

SIMATIC S7-200

Control technology a class of its own



SIMATIC Controller

Answers for industry.

SIEMENS

Communicative, modular, compact: So small – and so powerful

The Micro PLC SIMATIC S7-200 is truly in a class of its own: it's both compact and highly powerful – especially in relation to its real-time response – it's fast, features great communications options and comes with really easy-to-operate software and hardware.

But there's more to it than that: the Micro PLC SIMATIC S7-200 has a consistently modular design – for customized solutions which aren't too large for the present but open-ended enough to be expanded anytime in the future.

All this makes the SIMATIC S7-200 a real economic alternative in open-loop control for the lower performance range. For any applications in automation engineering that constantly depend on innovation and optimum customer benefit.

SIMATIC S7-200 delivers consistently economical solutions. The entire system family features

- powerful performance,
- optimum modularity and
- open communications.

In addition, the SIMATIC S7-200 programming tool makes your job even easier: the Micro PLC is very easy to program allowing fast and easy realization of applications – and the add-on libraries for the software accelerate and facilitate your work even more.

This Micro PLC has been in successful use in millions of applications around the world – in both stand-alone solutions and networks.

Find out for yourself what the SIMATIC S7-200 has to offer!



Open communication

- Integrated standard RS 485 interface with data transmission rates between 1.2 and 187.5 kbit/s
- PPI protocol functioning as system bus for trouble-free networking
- Programmable mode with user-specific protocols for any peripheral devices
- Fast connection to PROFIBUS via module as a slave
- Powerful to AS-Interface as a master
- Communications anywhere thanks to modem link (for remote maintenance, teleservice or telecontrol)
- Connection to Industrial Ethernet via Ethernet module
- With connection to the Internet by means of Internet module
- S7-200 PC ACCESS – OPC Server for simple connection to the PC environment

Powerful performance

- Small and compact – ideal for any applications where space is tight
- Integrated and comprehensive basic functionality in all CPU models
- Large memory
- Outstanding real-time response – being in total command of the entire process at any time means increased quality, efficiency and safety
- Easy to handle thanks to the user-friendly software STEP 7-Micro/WIN – ideal for both beginners and experts

Optimal modularity

- Systems engineering:
- 5 distinct CPUs in the performance range with comprehensive basic functionality and integrated Freeport communications interface
- A wide range of expansion modules for various functions:
 - Digital/analog expansions, scalable to specific requirements
 - PROFIBUS communications as a slave
 - AS-Interface communications as a master
 - Exact temperature measurement
 - Positioning
 - Remote diagnostics
 - Ethernet/Internet communications
 - SIWAREX MS weighing module
- HMI functions
- STEP 7-Micro/WIN software with Micro/WIN add-on library
- Compelling systems engineering – now featuring precise dimensioning and optimum solutions for a wide range of different requirements for one automation task

Fast, intelligent and well-planned: A system of endless possibilities

Tried and tested worldwide thanks to:

- Compact design
- High basic functionality
- Modular expansion options
- Integral RS 485 interface for use as system bus
- Excellent real-time behavior
- Extremely fast and precise process and sequence control
- Seamless control of time-critical processes by means of time interrupts
- Simple and user-friendly connection method thanks to removable terminal strips on the CPU and expansion modules – permanent wiring

Highlights

- Memory card for data logging, recipe management, saving of Micro/WIN project, storage of documentation in various formats
- PID auto-tune function
- 2 interfaces onboard for extended communication options, e.g. with other manufacturers' devices (CPU 224 XP, CPU 226)
- CPU 224 XP with integral analog inputs/outputs

CPUs	<p>CPU 221</p>  <p>6/4 inputs/outputs</p>	<p>CPU 222</p>  <p>8/6 inputs/outputs (I/O) + max. 2 modules = 78 I/Os</p>	<p>CPU 224</p>  <p>14/10 inputs/outputs (I/O) + max. 7 modules = 168 I/Os</p>
Digital and analog expansions	 <p>Input modules</p>	 <p>Output modules</p>	 <p>Input/output modules</p>
Specific expansions	 <p>RTD temperature measurement</p>	 <p>TC temperature measurement</p>	 <p>SIWAREX MS weighing module</p>
Communication	 <p>AS-Interface master CP 243-2 max. 2 modules</p>	 <p>PROFIBUS DP slave EM 277</p>	 <p>Ethernet module CP 243-1 max. 1 module</p>
Operating and monitoring	 <p>TD 100C</p>	 <p>TD 200/TD 200C</p>	 <p>TD 400C</p>

CPU 224XP



14/10 inputs/outputs (I/O)
2/1 analog I/O
+ max. 7 modules = 168 I/Os

CPU 224XPsi



14/10 inputs/outputs
(current-sinking digital outputs)
2/1 analog inputs/outputs
+ max. 7 modules = 224 I/Os

CPU 226



24/16 inputs/outputs (I/O)
+ max. 7 modules = 248 I/Os

Software

STEP 7-Micro/WIN

- Easy handling
- Windows standard
- Configuration instead of programming: the Wizards
- Powerful instruction set easy to use via drag-and-drop
- Status for STL, LAD and CSF



Input/output modules

- Modular buildingblock system
- Expansion modules can be scaled according to requirements
- Digital expansion modules from 4/4 to 32/32 inputs/outputs

- Analog expansion modules from 4/0, 4/1 to 0/2 inputs/outputs
- Power modules for switching loads: 5-A-DC or 10-A relay



Positioning module
EM 253

- Modules for exact temperature measurement to a tenth of a degree Celsius:
 - RTD module for measurement of resistance temperature
 - TC module for measurements with thermocouples

- EM 253 positioning module for controlling stepper motors and servodrives
- SIWAREX MS, compact weighing electronics for SIMATIC S7-200



IT module
CP 243-1 IT
max. 1 module



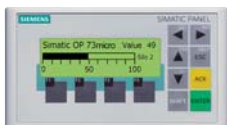
Modem module
EM 241



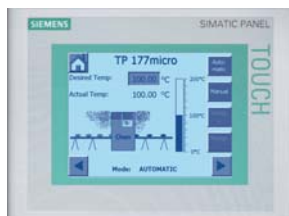
GSM/GPRS Modem
SINAUT MD720-3

- Integrated PPI interface as S7-200 system bus or as freely programmable interface – for connecting printers, barcode scanners, etc
- From CPU 222 upwards PROFIBUS-capable via PROFIBUS DP slave module
- From CPU 222 upwards functionality as AS-Interface master via AS-Interface module

- EM 241 modem module with interated complete functions for PLC communications such as remote maintenance, telecontrol, remote diagnostics, reporting, remote data transmission, etc.
- CP 243-IT, for communication via FTP, e-mail or HTML
- SINAUT MD720-3 GSM/GPRS modem; IP communication via GSM NET; quadband



OP 73micro



TP 177micro

TD 200

- Backlit, 4-/2-line LC-Display
- 8 user-programmable function keys
- TD 100C/TD 200C
- Backlit, 2-line LC-Display
- Up to 14/20 configurable keys
- Appearance and size of keys can be configured individually
- User-interface layout selectable
- TD 400C
- Backlit LC display, 4 lines
- Configuration of tactile keys – Up to 15 permanently assigned tactile keys. Can be used for multiple functions.
- Audible and visible feedback at the touch of a key In addition to tactile

feature of the keys

- User-selectable operator interface layout

OP 73micro

- Pixel graphics 3" display
- Signaling system with definable signal classes
- 5 online languages incl. Asian and Cyrillic scripts

TP 177micro

- Pixel graphics 5.7" display, suitable for vertical mounting (TP 177micro)
- Signaling system with definable signal classes
- 5 online languages incl. Asian and Cyrillic scripts

For service, maintenance, remote action and more: Communication at every level

The communications possibilities of the Micro PLC SIMATIC S7-200 are unique. The integrated standard RS 485 interfaces can operate at data transmission rates from 1.2 to 187.5 kbit/s functioning as follows:

- As a system bus with a maximum of 126 stations. In this capacity, for example, it is possible to network programming devices, SIMATIC HMI products and SIMATIC CPUs without a problem. The integrated PPI protocol is used for pure S7-200 networks. In a network consisting of TIA components (SIMATIC S7-300/400 and SIMATIC HMI etc), the S7-200 CPUs are integrated as MPI slaves.
- In programmable mode (up to max. 115.2 kbaud) with user-specific protocols (e.g. ASCII protocol). This means the SIMATIC S7-200 is open for any connected device; for example, it enables connection of a modem, barcode scanner, PC, non-Siemens PLC and much more. By means of the USS protocol for drives, as many as 31 SINAMICS frequency converters can be controlled without additional hardware.
- The Modbus RTU Library included in the package also enables connection to a Modbus RTU network.

