state-MOSFET	Relay, dry contact	Solid state-MOSFET
5 ~ 30 V DC or 5 ~ 250 V AC	20.4 ~ 28.8 V DC	5 ~ 30 V DC or 5 ~ 250 V AC	20.4 ~ 28.8 V DC
-	Min. 20 V DC	-	Min. 20 V DC
-	Max. 0.1 V DC	-	Max. 0.1 V DC
2 A	0.75 A	2 A	0.75 A
30 W DC/200 W AC	5 W	30 W DC/200 W AC	5 W
New equipment is 0.2 Ω	Max. 0.6 Ω	New equipment is 0.2Ω	Max. 0.6 Ω
-	Max 10 µ A		Max. 10 µ A
t is 7A when the contact is	8 A, max. lasting 100 ms	It is 7A when the contact is	8 A, max. lasting 100 ms
		closed	
	500 V AC lasting 1 min	1500 V AC Jasting 1 min (coil	500 V AC lasting 1 min
and contact) none, (coil and ogic side)	Soo V Ac, lasting T min	and contact) none, (coil and logic side)	Soo V Ac, lasting T min
New equipment is 100 MΩ minimally	-	New equipment is 100 M Ω minimally	-
750 V AC, lasting 1 min	-	750 V AC, lasting 1 min	-
2	2	4	3
3 A	3 A	8 A	6 A
-	-48 V	-	-48 V
From the disconnection to connection max.1 μs from the connection to disconnection is 3 μs max.	Max. 10 ms	From the disconnection to connection max.1 µs from the connection to disconnection is 3 µs max.	Max. 10 ms
10,000,000 break/close cycles	-	10,000,000 break/close cycles	-
100,000 break/close cycles	-	100,000 break/close cycles	-
	The default value is 0)		
3		16	
Shielded: 500 m: non shielded	: 300 m		
t V 3 1 5 5 2 0 8 5 8 7 5 - 2 3 Vr - t 1 a c Vr 7 2 8 - 5 1 1 3 1 - 3	t is 24V DC when the current is Aax 30 V DC 5 V DC, lasting 0.5 s 5 V DC (00 V AC, lasting 1 min) 2.2, 0.4, 0.8, 1.6, 3.2, 6.4 and (00 m (Shielded), 150 m (non) (elay, dry contact (3 - 30 V DC or 5 ~ 250 V AC) (3 - 30 V DC or 5 ~ 250 V AC) (3 - 30 V DC or 5 ~ 250 V AC) (3 - 30 V DC or 5 ~ 250 V AC) (3 - 30 V DC or 5 ~ 250 V AC) (3 - 30 V DC or 5 ~ 250 V AC) (3 - 30 V DC or 5 ~ 250 V AC) (3 - 30 V DC or 5 ~ 250 V AC) (3 - 30 V DC or 5 ~ 250 V AC) (3 - 30 V DC or 5 ~ 250 V AC) (3 - 30 V DC or 5 ~ 250 V AC) (3 - 30 V DC) (3 - 30 V	5 V DC, lasting 0.5 s 5 V DC W DC 000 V AC, lasting 1 min 2.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 ms (optional, 4 form on 300 m (Shielded), 150 m (nor shielded) 900 m (Shielded), 150 m (nor shielded) 100 M (Shielded) 101 M (Shielded) 102 M (Shielded) 102 M (Shielded) 103 M (Shielded) 104 M (Shielded) 105 M (Shielded)	is 24V DC when the current is 4 mA, nominal value dax 30 V DC 55 V DC, lasting 0.5 s 5 V DC, lasting 1 min c. 200 V AC, lasting 1 min c. 200 V AC, lasting 1 min c. 200 V AC, lasting 1 min c. 200 m (Shielded), 150 m (non shielded) c. 30 V DC or 5 ~ 250 V AC S M (Sh

Technical specification for digital input modules

Order No.: 6ES7 288-3AE04-0AA0 6ES7 288-3AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08-0AE08	0AA0		
Dimension W x H x D (mm) 45 x 100 x 81 Weight 147 g 186 g Power consumption 1.5 W (no load) 2.0 W (no load)			
Weight147 g186 gPower consumption1.5 W (no load)2.0 W (no load)			
Power consumption 1.5 W (no load) 2.0 W (no load)			
Current consumption (SM bus) 80 mA			
Current consumption (24 V DC) 40 mA (no load) 70 mA (no load)			
Analogue input			
No. of Inputs 4 8			
Type Voltage or current (differential):			
2 can be selected as a group Range			
8 to V, ±5 V, ±2.5 V, or 0 ~ 20 mA			
Full scale range (data word) -27, 648 ~ 27, 648			
Overshoot / undershoot range Voltage: 27, 649 ~ 32, 511/-27, 649 ~ -32, (data word) Current: 27, 649 ~ 32, 511/-4864 ~ 0	512		
Overflow / underflow (data Voltage: 32, 51 2 ~ 32, 767/-32, 51 3 ~ -32, word) Current: 32, 512 ~ 32, 767/-4, 865 ~ -32, 7			
Resolution Voltage mode: 11 bits + signal bits Current mode: 11 bits	Voltage mode: 11 bits + signal bits		
Maximum voltage / current ±35 V/±40 mA resistance			
Smoothness None, weak, medium or strong			
Noise suppression 400, 60, 50 or 10 Hz			
Input resistance $\geq 9 M \Omega$ (voltage) / 250 Ω (current)			
Isolation (field side and logic none side)			
Precision (25°C / 0 ~ 55°C) Voltage mode: full range ±0.1 %/±0.2 % Current mode: full range ±0.2 %/±0.3 %			
Analogue to digital conversion 625 µs (400 Hz inhibited) time			
Common mode rejection 40 dB, DC to 60 Hz			
The working signal range Signal plus common mode voltage must be than +1 2 and greater than -12 V;	less		
The cable length (maximum) 100 m, Shielded twisted pair			
Diagnosis			
Overflow / underflow ✓			
24 V DC low voltage ✓	✓		