The perfect new connection with PC Access

PC Access is the perfect basis for data exchange between S7-200 and PC – regardless of the communication link selected (PPI, modem, Ethernet/IT CP). As an OPC Server, PC Access offers you the option of writing or reading S7-200 data with Microsoft Excel. As an OPC Client, it can be used for ProTool Pro, WinCC flexible RT, Win CC, etc. With an interface for the visualization via as many as 8 connections, the configuration, programming and monitoring can be implemented from a central location, saving both time and money.

The Internet module CP 243-1 IT also offers you fast access by permitting a simple universal connection of the PLC to different computers by means of FTP. The Ethernet module CP 243-1 allows you to access S7-200 process data quickly via Ethernet for archiving or further processing. The configuration support from STEP 7-Micro/WIN ensures simple commissioning and convenient diagnostic options.

Modem communications

The S7-200 CPUs can be accessed nearly anywhere in the world by modem via wired network or radio.

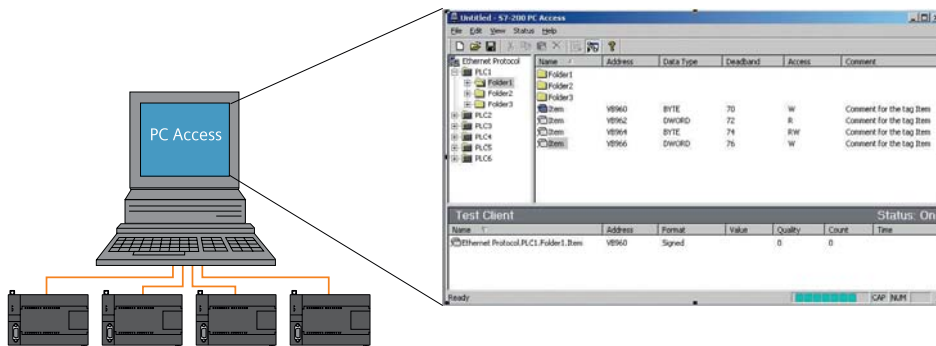
- Teleservice: the modem communication option is useful for avoiding expensive service calls. Two modems are all you need for remote use of the complete range of functions such as program transfer, status or control; the communications tools are integrated as a standard feature. External PCMCIA modems can be used as local modems.
- Telecontrol: you can call up messages and measured values via modem as well as define new setpoints or commands. In this case, one head-end can control a nearly unlimited number of tributary stations. The protocols for data transmission are freely selectable, e.g. for text messages directly to a cell phone, error messages to a fax machine or Modbus RTU.

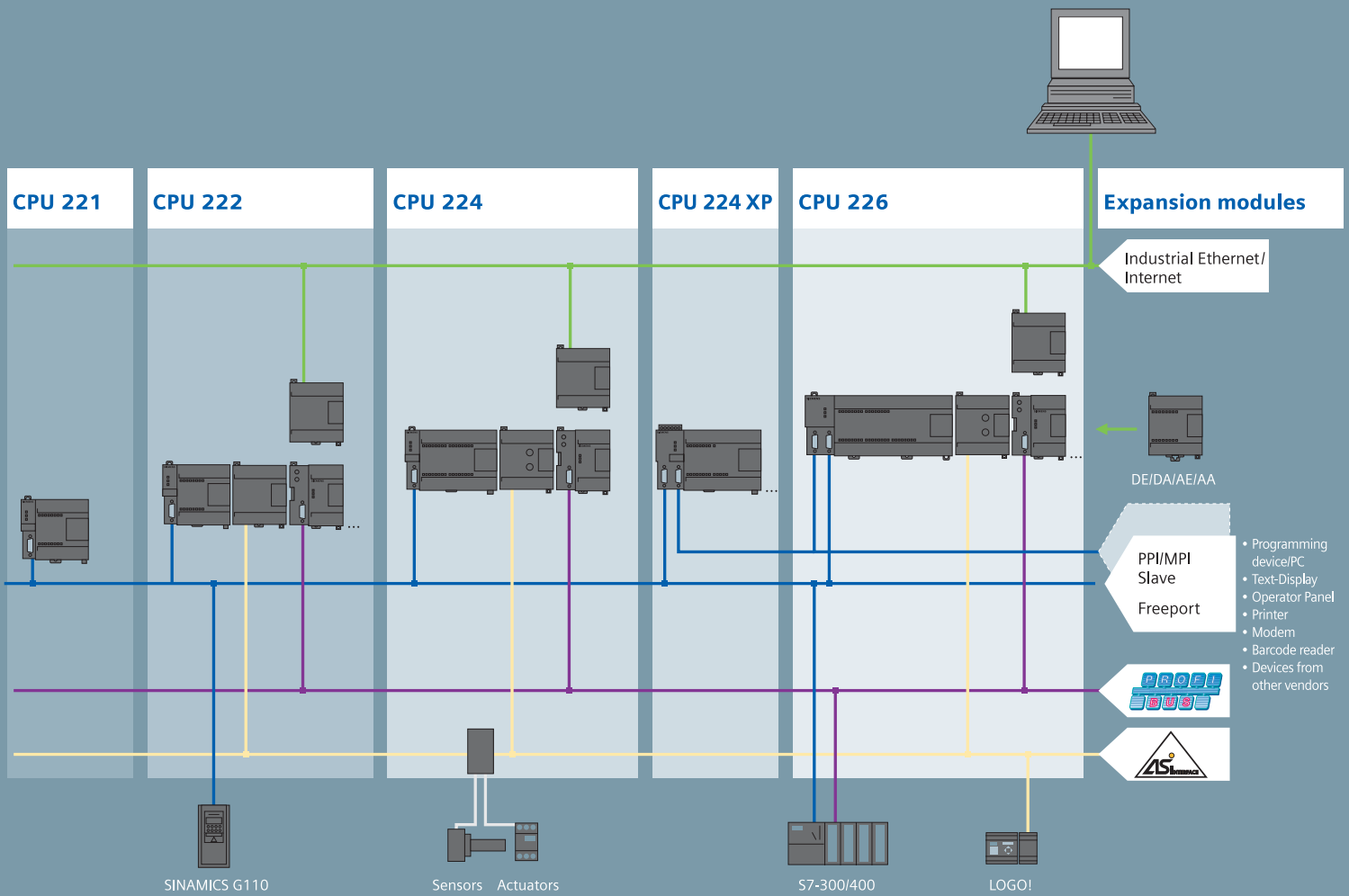
Speedy PROFIBUS connection

All 222-series CPUs or later can be run via the EM 277 communications module as a norm slave on the PROFIBUS DP with a transmission rate of up to 12 Mbit/s. This open feature of the S7-200 to higher-level PROFIBUS DP control levels ensures you can integrate individual machines into your production line. With the EM 277 expansion module, you can implement PROFIBUS capability of individual machines equipped with S7-200.

Powerful AS-Interface connection

The CP 243-2 turns series-222 CPUs or later into powerful masters on the AS-Interface. According to the new AS-Interface specification V 2.1, you can connect up to 62 stations, making even analog sensors easy to integrate. In accordance with the new AS-Interface specification, you can also connect up to 248 DI + 186 DOs in the maximum configuration. The maximum number of 62 stations can include up to 31 analog modules. The configuration of the slaves and reading/writing of data is supported by the handy AS-Interface Wizard.





So easy to use: The software for plug & play

The STEP 7-Micro/WIN programming software features especially time-saving and powerful tools – and that means great cost savings in your day-to-day work. Operation of the programming software is the same as standard Windows applications. Micro/WIN contains all the necessary tools for programming the entire S7-200 range of controllers. You have the powerful SIMATIC instruction set at your disposal and you can program in accordance with IEC 1131!

A host of new functions such as Trend Charts and wizards now make programming even easier. And STEP 7-Micro/WIN 4.0 has even more to offer: e.g. segmented data memories, improved handling of the program and command structure or diagnostic functions such as a user-specific LED, error history or runtime edit and online download.

Programming in the standard editors LAD/FBD and STL – and it's easy to change between them.

- 1** Integrated online functions:
 - Runtime edit
 - Online status.
- 2** Context-sensitive online help is possible for all functions.
- 3** Clear and informative symbols and symbol table
 - Standard symbol table
 - User-defined table.
- 4** Structured programming with libraries
 - USS protocol for actuating drives
 - Modbus library
 - Self-defined libraries.
- 5** Structured programming with subroutines
 - Parameterizable subroutines
 - Password-protected subroutines
 - Multiple calls of subroutines in user program
 - Import/export of subroutines possible.
- 6** Debugging
 - Fast online debugging
 - Fault localization at the click of a mouse.

Software add-ons

SIMATIC WinCC flexible – OP 73micro and TP 177micro

A special, low-cost engineering package has been bundled for configuration of the OP 73micro, TP 177micro with WinCC flexible:

WinCC flexible Micro. It goes without saying that the Compact/Standard/Advanced versions can also be used. Simple and quick configuration possible by means of a clear user interface, pre-generated graphics objects, intelligent tools for graphic configuration and support of

The screenshot displays the SIMATIC Manager environment for a SIMATIC 300 project. The main workspace shows a ladder logic network (Netzwerk 1) with the following components:

- Two normally open contacts labeled `ON=SM0.0`.
- A coil labeled `EN` for the `POS0_CTRL` block.
- A second coil labeled `MOD_EN` for the `POS0_CTRL` block.

The variable declaration table at the top of the workspace is as follows:

Symbol	Variablentyp	Datentyp	Kommentar
	TEMP		
	TEMP		
	TEMP		
	TEMP		

The variable declaration table at the bottom of the workspace is as follows:

Symbol	Adresse	Kommentar
DIRECTION	M0.2	
DONE	M0.0	
ERROR	MB1	
POSITION	MD4	
SPEED	MD8	

The status bar at the bottom indicates: `Bausteingröße = 1881 (Bytes), 0 Fehler`. The connection information shows: `PC/PPI cable(PPI) | 9,6 kbps | Lokal: 0, COM 1 | Entfernt: 2, Schnittstelle 0 | RUN | INS`.

multilingual configurations. A PC/PPI adapter cable is required for downloading the configuration.

SINAUT Micro SC – GRPS modem SINAUT MD720-3

Wireless bidirectional communication between S7-200 controllers and the SINAUT MD720-3 modem is provided via GRPS and the new GRPS management with the aid of the OPC routing software SINAUT Micro SC. Thanks to quadband modem technology, most mobile radio providers with GRPS network can be utilized. GRPS

and the Internet guarantee worldwide, fast communication and short transmission times – at low costs, as only the transferred data volume is charged.

SIWATOOL MS – SIWAREX MS weighing module

SIWAREX MS is integrated into the plant software with the aid of STEP 7-Micro/WIN. To do this and as a basis for further application programming, the ready-to-use software SIWAREX MS “Getting Started” is available, free of charge – in addition to the configuration package. The

SIWATOOL MS software allows to set SIWAREX weighing modules while benefiting from Windows comfort – even without specific SIMATIC knowledge. Fast troubleshooting is ensured in online mode with a host of diagnostic options provided by the SIWATOOL MS.

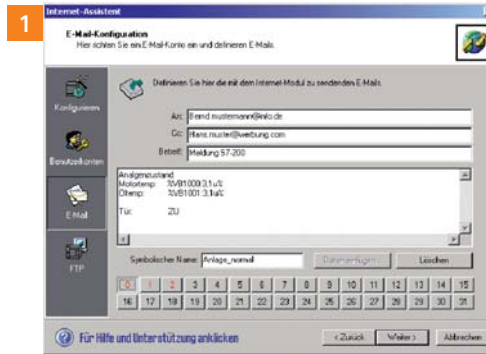
Easier than ever: Convenient wizards

STEP 7-Micro/WIN supports even the most complex automation solution with the following user-friendly wizards:

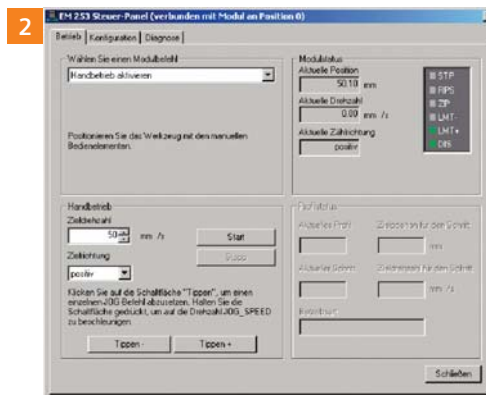
- TD 100C, TD 200, TD 200C, TD 400C
- PID loops
- High-speed counters
- NetRead-NetWrite
- AS-Interface Wizard
- Ethernet/Internet Wizard
- Positioning Wizard
- Positioning Control Panel
- Modem
- Data Logging
- PID Auto-Tune Control Panel
- PTO (pulse outputs)
- Recipe management
- SIWAREX MS
- Modbus RTU
- USS protocol

The most important benefits of the wizards

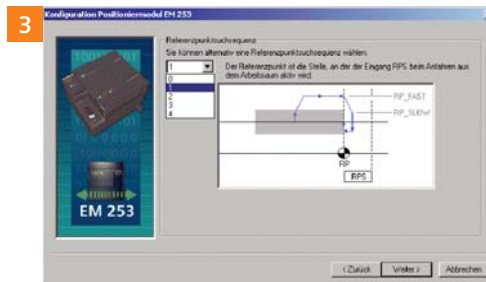
- Parameterization instead of programming
- Graphical parameterization of complex tasks
- Automatic check of available memory area
- Generation of commented and executable program blocks.



IT-Wizard



Control Panel



Positionier-Wizard

IT Wizard

- Configuring of access authorization, E-mail, and FTP
- Parameterization of data exchange over Ethernet i.e. CPU to CPU

Control Panel

- Start-up tool for motion applications
- Adaptation and testing of the position parameters
- Modification of traverse profiles

Positioning Wizard

- Parameterization of machine data
- Generation of different traverse profiles
- Selection of different types of reference point approaches

STEP 7-Micro/WIN 32 - Projekt1 - [SIMATIC KOP]

Ansicht Extras

Operations-Assistent
TD 200-Assistent
Positionier-Assistent
EM 253 Steuer-Panel
Modem-Assistent
Ethernet-Assistent
AS+-Assistent
Internet-Assistent

POSO_LD OFF (S
 POSO_LD POS (S
 POSO_SRATE (S
 POSO_DIS (SBR
 POSO_CLR (SBR
 POSO_CFG (SBR
 Symboltabelle
 USR1 (USR1)
 POE-Symbole (SY
 ETHO_SYM (SYS
 Statustabelle
 Datenbaustein
 Systemdatenbaustein
 Querverweise
 Kommunikation
 Operationen
 Favoriten
 Bitverknüpfung
 Festpunktarithmetik
 Gleitpunktarithmetik
 Interrupt
 Kommunikation
 Programmsteuerung
 Schieben/Rotieren
 Tabellen
 Übertragen
 Uhr
 Umwandeln
 Vergleichen
 Verknüpfen
 Zähler
 Zeichenkette
 Zeiten
 Bibliotheken
 Unterprogrammaufrufe

Symbol	Variablentyp	Datentyp	Kommentar
	TEMP		
	TEMP		
	TEMP		
	TEMP		

PROGRAMMKOMMENTARE

Netzwerk 1 Positioniermodul aktivieren

Netzwerkkommentar:

Symbol	Adresse	Kommentar
DIRECTION	M0.2	
DONE	M0.0	
ERROR	MB1	
POSITION	MD4	
SPEED	MD8	