Technical specification for analogue output modules

Model	EM AQ02	EM AQ02	
Order No.:	6ES7 288-3AQ02-0AA0	6ES7 288-3AQ04-0AA0	
Standard			
Dimension W x H x D (mm)	45 x 100 x 81		
Weight	147.1 g	170.5g	
Power consumption	1.5 W (no load)	2.1 W (no load)	
Current consumption (SM bus)	60 mA		
Current consumption (24 V DC)	50 mA (no load)	75 mA (no load)	
Analogue output			
No. of Inputs	2	4	
Туре	Voltage or current		
Range	± 10 V or 0 ~ 20 mA		
Resolution	Voltage mode: 10 bits + s Current mode: 10 bits	Voltage mode: 10 bits + signal bits Current mode: 10 bits	
Full scale range (data word)	Voltage: -27, 648 ~ 27, 6 Current: 0 to 27, 648	48	
Precision (25°C/0 ~ 55°C)	Full range ±0.5 %/ ±1.0 %	6	
Stabilisation time (95% of the new value)	Voltage: 300 µs (R), 750 µs (R), 750 µs (1 µ F) Current: 600 µs (1 mH), 2 ms (10 mH)		
Load resistance	Voltage: > 1000 Ω Current: < 500 Ω		
Output state under the STOP mode	Last value or replicable v is 0)	alue (The default value	
Isolation (field side and logic side)	none		
Cable length (max)	100 m, shielded twisted pair		
Diagnosis			
Overflow / underflow	√		
Short circuit to ground (only for voltage mode)	✓		
Circuit breaker (only for current mode)	✓		
24 V DC low voltage	✓		

Technical specification for analogue input/output modules

Model	EM AM06 EM AM03	Model	EM AM06 EM AM03
Order No.:	6ES7 288-3AM06-0AA0	Common mode rejection	40 dB, DC to 60 Hz
Standard		Working signal range	Signal plus common mode voltage must be less
Dimension W x H x D (mm)	45 x 100 x 81		than the +1 2 V is greater than -12 V
Weight	173.4 g	The cable length (maximum)	100 m, Shielded twisted pair
Power consumption	2.0 W (no load)	Analogue output	
Current consumption (SM bus)	80 mA	No. of Inputs	2 1
Current consumption (24 V DC)	60 mA (no load)	Туре	Voltage or current
Analogue input		Range	±10 V or 0 ~ 20 mA
No. of Inputs	4	Resolution	Voltage mode: 10 bits + signal bits
Туре	Voltage or current (differential):		Current mode: 10 bits
	2 can be selected as a group	Full scale range (data word)	Voltage: -27, 648 ~ 27, 648
Range	±10 V, ±5 V, ±2.5 V, or 0 ~ 20 mA		Current : 0 ~ 27, 648
Full scale range (data word)	-27, 648 ~ 27, 648	Precision (25°C/0 ~ 55°C)	Full range ±0.5 %/ ±1.0 %
Overshoot / undershoot range (data word)	Voltage: 27, 649 ~ 32, 511/-27, 649 ~ -32, 512 Current: 27, 649 ~ 32, 511/-4864 ~ 0	Stabilisation time (95% of the new value)	Voltage: 300 μs (R), 750 μs (R), 750 μs (1 μ F) Current: 600 μs (1 mH), 2 ms (10 mH)
Overflow / underflow (data	Voltage: 32, 51 2 ~ 32, 767/-32, 51 3 ~ -32, 768	Load resistance	Voltage $\geq 1000 \Omega$
word)	Current: 32, 512 ~ 32, 767/-4, 865 ~ -32, 768		Current $\leq 600 \Omega$
Resolution	Voltage mode: 11 bits + signal bits Current mode: 11 bits	Output state under the STOP mode	Last value or replicable value (The default value is 0)
Maximum voltage / current	±35 V/±40 mA	Isolation (field side and logic side)	None
resistance		Cable length (max)	100 m, shielded twisted pair
Smoothness	None, weak, medium or strong	5 ()	Too m, shielded twisted pair
Noise suppression	400, 60, 50 or 10 Hz	Diagnosis Overflow / underflow	✓
Input resistance	$\geq 9 \text{ M} \Omega \text{ (voltage) / } 250 \Omega \text{ (current)}$		
Isolation (field side and logic side)	none	Short circuit to ground (only for voltage mode)	✓
Precision (25°C / 0 ~ 55°C)	Voltage mode: full range ±0.1 %/±0.2 % Current mode: full range ±0.2 %/±0.3 %	Circuit breaker (only for current mode)	✓
Analogue to digital conversion time	625 μs (400 Hz inhibited)	24 V DC low voltage	\checkmark

Technical specification for digital input / output signal board

Order No.:6E57 288-5DT04-0AA0StandardStandardStandardStandardStandardNo. of InputStandard Colspan="2">Standard Colspan="2">Standar	Model	SB DT04
Dimension W x H x D (mm)35 x 52.2 x 16Weight18.1 gPower consumption1.0 WCurrent consumption (SM bus)50 mACurrent consumption (24 V DC)Each input used 4mAAnalogue input2YpeSinking type/sourcing type (IEC type 1 sinking)Rated voltage24 V DC, When the current is 4 mA, nominal valueAllowable continuous voltageMax. 30 V DCSurge voltage35 V DC, lasting 0.5 sLogic 1 signal (min)15 V DC when the current is 2.5mA.Logic 0 signal (max)5 VDC when the current is 1 mA.Isolation (field side and logic side)500 V AC, lasting 1 minIsolation (field side and logic side)500 V AC, lasting 1 minIsolation group1Filter timeEach channel can be selected separately 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 µs 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 µsNumber of inputs connected at the same time2Type of outputSolid state -MOSFETVoltage range20.4 - 28.8 V DCLogic 1 signal at max currentMax 0.1 V DCRated current of each point (max)0.5 ALamp load5WContact resistance in the ON statusMax 0.6 ΩSurge current5 A, max lasting 100 msOverload protectionNoIsolation (field side and logic side)500 V AC, lasting 1 minIsolation group1Current of each public end1 AInductive voltage10 + + 48 V, 1 W lossSolation (field side and logic side)500 V AC, lasting		
Weight18.1 gPower consumption1.0 WCurrent consumption (SM bus)50 mACurrent consumption (24 V DC)Each input used 4mAAnalogue inputNo. of Inputs2TypeSinking type/sourcing type (IEC type 1 sinking)Rated voltage24 V DC, When the current is 4 mA, nominal valueAllowable continuous voltageMax. 30 V DCSurge voltage35 V DC, lasting 0.5 sLogic 1 signal (min)15 V DC when the current is 2.5mA.Logic 0 signal (max)5 V DC when the current is 1.5mA.Isolation (field side and logic side)500 V AC, lasting 1 minIsolation (field side and logic side)500 V AC, lasting 1.8 wSolation (field side and logic side)20.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 µsDuz, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 µs2.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 µsSolation (field side and regime in the component of outputs2Number of inputs connected at the same time2Solid state -MOSFET2Voltage range20.4 - 28.8 V DCLogic 1 signal at max currentMax 0.1 V DCLogic 0 signal at max currentMax 0.1 V DCLogic 0 signal at max currentMax 0.1 Q MSurge current6 S WContact resistance in the ON statusMax 0.6 QCurrent leakage at pointMax 10 µASurge current5 A, max lasting 100 msSolation (field side and logic side)500 V AC, lasting 1 minIsolation (field side and logic side)500 V AC, lasting 1 min <td< td=""><td>Standard</td><td></td></td<>	Standard	
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Power consumption1.0 WCurrent consumption (SM bus)50 mACurrent consumption (24 V DC)Each input used 4mAAnalogue inputNo. of Inputs2TypeSinking type/sourcing type (IEC type 1 sinking)Rated voltage24 V DC, When the current is 4 mA, nominal valueAllowable continuous voltageMax. 30 V DCSurge voltage35 V DC, lasting 0.5 sLogic 1 signal (min)15 V DC when the current is 2.5mA.Logic 0 signal (max)5 V DC when the current is 1 mA.Isolation (field side and logic side)500 V AC, lasting 1 minIsolation group1Filter timeEach channel can be selected separately 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 µs 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 µs 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 µsNumber of inputs connected at the same time2Cable length500 m (shielded), 300 m (non shielded)Digital outputSolid state -MOSFETVoltage range20.4 ~ 28.8 V DCLogic 1 signal at max currentMax 0.6 ΩCurrent leakage at pointMax.10 µASurge current5 ASurge current5 ACurrent field side and logic side)500 V AC, lasting 100 msOverload protectionNoIsolation group1Current field side and logic side)500 W (Ac, lasting 1 minIsolation (field side and logic side)500 V AC, lasting 1 minIsolation (field side and logic side)500 V AC, lasting 1 minIsolation (field side and logic side)500 V AC, l		18.1 g
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Current consumption (24 V DC)Each input used 4mAAnalogue input2No. of Inputs2TypeSinking type/sourcing type (IEC type 1 sinking)Rated voltage24 V DC, When the current is 4 mA, nominal valueAllowable continuous voltageMax. 30 V DCSurge voltage35 V DC, lasting 0.5 sLogic 1 signal (min)15 V DC when the current is 2.5mA.Logic 0 signal (max)5 VDC when the current is 2.5mA.Isolation (field side and logic side)500 V AC, lasting 1 minIsolation group1Filter timeEach channel can be selected separately 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 µs 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 µs 0.3, 0.4 (Inter the Stop motion the selected sep	1	
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TypeSinking type/sourcing type (IEC type 1 sinking)Rated voltage24 V DC, When the current is 4 mA, nominal valueAllowable continuous voltageMax. 30 V DCSurge voltage35 V DC, lasting 0.5 sLogic 1 signal (min)15 V DC when the current is 2.5mA.Logic 0 signal (max)5 V DC when the current is 1 mA.Isolation (field side and logic side)500 V AC, lasting 1 minIsolation group1Filter timeEach channel can be selected separately 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 µs 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 µs 0.300 m (non shielded)Digital outputSoloi on		2
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Number of inputs connected at the 2 same time	Output state under the STOP mode	Last value or replicable value (The default
	•	. ,
	Cable length (max)	500 m (shielded), 150 m (non shielded)

Technical specification for battery signal board

M 11	CD D404
Model	SB BA01
Order No.:	6ES7 288-5BA01-0AA0
Standard	
Dimension W x H x D (mm)	35 x 52.2 x 16
Weight	20 g
Power consumption	0.6 W
Current consumption (SM bus)	18 mA
Current consumption (24 V DC)	None
Battery (need to be bought by th	e user)
Hold duration	About 1 year
Type of battery	CR1025cell battery
Nominal voltage	3 V
Nominal capacity	30 mAH
Diagnosis	
Critical cell voltage	<2.5 V
Battery diagnosis	Low voltage lamp:
	Low battery voltage will cause the BA01 panel
	of the LED display in red state
	Diagnosis alarm / or low power digital output
-	status available
Battery status	The battery status provided
	0 =battery normal
	1= Low battery
Battery status update	Battery status will be updated in the boot, then the CPU in RUN mode
	then the CPU III KUN mode

Technical specification for analogue output signal board

Model	SB AQ01
Order No.:	6ES7 288-5AQ01-0AA0
Standard	
Dimension W x H x D (mm)	35 x 52.2 x 16
Weight	17.4 g
Power consumption	1.5 W
Current consumption (SM bus)	15 mA
Current consumption (24 V DC)	40 mA (no load)
Analogue output	
No. of Inputs	1
Туре	Voltage or current
Range	±10 V or 0 ~ 20 mA
Resolution	Voltage mode: 11 bits + signal bits Current mode: 11 bits
Full scale range (data word)	-27, 648 ~ 27, 648 (-10V ~ 10 V) 0 ~ 27, 648 (0 ~ 20 mA)
Precision (25°C/0 ~ 55°C)	±0.5 %/ ±1.0 %
Stabilisation time (95% of the new value)	Voltage: 300 µs (R), 750 µs (R), 750 µs (1 µ F) Current: 600 µs (1 mH), 2 ms (10 mH)
Load resistance	Voltage $\ge 1000 \Omega$ Current $\le 600 \Omega$
Output state under the STOP mode	Last value or replicable value
Isolation (field side and logic side)	none
Cable length (max)	10 m, shielded twisted pair
Diagnosis	\checkmark
Overflow / underflow	✓
Short circuit to ground (only for voltage mode)	✓
Circuit breaker (only for current mode)	✓

Technical specification for RS485/232 signal board

Model	1 SB CM01
Order No	6ES7 288-5CM01-0AA0
Standard	
Dimension W x H x D (mm)	35 x 52.2 x 16
Weight	18.2 g
Power consumption	0.5 W
Current consumption (5 V DC)	50 mA
Current consumption (24 V DC)	Not applicable
Transmitter and receiver (RS485)	
common-mode voltage range	-7 V ~ +12 V, 1 s, 3 VRMS continuous
Transmitter differential output voltage	min 2 V when RL = 100 Ω min 1.5 V when RL = 54 Ω
Termination and bias	On TXD 4.7 KΩ for +5 V On RXD 4.7 KΩ for GND
Receiver input impedance	Min 12 KΩ
The receiver threshold / sensitivity	Minimum +/-0.2 V, the typical lag 60 mV
Isolation The RS485 signal and the shell grounding RS485 signal and CPU logic common end	None
Length of cable, shielded cable	lsolation repeaters: 1000 m, baud rate up to 187.5 K No isolation repeaters: 50 m
Transmitter and receiver (RS232)	
Transmitter output voltage	Minimum +/-5V, when RL two 3 K
Output voltage sent	MAX. +/-1 5 V DC
Receiver input resistance	Min 3 KΩ
Receiver threshold / sensitivity	Lower limit 0.8 V, top limit 2.4 V typical lag 0.5 V
Receiver input voltage	Max +/- 30 V DC
Isolation The RS232 signal and the shell grounding RS232 signal and CPU logic common end	None
Length of cable, shielded cable	Max. 10 m