Netzwerk 2 FM-Step Drive aktivieren

MAIN / SBR_0 / INT_0 / POSO_CTRL / POSO_MAN / R

Bausteingröße = 1881 Bytes, 0 Fehler

Bereit PC/PPI cable (PPI) 9,6 kbps Lokal: 0, COM 1 Entfernt: 2, Schnittstelle 0 RUN INS

Perfectly interacting: S7-200 and Micro Panels

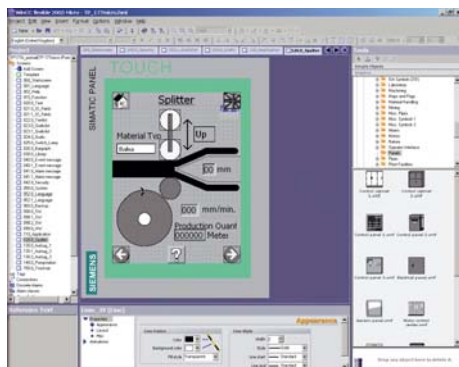
With the SIMATIC Micro Panels we can offer you an excellent overall solution for operator control and monitoring from a single supplier that was specially designed for SIMATIC S7-200. The panels perfectly match the S7-200 controller. For you this means less configuring expense. The panels' plug & play functionality ensures perfect interaction of all components. You decide which panel is right for you.*

For simple applications there are TD panels which can be customized and used whenever narrow space requirements matter.

Coming with the matching software...

Thanks to the innovative WinCC flexible Micro operating and monitoring software, the OP 73micro and TP 177micro panels can easily and comfortably be configured – at the highest possible automation level.

Text displays TD 100C, TD 200 and TD 200C are configured using the SIMATIC STEP 7-Micro/WIN software.



* We take compatibility very seriously – for this reason, you can of course connect any other panel from our SIMATIC HMI range to the S7-200.



- 4-line display for viewing text with 16 characters per line
- Up to 14 user-configurable keys
- User-defined display layout
- Representation, position and size of the keys can be configured as desired
- Password protection of all functions
- Up to 40 alarms can be easily configured
- Simplified Asian and Cyrillic fonts

- Backlit high-contrast LC display, 2-line
- Up to 80 text messages with integrated variables
- Configuration is saved on the S7-200: intervention in the control program is possible via input of set-points
- Setting of inputs and outputs (password protection of all functions)
- 5 online languages
- Simplified Asian and Cyrillic fonts

Extras for TD 200

- 8 user-configurable function keys in fixed arrangement

Extras for TD 200C

- Up to 20 user-configurable keys
- User-defined display layout
- Representation, position and size of the keys can be configured as desired



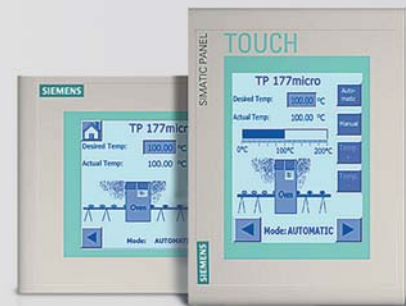
Text Display
TD 400C

- Backlit, high-contrast LC display, 4 lines
- Up to 80 text messages with integral variables
- Configuration stored in S7-200: Control program can be manipulated via setpoints
- Setting inputs and outputs (password protection for all functions)
- 6 online languages
- Simplified Asian and Cyrillic character sets
- Up to 15 permanently assigned tactile keys. Can be used for multiple functions
- Audible and visible feedback can be programmed with the TD 400C in addition to the tactile feature of the keys
- User-selectable operator interface layout
- Design (colors, images, text, etc.) of the operator interface can be defined individually



Graphics operator
panel OP 73micro

- The compact kid among the panels. Simple in detail, but full of functionality.
- Full graphics 3" display: bitmaps, bars, different font sizes, Cyrillic font
 - End-to-end message system with user-definable message classes (e.g. for operating and fault messages) and message history (128 entries)
 - 5 online languages (incl. Asian and Cyrillic fonts)
 - Access protection (password system)



Touch Panel
TP 177micro

- For demanding users who appreciate a fully graphics-capable display as well as touch functionality, the TP 177micro is the right solution containing all of the required basic functions.
- Intuitive use via 6" touch screen
 - More choices of application through vertical installation
 - Improved graphics options thanks to vector graphics blue mode (4 levels of blue)
 - Efficient and flexible message system for increased plant transparency
 - Display of machine and plant states for defined message classes
 - Transparent process visualization
 - Optimal readability
 - **NEW:** Curve display

Expandable, flexible and powerful: Extras to meet any needs

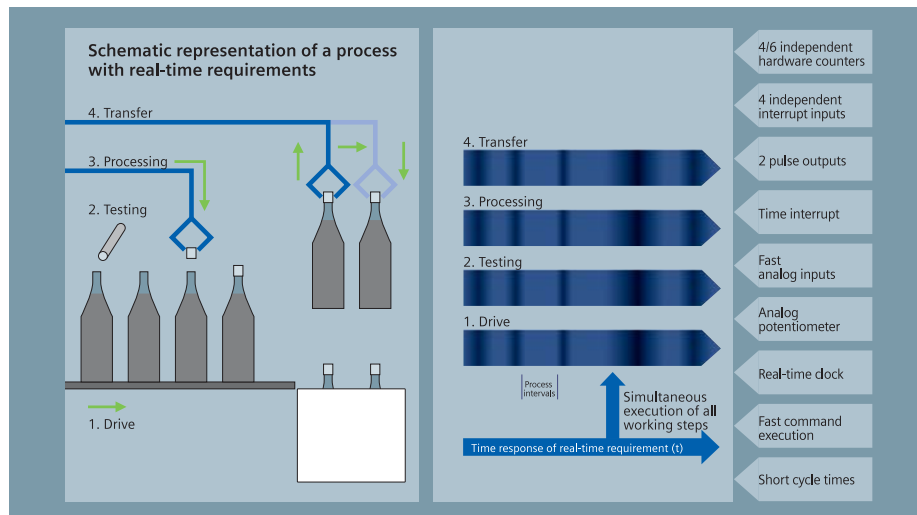
TOP in real-time response

The advanced technology down to the last detail ensures our CPUs deliver excellent real-time response rates:

- 4 or 6 independent hardware counters, each with 30 kHz, 2 x 200 kHz with a CPU 224 XP, e.g. for precise path monitoring with incremental encoders or for high-speed counting of process events
- 4 independent alarm inputs, input filter time 0.2 ms to program action – for maximum process safety
- Pulse-capturing function for signals > 0.2 ms for fast events from the application
- 2 pulse outputs, each 20 kHz, or 2 x 100 kHz with CPU 224 XP with pulse-width modulation and pulse-no-pulse setpoint – e.g. for controlling stepper motors
- 2 time interrupts starting at 1 ms and adjustable in increments of 1 ms – for gapless control of rapidly changing processes
- Fast analog inputs – signal conversion with 25 μ s, 12-bit resolution
- Real-time clock

Time interrupts

- Between 1 and 255 ms, with a resolution of 1 ms
- For example: it is possible to record and process signals during fastaction insertion of screws at an RPM rate of 3000 1/min after just a quarter turn. This enables very precise recording, for instance, of tightening torques (M) to ensure optimum fastening of the screw.



Fast counters

- Operating independently of each other, of other operations and of the program cycle
- Interrupt triggering when userselectable counted values are reached – reaction time from the detection of an input signal to switching of an output is 300 μ s
- 4-edge evaluation when incremental position encoders are used for exact positioning

Alarm inputs

- 4 independent inputs
- For registering signals in rapid succession
- Response time of 200 μ s–500 μ s for signal detection/300 μ s for signal output
- Response to positive-going and/or negative-going signal edge
- Max. 16 interrupts in one queue depending on prioritization

Feature	CPU 221	CPU 222	CPU 224 CPU 224XP	CPU 226
Independent hardware counters	4	4	6	6
Independent alarm inputs	4	4	4	4
Pulse outputs	2	2	2	2
Time interrupts	1 to 250 ms	1 to 250 ms	1 to 250 ms	1 to 250 ms
Real-time clock	optional	optional	integrated	integrated
Binary processing speed	0.22 μ s	0.22 μ s	0.22 μ s	0.22 μ s



Great well-rounded technology

SITOP smart – optimally matched to SIMATIC S7-200

SITOP smart is one of the narrowest DIN rail mounted power supply units and exhibits an impressive overload behavior. Even high loads can be switched on without any problems. Nominal outputs of continuous 120 percent position the power supplies as the most reliable of their class. Numerous certifications simplify their universal and worldwide use, as well as their deployment under hazardous conditions.