Technical specification for RTD module

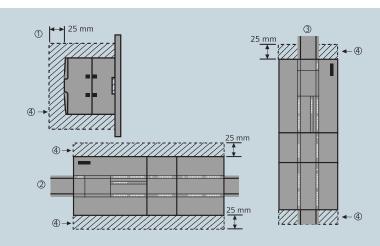
Technical specification of thermocouple module

Model	EM AR02	EM AR04	Model	EM AT04
Order No.:	6ES7 288-3AR02-0AA0	6ES7 288-3AR04-0AA0	Order No.:	6ES7 288-3AT04-0AA0
Standard			Standard	
Dimension W x H x D (mm)	45 x 100 x 81		Dimension W x H x D (mm)	45 x 100 x 81
Weight	148.7 g	150 g	Weight	125 g
Power consumption	1.5 W		Power consumption	1.5 W
Current consumption (SM bus)	80 mA		Current consumption (SM bus)	80 mA
Current consumption (24 V DC)	40 mA		Current consumption (24 V DC)	40 mA
Analogue input			Analogue input	
No. of Inputs	2		No. of Inputs	4
Туре	RTD and resistance value of module reference ground		Range Nominal range (data word)	Please refer to RTD sensor selection table in th S7-200 SMART System Manual
Range Nominal range (data word) overshoot / undershoot range (data	Please refer to RTD sense S7-200 SMART System N		overshoot / undershoot range (data word) Overflow / underflow (data word)	
word)			Resolution	
Overflow / underflow (data word)			Temperature	0.1°C / 0.1°F
Resolution			Resistance	15 position + sign
Temperature	0.1°C / 0.1°F		Maximum voltage hold	±35 V
Resistance	15 position + sign		Noise suppression	For the selected filter settings
Maximum voltage hold	±35 V			(10 Hz, 50 Hz, 60 Hz or 400 Hz) is 85 dB
Noise suppression	85 dB, 10 Hz/50 Hz/60 H	z/400 Hz	Common mode rejection	120 V AC of, > 120 dB
Common mode rejection	> 120 dB		Resistance	\geq 10 M Ω
Resistance	> 10 M Ω		isolation	
isolation			Field side and logic side	500 V AC
Field side and logic side	500 V AC		Field side and 24 V DC side	500 V AC
Field side and 24 V DC side	500 V AC		24 V DC side and logic side	500 V AC
24 V DC side and logic side	500 V AC		Channel to channel isolation	-
Channel to channel isolation	0		Precision	Please refer to RTD sensor selection table
Precision	Please refer to RTD sense	or selection table	Repeatability	±0.05 % FS
Repeatability	±0.05 % FS		Maximum power consumption of the	Integral type
Maximum power consumption of the sensor	0.5 m W		sensor Module update time	Please refer to the noise reduction selection
Measuring principle	Sigma-Delta			table
Module update time	Please refer to the noise	reduction selection table	The cold end temperature error	± 1.5 °C
Cable length (maximum)	The maximum length to	the sensor is 100 m	Cable length (maximum)	The maximum length to the sensor is 100 m
Cable resistance	Max.20 Ω, for Cu10, max	κ. is 2.7 Ω	Cable resistance	Max. 100 Ω
Diagnosis			Diagnosis	
Overflow / underflow	✓		Overflow / underflow	\checkmark
Circuit breaker (only current mode)	✓		Circuit breaker (only current mode)	\checkmark
24 V DC low voltage	✓			

General technical specifications

Electromagnetic compatibility - immunity with EN61000-6-2	
EN 61000-4-2 electrostatic discharge	8 kV, the air discharge to all surfaces; ±4 kV, conductive contact discharge on the exposed surface
EN 61000-4-3	When 80 ~ 1000 MHz, 10 V/m, 1 kHz, 80 % AM
Radiation, radio frequency, electromagnetic field immunity test	When 1.4 ~ 2.0 GHz, 3 V/m, 1 kHz, 80 % AM
	When 2.0 ~ 2.7 GHz, 1 V/m, 1 kHz, 80 % AM
EN 61000-4-4 fast transient Bursts	2 kV, 5 kHz, - a coupled network of AC and DC power supply systems ; 2 kV, 5 kHz, I/O coupling clamp
EN 61000-4-5	AC system — 2 kV Common mode, 1 kV Differential mode
Surge immunity	DC system — 2 kV Common mode, 1 kV Differential mode
	For the DC system (I/O signal, DC power supply system), need the external protection
EN61000-4-6 Conducted interference	When 150 kHz ~ 80 MHz, 10 V RMS, 1 kHz, 80 % AM
EN61000-4-11 Voltage dip	Communication systems; 60 Hz, 0% for 1 cycles, 40% for 12 cycles and 70% for 30 cycles
Electromagnetic compatibility of a conduction and radiation in accordance with	
Transmission of EN55001, class A, group 1	0.15 MHz ~ 0.5 MHz < 79 dB (µV) Quasi peak ; < 66 dB (µV) Average value
	0.5 MHz ~ 5 MHz < 73 dB (µV) Quasi peak ; < 60 dB (µV) Average value
	5 MHz \sim 30 MHz $<$ 73 dB (μ V) Quasi peak ; $<$ 60 dB (μ V) Average value
Radiation EN55001, Class A, Group 1	30 MHz ~ 230 MHz < 40 dB (μ V/m) Quasi peak ; Measured distances is 10m
	230 MHz \sim 1 GHz $<$ 47 dB (µV/m) Quasi peak ; Measured distances is 10m
Environmental conditions -transport and storage	
EN60068-2-2, Bb test, EN60068-2-1 test Ab, hot and cold	-40°C~70°C
EN60068-2-30, Db test, damp heat	25°C ~ 55°C / humidity 95 %
EN60068-2-14 Na test, a temperature change	-40~ 70°C, residence time 3hrs, 2 cycles
EN60068-2-32, free fall	0.3 m, 5times, product package
Atmospheric pressure	1080 ~ 660 hPa (equivalent to altitude -1000 ~ 3500 m)
Environment conditions -running	
Ambient temperature range (25 mm height space under the equipment for the wind	0°C ~ 55°C, horizontal installation
coming in)	0°C ~ 45°C, vertical installation
	Humidity 95 %, No condensation
Atmospheric pressure	1080 ~ 795 hPa (equivalent to altitude 1000 ~ 2000 m)
Pollutant concentration	SO2: < 0.5 ppm ; H2S : < 0.1 ppm ; RH < 60 %, No condensation
EN 60068-2-14, Nb test, temperature change	5°C ~ 55°C, 3°C/min
EN 60068-2-27 mechanical shock	15 G, 11 ms pulse, 3 axes upwards 6 impacts
EN 60068-2-6 Sinusoidal vibration	When DIN guide rail mounting : 5 ~ 9 Hz, 3.5 mm, when 9 ~ 150 Hz, 1 G
	Panel installation : when 5 ~ 9 Hz, 7.0 mm, when 9 ~ 150 Hz, 2 G
	Each axis swings 10 times, each divided into 1 octave
High voltage insulation test	
24 V/5 V nominal circuit	520 V DC (optical isolation boundary type test)
115/230 V Ground circuit	1500 V AC routine test/1950 V DC type test
11 5/230 V circuit for a 115/230 V circuit	1500 V AC routine test /1950 V DC type test
11 5/230 V circuit for a 24 V/5 V circuit	1500 V AC routine test /3250 V DC type test
Ethernet port on 24 V/5 V circuit and ground	1500 V AC (only the type testing)