For tough customers: SIPLUS extreme

Operating under extreme conditions? No problem! If you have to operate your system in an extended temperature range, require added condensation protection or demand other voltage ratings, then SIPLUS extreme is the solution for you. It lets you adapt your CPUs to your special requirements.

Memory cartridge

EEPROM memory modules

A small optional EEPROM memory module can save you a lot of time and costs. It makes it very easy to copy, update or exchange your user program on the device. And if necessary you can use this module to send a program quickly and inexpensively to your customers. You just shut off the power, plug in the module, turn it all back on – and the program is instantly updated. Whether project documentation, recipe handling or data logging – our new memory modules are available with 64 KB or 256 KB.

Available options

Project documentation

- Bitmap files, PDF files, DOC files
- Complete MW projects can be transferred to the memory card with the S7-200 Explorer – giving you onsite access to the current user data at all times even without MW

Recipe handling

- Definition and download of the recipes, e.g. production data, machine parameters, etc
- Better use of memory by occupying the data memory in the CPU with only one recipe: online updating and adaptation

Data logging

- Dynamic storage, e.g. of performance or statistics data and fault or error messages
- Optionally with time stamp
- Log file transferable to PC via Explorer

Small and practical

Battery module

And to make sure no user data gets lost, you can use the optional battery module for long-term backups to extend backup time from the roughly 5 days of internal backup to, in general, a total of 200 days.

Real-time clock

Whether you need to count operating hours, warm up rooms or attach a time stamp to messages: the integrated real-time clock on the S7-200 runs to the minute and to the day via the software according to your settings – even in leap years. Including automatic daylight saving-time switchover.

Analog potentiometers

With the integrated analog potentiometers on the S7-200, you can optimize the process sequence almost “according to feel” without a PC or visualization. They let you fine-tune the contents of data registries, time values, preassigned counter values or other parameters without meddling with the program. This is a practical way, for example, to change a welding time or delay time quickly and directly.

Facts, facts, facts: The CPUs

Identical technical specifications of the CPUs 221, 222, 224, 224XP, 224XPsi and 226:

Feature	CPU 221, 222, 224, 224 XP, 226
32-bit floating-point arithmetic in accordance with IEEE norm	yes
Fully configurable, integrated PID controller	yes, up to 8 independent PID controllers
Bit processing speed	0.22 µs
Time-controlled interrupts	2 (cycle time between 1 and 255 ms at 1 ms resolution)
Hardware interrupts (edge detection at inputs)	max. 4 inputs
Flags, timers, counters	256 each
High-speed counters	4–6 (depending on CPU), max. 30 kHz, or 200 kHz with CPU 224 XP
Pulse outputs (pulse-width- or frequency-modulated)	2 outputs, 20 kHz each (for DC versions), 100 kHz with CPU 224 XP
Program and data memory	retentive (non-volatile)
Storage of dyn. data in the event of a power failure	retentive: non-volatile via internal high-performance capacitor and/or additional battery module: loading of data lock with STEP 7-Micro/WIN, TD 200C or by user program to integrated EEPROM
Buffering of the dynamic data with battery module	typ. 200 days
Integrated communications interface	yes, RS 485 interface supporting the following operating modes: PPI master or slave/MPI slave/Freeport (freely configurable ASCII protocol)
Max. baud rate	187.5 kbaud (PPI/MPI) or 115.2 kbaud (Freeport)
Programming software	STEP 7-Micro/WIN supports all standards such as STL, CSF or LAD
Optional program memory module	yes, programmable in CPU, for program transmission, data logging, recipe, documentation
DC/DC/DC version	yes
Supply voltage	24 V DC
Digital inputs	24 V DC
Digital outputs	24 V DC, max. 0.75 A, parallel connection possible for higher switching capacity
AC/DC/relay version	yes
Supply voltage	85–264 V AC
Digital inputs	24 V DC
Digital outputs	5–30 V DC or 5–250 V AC, max. 2 A (relay)

Accessories

Cable	RS 232 Smart Cable (Multimaster ^{1, 2, 3})	USB Smart Cable (Multimaster ⁴)
Isolation	yes	yes
Power supply	from CPU	from USB Port
Supported protocols	PPI and ASCII (Freeport); 10/11 bit	PPI; 10/11 bit
PPI communication	9.6 k; 19.2 k; 187.5 k	9.6 k; 19.2 k; 187.5 k
Communication setting	DIP switch; RS 232 automatically	unnecessary
LED display	yes	yes
Required software	STEP 7-Micro/WIN V3.2 from SP4	STEP 7-Micro/WIN V3.2 from SP4






1) as SIPLUS component also for extended temperature range –25...+70 °C and aggressive atmospheres/condensation (www.siemens.com/siplus)

2) RS 232 Smart Cable: for networks and external modems (including GSM and GPRS)

3) Settings, e.g. for modems, are stored permanently

4) USB Smart Cable: Multimaster for USB

Specific technical data on the CPUs:

Feature	CPU 221 ¹	CPU 222 ¹	CPU 224 ¹	CPU 224XP ¹ CPU 224XPs ²	CPU 226 ¹
					
Integrated dig. inputs/outputs	6 DI/4 DO	8 DI/6 DO	14 DI/10 DO	14 DI/10 DO	24 DI/16 DO
Digital inputs/outputs/max. number of channels with expansion modules	–	48/46/94	114/110/224	114/110/224	128/128/256
Analog inputs/outputs/max. number of channels with expansion modules	–	16/8/16	32/28/44	2 AI/1 AO integrated 32/28/44	32/28/44
Program memory	4 KByte	4 KByte	8/12 KByte	12/16 KByte	16/24 KByte
Data memory	2 KByte	2 KByte	8 KByte	10 KByte	10 KByte
Storage of dyn. data via high-performance capacitor	typ. 50 h	typ. 50 h	typ. 100 h	typ. 100 h	typ. 100 h
High-speed counters	4x30 kHz, of which 2x20 kHz A/B counter usable	4x30 kHz, of which 2x20 kHz A/B counter usable	6x30 kHz, of which 4x20 kHz A/B counter usable	4 x 30 kHz, 2 x 200 kHz f which 3 x 20 kHz + 1 x 100 kHz A/B counter usable	6 x 30 kHz, of which 4 x 20 kHz A/B counter usable
Communications interfaces RS 485	1	1	1	2	2
Supported protocols:				both interfaces	both interfaces
– PPI master/slave	yes	yes	yes	yes	yes
– MPI slave	yes	yes	yes	yes	yes
– Freeport (freely config. ASCII protocol)	yes	yes	yes	yes	yes
Optional communications possibilities	not expandable	yes, PROFIBUS DP Slave and / or AS-Interface Master / Ethernet/ Internet / Modem	yes, PROFIBUS DP Slave and / or AS-Interface Master / Ethernet/ Internet / Modem	yes, PROFIBUS DP Slave and / or AS-Interface Master / Ethernet/ Internet / Modem	yes, PROFIBUS DP Slave and / or AS-Interface Master / Ethernet/ Internet / Modem
Integrated 8-bit analog potentiometer (for commissioning, value change)	1	1	2	2	2
Real-time clock	optional	optional	yes	yes	yes
Integrated 24-V-DC sensor supply volt.	max. 180 mA	max. 180 mA	max. 280 mA	max. 280 mA	max. 400 mA
Removable terminal strip	–	–	yes	yes	yes
Dimensions (W x H x D in mm)	90 x 80 x 62	90 x 80 x 62	120,5 x 80 x 62	140 x 80 x 62	196 x 80 x 62

1) as SIPLUS component also for extended temperature range –25...+70 °C and aggressive atmospheres/condensation (www.siemens.de/siplus)

2) CPU 224XPs (current-sinking digital outputs)