Mounting dimensions

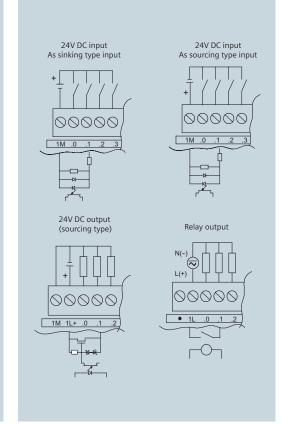


Side view
 Overtical mounting
 Overt

- The equipment shall be isolated from the thermal radiation, high voltage and electrical noise.
- Leave enough space for cooling and wiring. A 25mm height space above or under the equipment must be left so as to allow free air circulation.

Please refer to "S7-200 SMART System Manual" for the specific requirements of installation and guidelines.

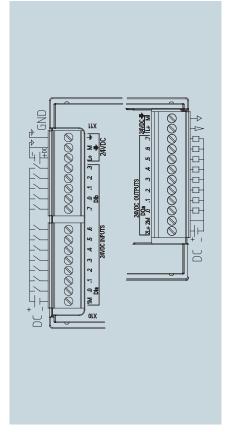
Input and output wiring diagram

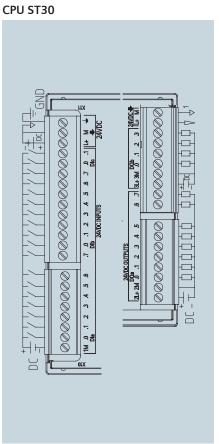


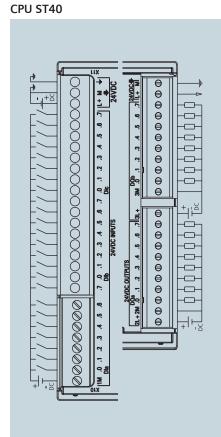
Order number description

	6 E S 7 — 2 8 8 — 0 A A 0			
Siemens S7 series PLC				
S7-200 SMART				
1: CPU				
2: Digital expansion module				
3: Analog expansion module				
5: Signal board				
C/S stands for CPU type				
C stands for economic type, S stands for standa	rd type			
D/A represents the extension module type				
D represents a digital expansion module, A repr	esents an analog expansion module			
E/Q represents input/output				
R/T represents the digital expansion module relay output / transistor output				
M represent the mixed input /output expansion module				
* AR represents the RTD expansion module, AT represents the thermocouple module				
XX represents the number input/output ports				
0A: Reserved				
A0: version No.				