Facts, facts, facts: Digital expansions

Technical data:

Digital I/O modules	EM 221 ¹	EM 222 ¹	EM 222 ¹
Number of inputs/outputs	8 DI (DC)	8 DO (DC)	8 DO (relay)
Number of inputs	8	–	–
Input type	24 V DC	–	–
Sinking/sourcing	x / x	–	–
Input voltage	24 V DC, max. 30 V	–	–
Isolation	yes	–	–
In groups of	4 inputs	–	–
Number of outputs	–	8	8
Output type	–	24 V DC	relay
Output current	–	0.75 A in group-parallel connection possible for higher switching capacity	2 A
Output voltage DC	–	20.4–28.8 V	5–30 V
(permissible range) AC	–	–	5–250 V
Isolation	–	yes	yes
In groups of	–	4 outputs	4 outputs
Removable terminal strip	yes	yes	yes
Dimensions (W x H x D in mm)	46 x 80 x 62	46 x 80 x 62	46 x 80 x 62

Digital I/O modules	EM 221 ¹	EM 222	EM 222
Number of inputs/outputs	16 DI (DC)	4 DO (DC)	4 DO (relay)
Number of inputs	16	–	–
Type of input	24 V DC	–	–
Sinking/sourcing	x / x	–	–
Input voltage	24 V DC, max. 30 V	–	–
Isolation	yes	–	–
In groups of	4 inputs	–	–
Number of outputs	–	4	4
Output type	–	24 V DC	relay
Output current	–	5 A max. per output, switchable in parallel for greater power	10 A max. per output
Output voltage DC (permissible range) AC	–	20.4–28.8 V	12–250 V
Isolation	–	yes	yes
In groups of	–	1 output	1 output
Removable terminal strip	yes	yes	yes
Dimensions (W x H x D in mm)	71,2 x 80 x 62	46 x 80 x 62	46 x 80 x 62

1) as SIPLUS component also for extended temperature range –25...+70 °C and aggressive atmospheres/condensation (www.siemens.com/siplus)



Technical data:

Digital I/O modules	EM 223 ¹	EM 223 ¹	EM 223 ¹	EM 223 ¹
Number of inputs/outputs	4 DI (DC) / 4 DO (DC)	4 DI (DC) / 4 DO (relay)	8 DI (DC) & 8 DO (DC)	8 DI (DC) & 8 DO (relay)
Number of inputs	4	4	8	8
Input type	24 V DC	24 V DC	24 V DC	24 V DC
Sinking/sourcing	x / x	x / x	x / x	x / x
Input voltage	24 V DC, max. 30 V	24 V DC, max. 30 V	24 V DC, max. 30 V	24 V DC, max. 30 V
Isolation	no	no	yes	yes
In groups of	–	–	4 inputs	4 inputs
Number of outputs	4	4	8	8
Output type	24 V DC	relay	24 V DC	relay
Output current	0.75 A in parallel connection possible for higher switching capacity	2 A	0.75 A in group-parallel connection possible for higher switching capacity	2 A
Output voltage DC	20.4–28.8 V	5–30 V	20.4–28.8 V	5–30 V
(Permissible range) AC	–	5–250 V	–	5–250 V
Isolation	no	no	yes	yes
In groups of	–	–	4 outputs	4 outputs
Removable terminal strip	yes	yes	yes	yes
Dimensions (W x H x D in mm)	46 x 80 x 62	46 x 80 x 62	71,2 x 80 x 62	71,2 x 80 x 62

Digital I/O modules	EM 223 ¹	EM 223 ¹	EM 223	EM 223
Number of inputs/outputs	16 DE (DC) & 16 DA (DC)	16 DE (DC) & 16 DA (Rel.)	32 DE (DC) & 32 DA (DC)	32 DE (DC) & 32 DA (Rel.)
Number of inputs	16	16	16	16
Input type	DC 24 V	DC 24 V	DC 24 V	DC 24 V
Sinking/sourcing	x / x	x / x	x / x	x / x
Input voltage	DC 24 V, max. 30 V	DC 24 V, max. 30 V	DC 24 V, max. 30 V	DC 24 V, max. 30 V
Isolation	yes	yes	yes	yes
In groups of	8 inputs	8 inputs	16 inputs	16 inputs
Number of outputs	16	16	16	16
Output type	DC 24 V	relay	DC 24 V	relay
Output current	0.75 A in group parallel connection possible for higher switching capacity	2 A	0.75 A in group parallel connection possible for higher switching capacity	2 A
Output voltage DC	20.4–28,8 V	5–30 V	20.4–28,8 V	5–30 V
(Permissible range) AC	–	5–250 V	–	5–250 V
Isolation	yes	yes	yes	yes
In groups of	4/4/8 outputs	4 outputs	16 outputs	11/11/10 outputs
Removable terminal strip	yes	yes	yes	yes
Dimensions (W x H x D in mm)	137.3 x 80 x 62	137.3 x 80 x 62	196 x 80 x 62	196 x 80 x 62

Facts, facts, facts: Analog expansions

Technical data:

Analog I/O modules	EM 231 ¹	EM 231	EM 232 ¹	EM 232	EM 235 ¹
Number of inputs/outputs	4 AI	8 AI	2 AO	4 AO	4 AI & 1 AO
Number of inputs	4	8	–	–	4
Input type	0–10 V/0–20 mA	0–10 V/0–20 mA	–	–	0–10 V/0–20 mA
Voltage ranges	0–10 V, 0–5 V, +/-5 V, +/-2,5 V	0–10 V, 0–5 V, +/-5 V, +/-2,5 V (Ch 0 – 5) 0–10 V, 0–5 V, +/-5 V, +/-2,5 V, 0–20 mA (Ch 6 – 7)	–	–	0–10 V, 0–5 V
Resolution	12 bit	12 bit	–	–	12 bit
Isolation	no	no	–	–	no
Number of outputs	–	–	2	4	1
Output type	–	–	+/-10 V, 0–20 mA	+/-10 V, 0–20 mA	+/-10 V, 0–20 mA
Resolution	–	–	12 bit volt., 11 bit current	12 bit volt., 11 bit current	12 bit volt., 11 bit current
Isolation	–	–	no	no	no
Removable terminal strip	no	no	no	no	no
Dimensions (W x H x D in mm)	71,2 x 80 x 62	71,2 x 80 x 62	46 x 80 x 62	71,2 x 80 x 62	71,2 x 80 x 62

Temperature measurement modules	EM 231 TC Thermocouples	EM 231 TC Thermocouples	EM 231 RTD resistance-type sensors ¹	EM 231 RTD resistance-type sensors
Number of inputs/outputs	4 AI	8 AI	2 AI	4 AI
Number of inputs	4	8	2	4
Input type	Thermocouples Type S, T, R, E, N, K, J Voltage +/-80 mV	Thermocouples Type S, T, R, E, N, K, J Voltage +/-80 mV	Pt 100, 200, 500, 1000 ohm, Pt 10.000, Ni 10, 120, 1000 ohm, R 150, 300, 600 ohm	Pt 100, 200, 500, 1000 ohm, Pt 10.000, Ni 10, 120, 1000 ohm, R 150, 300, 600 ohm
Resolution	15 bit + sign	15 bit + sign	15 bit + sign	15 bit + sign
Isolation	500 V AC	500 V AC	500 V AC	500 V AC
Cold-junction compensation	yes	yes	not nec.	not nec.
Wiring	two-wire	two-wire	two-, three- or four-wire	two-, three- or four-wire
Max. wire length to sensor	100 m	100 m	100 m	100 m
Removable terminal strip	no	no	no	no
Dimensions (W x H x D in mm)	71,2 x 80 x 62	71,2 x 80 x 62	71,2 x 80 x 62	71,2 x 80 x 62

Temperature values in Centigrade or degrees Fahrenheit are available in the program as values with one decimal place.