Schematic diagram of the module and the signal board wiring

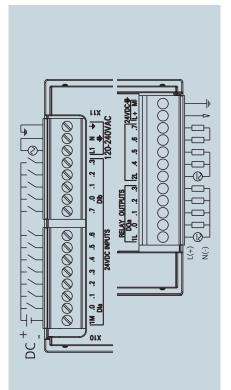


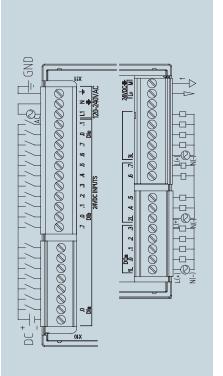




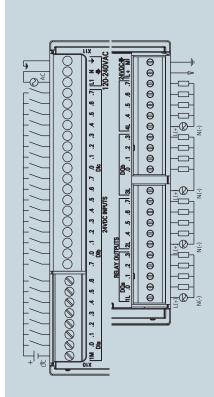
CPU SR20

CPU ST20

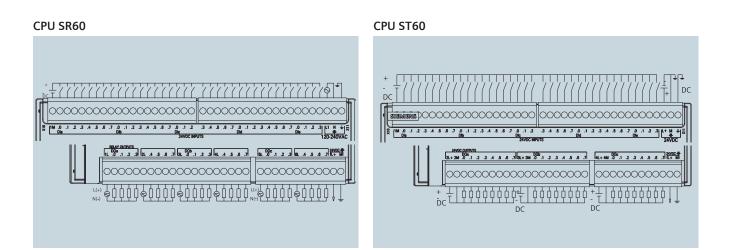




CPU SR30



CPU SR40

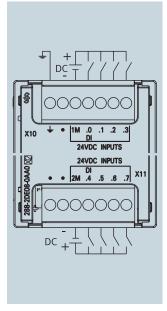


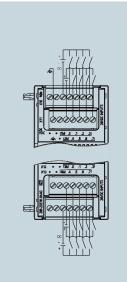
EM DE08

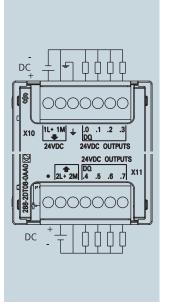


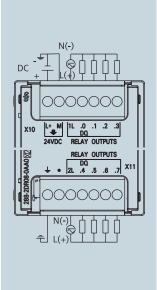
EM DT08

EM DR08

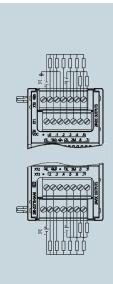












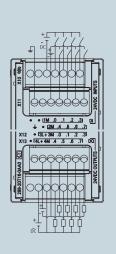
EM QR16

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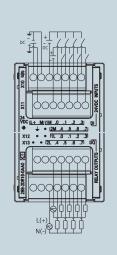
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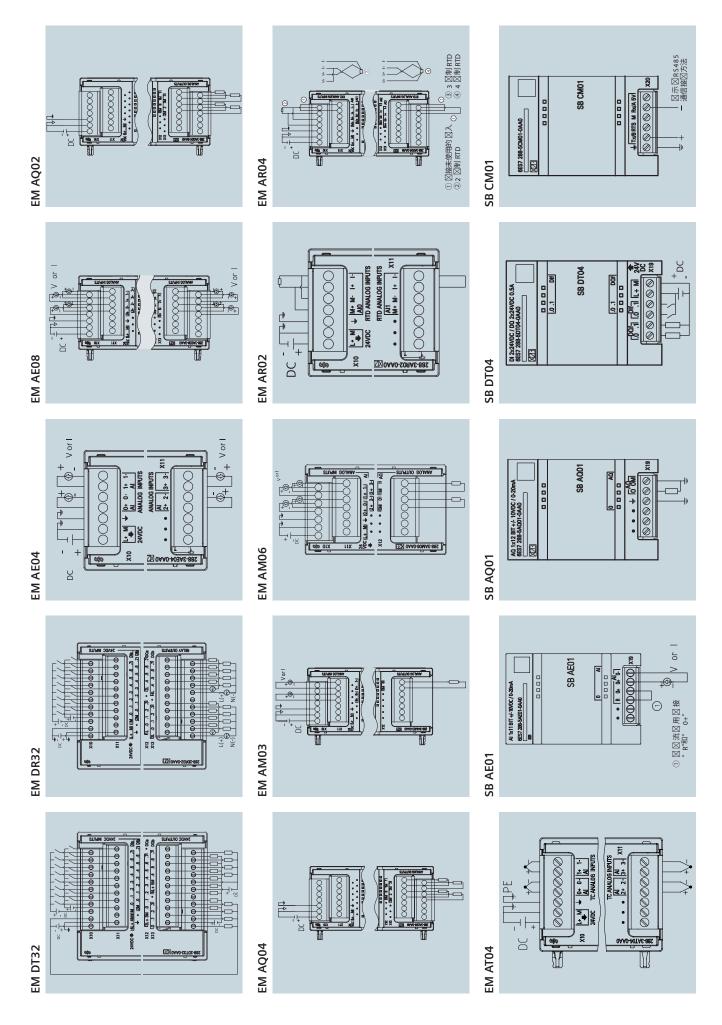
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EM DR16







Simple and extraordinary

The SIMATIC S7-200 SMART Compact CPU, which Siemens has developed in response to market demand, is economical and costeffective. Works with SINAMIC V20 drives for your A small automated control system provides the ideal solution.

A new generation of economical S7-200 SMART CPU S7-200 SMART Compact CPU

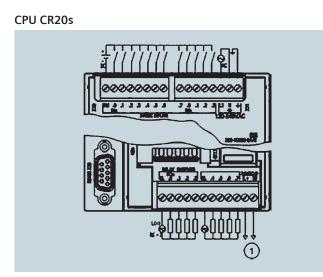
- Economical CPU module with 20 I/O, 30 I/O, 40 I/O, 60 I/O configurations
- High-speed processor chip, bit instruction execution time up to $0.15 \mu s$
- Supports high-speed counting for single-phase 4-channel 100KHz or 2-channel A/B phase 50KHz input
- Integrated power-off data retention function, no special battery required, simple setup, easy
- Realize power outage data forever

Economic CPU CR20s/CR30s/CR40s/CR60s specifications

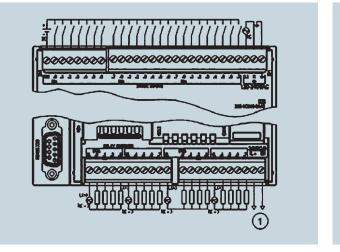
MODEL	CPU CR20s AC/DC/RLY	CPU CR30s AC/DC/RLY	CPU CR40s AC/DC/RLY	CPU CR60s AC/DC/RLY
Order no	6ES7 288-1CR20-0AA1	6ES7 288-1CR30-0AA1	6ES7 288-1CR40-0AA1	6ES7 288-1CR60-0AA1
Standard				
Dimension W x H x D (mm)	90×100×81	110×100×81	125 x 100 x 81	175×100×81
Weight	367g	435g	440 g	620 g
Power consumption	14W	14W	18 W	20 W
Available current (24 V DC)	300 mA maximum (sensor power supply)			
DI current consumption (24 V DC)	4mA per point used			
CPU feature				
User Storage	12 KB program memory	8 KB data memory / 2 KB ret	tentive memory	
Onboard number I/O	12DI/8DO	18DI/12DO	24DI/16DO	36 DI/24DO
Process image size	256-bit input (I) / 256-bit		210111000	50 51/2 100
Analog image	_	output (Q)		
Bit memory (M)	256 Bit			
Temporary (partial) storage		gram, 64 bytes in each subro	uting and interrupt program	<u></u>
I/O module extension	04 bytes in the main prog	graffi, 04 bytes in each subio	utilie allu interrupt prografi	11
	-			
Signal board expansion				
High speed counter	4 in total Single phase 4, 100 KHz Quadrature phase 2, 50 k	ΚHz		
Pulse output	-			
Interrupted				
4 rising edges and 4 falling edges				
Storage card	-			
Real time clock accu	-			
Real time clock hold time	_			
Performance				
Boolean operation	0.15 µs/instruction			
Mobile word	1.2 µs/instruction			
Real mathematical operation	3.6 μs/instruction			
S7-200 SMART Supported user progra				
POUs	Type/quantity • Main program: 1 • Subroutine: 128 (0 to 1 • Interrupt program: 128 Nesting depth • From main program: 8 • From interrupt program	(0 to 127) subroutine levels		
Accumulator				
Timer	4 types / quantity • Non-retentive (TON, TOF): 192 • Retention: 64			
Counter	256			
Communication				
Number of ports	Serial port: 1 (RS485)			
HMI device	Serial port: 4 connections per port			
Programming device (PG)	Serial port: 1 connection			
Data transfer rate	RS485 system protocol: 9600, 19200 and 187500 b/s RS485 free port: 1200 to 115200 b/s			
Cable type	RS485: PROFIBUS networ	RS485: PROFIBUS network cable		
Power Supply				
Voltage range	85 ~ 264 V AC			
Power frequency	47 ~ 63 Hz			
Input current only includes CPU	90mA at 120V AC 120V AC 130 mA 90 mA at 120 V AC 60mA at 240V AC 240V AC 80 mA at 150 mA 240 V AC			
Inrush current (MAX)	9.3A at 264V AC		7.3 A at 264 V AC	
Isolation (input power and logic side)	1500 V AC			

MODEL	CPU CR20s AC/DC/RLY	CPU CR30s AC/DC/RLY	CPU CR40s AC/DC/RLY	CPU CR60s AC/DC/RLY	
Leakage current, AC line pair	0.5 mA				
functionally					
Hold time (power down)	30ms at 120V AC 50 ms at 120 V AC				
	200ms at 240 V AC 400 ms at 240 V AC				
Internal fuse (users cannot replace)	3 A, 250 V, slow blow				
Digital input	10	10		24	
Input Points	12	18	24	36	
Types of	Sink/source (IEC Class 1 missing type)				
Rated voltage	24 V DC at 4 mA, rating				
Allowed continuous voltage	30 V DC maximum				
Surge voltage	35 V DC for 0.5 s				
Logic 1 signal (minimum)	15 V DC at 2.5 mA				
Logic 0 signal (maximum)	5 V DC at 1 mA				
Isolation (field side and logic side)	500 V AC for 1 min				
Isolation group	1				
Filtering time	Each channel can be selected individually (points 10.0 to 11.3): 0.2, 0.4, 0.8, 1.6, 3.2,6.4 and 12.8 µs0.2, 0.4, 0.8, 1.6, 3.2,6.4 and 12.8 ms	Each channel can be selected individually (points 10.0 to 11.5): 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 µs 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 ms Each channel can be selected individually (points 11.6 and larger): 0,6.4,12.8	Each channel can be selected individually (points 10.0 to 11.5): 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 µs 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 ms Each channel can be selected individually (points 11.6 and larger): 0,6.4,12.8 ms	Each channel can be selected individually (points 10.0 to 11.5): 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 μ s 0.2, 0.4, 0.8, 1.6, 3.2, 6.4 and 12.8 ms Each channel can be selected individually(points 11.6 and larger): 0,6.4,12.8	
HSC clock input frequency (maximum) (logic 1 level = 15 ~ 26 V DC)	Single phase: 4, 100 KHz Quadrature phase: 2, 50 KHz				
Number of inputs simultaneously turned on	12	18	24	36	
Cable length	Shield: 500m (normal inpu	ut), 50m (HSC input);Unshie	lded: 300m (normal input)		
Digital Output					
Output Points	8	12	16	24	
Types of	Relay, dry contact				
Voltage Range	5 ~ 30 V DC or 5 ~ 250 V A	AC			
Logic 1 signal at maximum current	-				
Logic 0 signal with 10 K Ω load	-				
Rated current per point (maximum)	2.0 A				
Lamp load	30 W DC/200 W AC				
On-state resistance	The new device is maximu	im 0.2 Ω			
Leakage current at each point	-				
Inrush current	When the contact is closed	d 7A			
Overload protection	NO				
Isolation (field side and logic side)	1500 V AC for 1 min (coil a	and electric shock) None (co	il and logic side)		
Isolation resistance	The new device is a minim	num of 100 MΩ			
Disconnect insulation between contacts	750 V AC for 1 min				
Isolation group	2	3	4	6	
Inductive clamping voltage	-				
Switch delay	Up to 10 ms				
Mechanical life (no load)	10,000,000 open/close cycle				
Contact life at rated load	100,000 open/close cycle				
Output status in STOP mode	Previous value or replacement value (default is 0)				
Number of outputs simultaneously turned on	8	12	16	24	
cable length	500m (shielded), 150m (u	inshielded)			

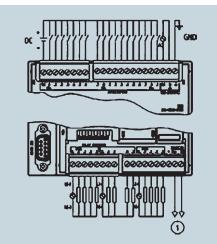
Economical CPU wiring diagram



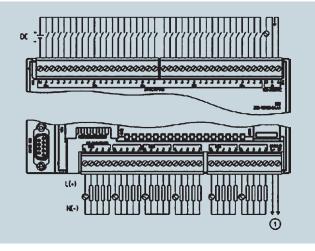
CPU CR40s



CPU CR30s



CPU CR60s



Economical CPU appearance



Open a new Era of PROFINET 2019.03 officially released

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SIMATIC ST-200

CONTRACTOR DESCRIPTION

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07770700

CPU model supporting PROFINET communication

CPUTypes of	Article number
CPU SR20, AC/DC/RLY	6ES7288-1SR20-0AA0
CPU ST20, DC/DC/DC	6ES7288-1ST20-0AA0
CPU SR30, AC/DC/RLY	6ES7288-1SR30-0AA0
CPU ST30, DC/DC/DC	6ES7288-1ST30-0AA0
CPU ST40, DC/DC/RLY	6ES7288-1SR40-0AA0
CPU SR40, AC/DC/DC	6ES7288-1ST40-0AA0
CPU SR60, AC/DC/RLY	6ES7288-1SR60-0AA0
CPU ST60, DC/DC/DC	6ES7288-1ST60-0AA0

Note: 1. The firmware version of the CPU is V2.4 and above.

2. Programming software SETP7 Micro/WIN SMART version is V2.4 and above

PROFINET communication performance

PROFINET Performance	Parameter
PROFINET Maximum number of devices	8
PROFINET Device number of the device	1 to 8
Maximum input size per PROFINET device	128 bytes
Maximum output size per PROFINET device	128 bytes
Maximum number of modules	64
Minimum cycle update time for PROFINET devices Depending on the PN communication component, the no of devices and the amount of user data	

PROFINET communication function

Function Name	Overview
PROFINET device status	Use the LEDs on the CPU panel to indicate the working status of PROFINET
Find PROFINET devices	Find PROFINET devices and assign names to PROFINET devices
PROFINET Programming Wizard	Configure, assign parameters and interconnect the functions of individual PN hardware components
PROFINET program instructions	Read and write data records using the RDREC and WRREC instructions. Read and write multiple input or output bytes of the device using the BLKMOV_BIR and BLKMOV_BIW instructions. PROFINET Network Diagnostics