1) as SIPLUS component also for extended temperature range -25...+70 °C and aggressive atmospheres/condensation (www.siemens.com/siplus)

Technical data:**Positioning module EM 253**

Number of inputs	5 points (RP, LMT-, LMT+, ZP, STP)	
Type of inputs	active high/active low (IEC Type 1 sink, except ZP)	
Number of integrated outputs	6 points (4 signals)	
Type of outputs PO+, PO-, P1+, P1- PO, P1+, DIS, CLR	RS -422-driver Open drain	
Switching frequency PO+, PO-, P1+, P1-	200 kHz	
Power supply: L + supply voltage Logic output voltage L + supply current VS, 5 V DC load	11 to 30 V DC +5 V DC +/-10%, max. 200 mA	
Load current 0 mA (no load) 200 mA (rated load)	<u>12-V-DC-input</u> 120 mA 300 mA	<u>24-V-DC-input</u> 70 mA 130 mA
Dimensions (W x H x D in mm)	71,2 x 80 x 62	
Weight	0.190 kg	
Dissipation	2.2 W	
V-DC-requirements +5 V DC +24 V DC	190 mA 70 mA	

SIWAREX MS weighing module

Communication interfaces	SIMATIC S7 bus, RS 232, TTY
Measuring properties • Fault limit acc. to DIN 1319-1 of the measuring range end value at 20° ±10 K • Internal resolution data format of weight values	0,05 % 65,535 2 byte (fixed point)
Number of measurements/second	50 or 30
Load cells	DMS in 4- oder 6-conductor technology
Load cell identifier	1 mV/V up to 4mV/V
Max. distance of load cells	500 m
Ex approvals and safety	CE, ATEX 100, FM, UL, cULus Haz. Loc.s
Degree of protection acc. to DIN EN 60529; IEC 60529	IP20



Facts, facts, facts: Human Machine Interface

Technical data:

Operator panels	TD 100C	TD 200 ²
Display	Reflective LC display	Backlit LC display
Number of lines	4	2
Characters per line (max.)	16 (ASCII/Cyrillic), 8 (Chinese)	20 (ASCII/Cyrillic), 10 (Chinese)
Resolution	132 x 65 pixels	181 x 33 pixels
Operator controls	Membrane keyboard	Membrane keyboard
Function keys (programmable)	14 user-configurable	8
System keys	6	5
Memory integrated (usable memory for user data)	User data on CPU	User data on CPU
Interfaces	1 PPI (RS 485) for setup of a network with max. 126 nodes	1 PPI (RS 485) for setup of a network with max. 126 nodes
Functionality		
Signals (freely definable signal classes)	40	80
Signal buffer (number of entries)	–	–
Mimic diagrams	32	64
Variables	208	864
Graphics objects	–	–
Numeric/alphabetic input	• / –	• / –
Password	•	•
Online languages	1	5
Bar charts (pixel graphics)	–	•
Degree of protection (front/rear)	IP 65, UL 50 Type 4X (when built in) / IP 20	IP 65, UL 50 Type 4X (when built in) / IP 20
Dimensions		
Front panel (W x H in mm)	89,6 x 76	148 x 76
Depth of device in mm	35,7 (max. 44 with fittings)	28
Certification	CE, cULus, FM, C-Tick, ATEX	CE, cULus, FM, C-Tick, ATEX
Supply voltage	24 V DC (from S7-200)	24 V DC
Ambient conditions		
Operating temperature		
• vertical mounting	0 °C to 60 °C	0 °C to 60 °C
• max. angle of inclination	0 °C to 60 °C	0 °C to 60 °C
Transport/storage temperature	–20 °C to 60 °C	–20 °C to 60 °C
Weight	0.26 lb	0.42 lb
Configuration/programming	Micro/WIN 4.0 SP2	Micro/WIN 4.0

1) MTBF for backlighting (at 25 °C): OP 73micro about 100,000 h, TP 177micro about 50,000 h

2) as SIPLUS component also for extended temperature range –25...+70 °C and aggressive atmospheres/condensation (www.siemens.com/siplus)

- possible
- not possible

TD 200C	TD 400C	OP 73micro	TP 177micro
Backlit LC display	Backlit LC display	LC display 3" ¹	LC display 5.7", STN, Blue Mode, 4 blue stages ¹
2	4	–	–
20 (ASCII/Cyrillic), 10 (Chinese)	32 (ASCII/Cyrillic), 16 (Chinese)	–	–
181 x 33 pixels	192 x 64 pixels	160 x 48 pixels	320 x 240 pixels (240 x 320 pixels for vertical configuration of TP 177micro)
Membrane keyboard	Membrane keyboard	Membrane keyboard	Touch screen
20 freely configurable	15 freely configurable	4	–
7	7	8	–
User data on CPU	User data on CPU	128 KB Flash	256 KB Flash
1 PPI (RS 485) for setup of a network with max. 126 nodes	1 PPI (RS 485) for setup of a network with max. 126 nodes	1 x RS 485	1 x RS 485
80	80	250	500
–	–	128 (no battery backup)	128 (no battery backup)
64	64	250	250
864	864	500	250
icons	icons	bitmaps / icons / background images	bitmaps / icons / background images
• / –	• / –	• / •	• / •
•	•	•	•
5	5	5	5
•	•	•	•
IP 65, UL 50 Type 4X (when built in) / IP 20	IP 65 (when built in) / IP 20	IP 65 (when built in), NEMA 4, NEMA 4X, NEMA 12 / IP 20	IP 65 (when built in), NEMA 4, NEMA 4X, NEMA 12 / IP 20
148 x 76	174 x 102	154 x 84	212 x 156
28	31	27	42
CE, cULus, FM, C-Tick, ATEX	CE, cULus, C-Tick	CE, cULus, C-Tick	CE, cULus, FM, C-Tick, ATEX
24 V DC	24 V DC	24 V DC	24 V DC
0 °C to 60 °C 0 °C to 60 °C –20 °C to 60 °C	0 °C to 50 °C 0 °C to 50 °C –20 °C to 60 °C	0 °C to 50 °C 0 °C to 40 °C –20 °C to 60 °C	0 °C to 50 °C 0 °C to 40 °C –20 °C to 60 °C
0.44 lb	0,31 kg	0.66 lb	1.54 lb
Micro/WIN 4.0	Micro/WIN 4.0 SP6	from WinCC flexible Micro	from WinCC flexible Micro

Facts, facts, facts: The communications module

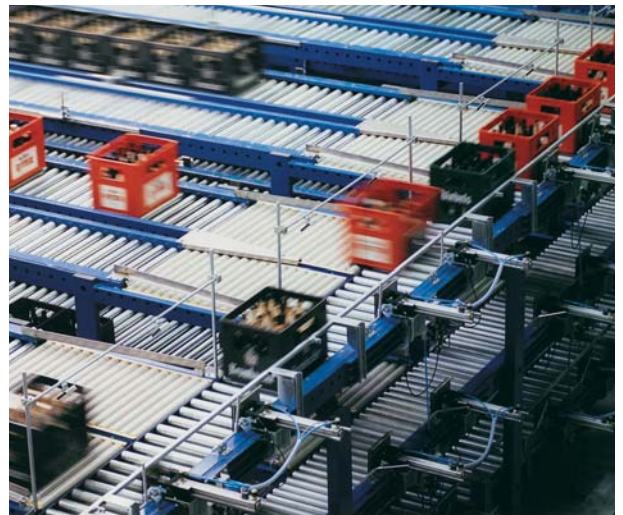
Technical data		
Communications module	EM 277 PROFIBUS DP module ¹	CP 243-2 AS-i master module
Interface	1 communications interface RS 485	AS-Interface
Supported protocols:	– MPI slave – PROFIBUS DP slave	AS-Interface
Transmission rate	9,600 baud up to 12 Mbaud adaptive	– max. 5 ms cycle time with 31 slaves – max. 10 ms cycle time with 62 slaves
Connectable stations:	– Text display TD 200, V2.0 or later – Operator panels, touch panels – PG/PC with MPI interface (CPU download/status via Micro/WIN possible) – CPU S7-300/400 – PROFIBUS DP master or slaves	max. 62 AS-Interface slaves
Status displays	CPU error, power, DP error, DX mode	Status displays for slaves, error displays
Station address	Adjustable on module (0–99)	Not necessary
Galvanic isolation	500 V AC	no
Max. cable length (without repeater)	1200 m (at 93,75 kbaud)	100 m
Removable terminal strip	no	yes
Dimensions (W x H x D in mm)	71 x 80 x 62	71.2 x 80 x 62
Weight in g	175 g	210 g
Dissipation in W	2.5	1.8