PROFINET I/O address assignment

PROFINET device number	CPU input process image address	CPU output process image address
1PROFINET device process image register address	1128.0 to 1255.7	Q128.0 to Q255.7
2PROFINET device process image register address	1256.0 to 1383.7	Q256.0 to Q383.7
3PROFINET device process image register address	I384.0 to I511.7	Q384.0 to Q511.7
4PROFINET device process image register address	I512.0 to I639.7	Q512.0 to Q639.7
5PROFINET device process image register address	1640.0 to 1767.7	Q640.0 to Q767.7
6PROFINET device process image register address	1768.0 to 1895.7	Q768.0 to Q895.7
7PROFINET device process image register address	1896.0 to 11023.7	Q896.0 to Q1023.7
8PROFINET device process image register address	I1024.0 to I1151.7	Q1024.0 to Q1151.7

Ordering data

SIMATIC S7-200 SMART Ordering data

		Article number
СРИ		
CPU SR20	Standard CPU module, relay output, 220 V AC supply, 12 DI / 8 DO, integrated PN port	6ES7 288-1SR20-0AA0
CPU ST20	Standard CPU module, transistor output, 24 V DC supply, 12 DI / 8 DO, integrated PN port	6ES7 288-1ST20-0AA0
CPU SR30	Standard CPU module, relay output, 220 V AC supply, 18 DI / 12 DO, integrated PN port	6ES7 288-1SR30-0AA0
CPU ST30	Standard CPU module, transistor output, 24 V DC supply, 18 DI / 12 DO, integrated PN port	6ES7 288-1ST30-0AA0
CPU SR40	Standard CPU module, relay output, 220 V AC supply, 24 DI / 16 DO, integrated PN port	6ES7 288-1SR40-0AA0
CPU ST40	Standard CPU module, transistor output, 24 V DC supply, 24 DI / 16 DO, integrated PN port	6ES7 288-1ST40-0AA0
CPU SR60	Standard CPU module, relay output, 220 V AC supply, 36 DI / 24 DO, integrated PN port	6ES7 288-1SR60-0AA0
CPU ST60	Standard CPU module, transistor output, 24 V DC supply, 36 DI / 24 DO, integrated PN port	6ES7 288-1ST60-0AA0
CPU CR20s	Economical CPU module, relay output, 220 V AC supply, 12 DI / 8 DO	6ES7 288-1CR20-0AA1
CPU CR30s	Economical CPU module, relay output, 220 V AC supply, 18 DI / 12 DO	6ES7 288-1CR30-0AA1
CPU CR40s	Economical CPU module, relay output, 220 V AC supply, 24 DI /16 DO	6ES7 288-1CR40-0AA1
CPU CR60s	Economical CPU module, relay output, 220 V AC supply, 36 DI / 24 DO	6ES7 288-1CR60-0AA1
Expanion Modules		
EM DE08	Digital input module, 8 x 24 V DC input	6ES7 288-2DE08-0AA0
EM DE16	Digital input module, 16 x 24 V DC input	6ES7 288-2DE16-0AA0
EM DR08	Digital output module, 8 x relay output	6ES7 288-2DR08-0AA0
EM DT08	Digital output module, 8 x 24 V DC output	6ES7 288-2DT08-0AA0
EM QT16	Digital output module, 16 x 24 V DC output	6ES7 288-2QT16-0AA0
EM QR16	Digital output module, 16× relay output	6ES7 288-2QR16-0AA0
EM DR16	Digital input/output module, 8 x 24 V DC input / 8 x relay output	6ES7 288-2DR16-0AA0
EM DR32	Digital input/output module, 16×24 V DC input / 16 x relay output	6ES7 288-2DR32-0AA0
EM DT16	Digital input/output module, 8 x 24 V DC input / 8 x 24 V DC output	6ES7 288-2DT16-0AA0
EM DT32	Digital input/output module, 16 x 24 V DC input / 16 x 24 V DC output	6ES7 288-2DT32-0AA0
EM AE04	Analog input module, 4 inputs	6ES7 288-3AE04-0AA0
EM AE08	Analog input module, 8 inputs	6ES7 288-3AE08-0AA0
EM AQ02	Analog output module, 2 outputs	6ES7 288-3AQ02-0AA0
EM AQ04	Analog output module, 4 outputs	6ES7 288-3AQ04-0AA0
EM AM03	Analog input/output module, 2 inputs / 1 output	6ES7 288-3AM03-0AA0
EM AM06	Analog input/output module, 4 inputs / 2 outputs	6ES7 288-3AM06-0AA0
EM AR02	Thermal resistance input module, 2 channels	6ES7 288-3AR02-0AA0
EM AR04	Thermal resistance input module, 4 inputs	6ES7 288-3AR04-0AA0
EM AT04	Thermocouple input module, 4 channels	6ES7 288-3AT04-0AA0
EM DP01	PROFIBUS-DP slave module	6ES7 288-7DP01-0AA0
Signal board SB	Communication signal board DC405/DC222	CEC7 200 ECM01 0440
SB CM01	Communication signal board, RS485/RS232	6ES7 288-5CM01-0AA0
SB DT04	Digital expansion signal board, 2 x 24 V DC input / 2 x 24 V DC output	6ES7 288-5DT04-0AA0
SB AE01	Analog expansion signal board, 1 × 12-bit analog input	6ES7 288-5AE01-0AA0
SB AQ01	Analog expansion signal board, 1 x 12-bit analog output	6ES7 288-5AQ01-0AA0
SB BA01 Acessories	Battery signal board, support CR1025 button battery (battery purchased separately)	6ES7 288-5BA01-0AA0
I/O Extension Cable	S7-200 SMART I/O extension cable, 1 m in length	6ES7 288-6EC01-0AA0
PM207	S7-200 SMART I/O extension cable, 1 m mengun S7-200 SMART power supply, 24 V DC/3 A	6ES7 288-0CD10-0AA0
PM207	S7-200 SMART power supply, 24 V DC/5 A	6ES7 288-0ED10-0AA0
PM207	S7-200 SMART power supply, 24 V DC/S A S7-200 SMART power supply, 24 V DC/10 A	6ES7 288-0KD10-0AA0
USB/PPI Cable	S7-200 SMART Power Supply, 24 V DC/10 A S7-200 SMART Economy CPU programming cable, USB interface	6ES7 901-3DB30-0XA0
USDITT Cable	57 200 Swinter Economy Cro programming cable, OSB interface	0257-501-50850-0XA0

Industry Sector Automation Systems Industrial Automation R&D Building, Kalwa Works Thane-Belapur Road, Airoli Thane – 400601 Tel. 022 - 33265005 XX-XXX-XXX

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