Modem communication modules	EM 241 modem module	SINAUT MD 720-3 ²
	Phone connection:	GPRS/GSM modem
Isolation (phone line against Logic and ...)	1500 V AC (galvanic)	–
Cable connector	RJ11 (6 points, 4-wire)	SMA/50 ohm (antenna) RS 232, jack: D-SUB 9-pin
Modem standards	Bell 103, Bell 212, V.21, V.22, V.22 bis, V.23c, V.32, V.32 bis, V.34 (standard)	GPRS/CSD/quadband 850/900/1800/1900 MHz V.24/V.28 (standard)
Safety features	Password, callback	–
Calling method	Pulse or tone dialing	–
Messaging protocols (SMS)	Numerical TAP (alphanumeric) UCP commands 1, 30, 5	SMS/AT commands –
Industrial standard protocols	Mode RTU, PPI, integrated functions for data exchange	–
Dimensions (W x H x D in mm)	71.2 x 80 x 62	114 mm x 22.5 mm x 99 mm
Weight	0.190 kg	0.150 kg
Dissipation	2.1 W	5.5 W
V-DC requirements +5 V DC +24 V DC	80 mA 70 mA	12–30 V DC (24 V DC nominal)

1) as SIPLUS component also for extended temperature range –25...+70 °C and aggressive atmospheres/condensation (www.siemens.com/siplus)

2) Quadband antenna ANT 794-4MR required

Ethernet communications modules	CP 243-1	CP 243-1 IT
Transmission rate	10/100 Mbit/s	10/100 Mbit/s
Interfaces (connection Industrial Ethernet)	RJ45	RJ45
Supply voltage	24 V DC	24 V DC
Power consumption via backplane/via 24 V DC external	55 mA / 60 mA	55 mA / 60 mA
Dissipation 24 V DC	1.75 W	1.75 W
Dimensions (W x H x D in mm)	71.2 x 80 x 62	71.2 x 80 x 62
Weight	150 g	150 g
S7/PG communication		
Number of operable connections	8 S7 connections + 1 PG connection	8 S7 connections + 1 PG connection
Configuration	With STEP 7-Micro/WIN (V3.2 SP1 or later)	With STEP 7-Micro/WIN (V3.2 SP3 or later)
IT communications		
Number of connections to an E-mail server	–	1
E-mail client	–	32 E-mails with max. 1024 characters
Number of FTP/HTTP connections	–	1/4
Adjustable access protection	–	8 users
Memory capacity of the file system	–	8 MByte



Facts, facts, facts: Ordering data

Product	Order No.
CPUs	
CPU 221 DC/DC/DC (not expandable)	6ES7 211-0AA23-0XB0
CPU 221 AC/DC/relay (not expandable)	6ES7 211-0BA23-0XB0
CPU 222 DC/DC/DC	6ES7 212-1AB23-0XB0
CPU 222 AC/DC/relay	6ES7 212-1BB23-0XB0
CPU 224 DC/DC/DC	6ES7 214-1AD23-0XB0
CPU 224 AC/DC/relay	6ES7 214-1BD23-0XB0
CPU 224XP DC/DC/DC	6ES7 214-2AD23-0XB0
CPU 224XP AC/DC/relay	6ES7 214-2BD23-0XB0
CPU 224XPsi DC/DC/DC (current-sinking digital outputs)	6ES7 214-2AS23-0XB0
CPU 226 DC/DC/DC	6ES7 216-2AD23-0XB0
CPU 226 AC/DC/relay	6ES7 216-2BD23-0XB0
Expansion modules	
Digital and analog expansions	
Input module 8 x DI 24 V DC	6ES7 221-1BF22-0XA0
Input module 8 x DI 120 / 230 V	6ES7 221-1EF22-0XA0
Input module 16 x DI 24 V DC	6ES7 221-1BH22-0XA0
Output module 8 x DO 24 V DC	6ES7 222-1BF22-0XA0
Output module 8 x DO relay	6ES7 222-1HF22-0XA0
Output module 8 x DO 120 / 230 V	6ES7 222-1EF22-0XA0
Output module 4 x DO 24 V DC 5 A	6ES7 222-1BD22-0XA0
Output module 4 x DO relay 10 A	6ES7 222-1HD22-0XA0
Input/output module 4 x DI 24 V DC / 4 x DO 24 V DC	6ES7 223-1BF22-0XA0
Input/output module 4 x DI 24 V DC / 4 x DO relay	6ES7 223-1HF22-0XA0
Input/output module 8 x DI 24 V DC / 8 x DO 24 V DC	6ES7 223-1BH22-0XA0
Input/output module 8 x DI 24 V DC / 8 x DO relay	6ES7 223-1PH22-0XA0
Input/output module 16 x DI 24 V DC / 16 x DO 24 V DC	6ES7 223-1BL22-0XA0
Input/output module 16 x DI 24 V DC / 16 x DO relay	6ES7 223-1PL22-0XA0
Input/output module 32 x DI 24 V DC / 32 x DO 24 V DC	6ES7 223-1BM22-0XA0
Input/output module 32 x DI 24 V DC / 32 x DO relay	6ES7 223-1PM22-0XA0
Analog input module 4 AI 12 bit	6ES7 231-0HC22-0XA0
Analogeingangsmodule 8 AE 12 bit	6ES7 231-0HF22-0XA0
Analog output module 2 AO 12 bit	6ES7 232-0HB22-0XA0
Analogausgangsmodule 4 AA 12 bit	6ES7 232-0HD22-0XA0
Analog input/output module 4 AI / 1 AO 12 bit	6ES7 235-0KD22-0XA0

Product	Order No.
Specific expansions	
Analog input module RTD, 2 AI, PT100/200/500/1000, Ni100/120/1000, Cu10, resist. 150/300/600 ohm, 16 bit	6ES7 231-7PB22-0XA0
Analog input module RTD, 4 AE, PT100/200/500/1000, Ni100/120/1000, Cu10, Wdst. 150/300/600 Ohm, 16 bit	6ES7 231-7PC22-0XA0
Analog input module TC, 4 AI, ± 80 mV and thermocouples, type J, K, S, T, R, E, N, 16 bit	6ES7 231-7PD22-0XA0
Analog input module TC, 8 AE, ± 80 mV and thermocouples, Typ J, K, S, T, R, E, N, 16 bit	6ES7 231-7PF22-0XA0
Positioning expansion module (EM) ¹⁾ , 200 kHz, for controlling stepper motors or servo drives, open-loop control, parameterization via Micro/WIN	6ES7 253-1AA22-0XA0
SIWAREX MS Micro Scale weighing module	7MH4930-0AA01
Communication	
PROFIBUS DP module EM 2771	6ES7 277-0AA22-0XA0
AS-Interface Master-Modul CP 243-2	6GK7 243-2AX01-0XA0
Modem EM ¹⁾ , modem expansion module for analog telephone networks for remote control centers, signaling, CPU-to-CPU, CPU-to-PC communication	6ES7 241-1AA22-0XA0
Industrial Ethernet CP 243-1, S7-200 interface to Industrial Ethernet	6GK7 243-1EX00-0XE0
Industrial Ethernet CP 243-1-IT; function same as CP 243-1 in addition: FTP, e-mail, HTML	6GK7 243-1GX00-0XE0
GPRS modem SINAUT MD 720-3	6NH9720-3AA00
Antenna ANT 794-4 MR	6NH9860-1AA00
Manuals	
S7-200 system manual	6ES7 298-8FA24-8AH0
OP 73micro/TP 177micro operating instructions	6AV6 691-1DF01-0AA0
User manual, WinCC flexible Micro	6AV6 691-1AA01-0AA0
CP 243-2 communications processor manual	6GK7 243-2AX00-8AA0



Product	Order No.
HMI	
TD 100C text display with individual user interface 4-line, and fitting accessories, 187.5 kbaud	6ES7 272-1BA10-0YA0
TD 200 text display, 2 lines with cable (2.5 m) and fitting accessories, 187.5 kbaud	6ES7 272-0AA30-0YA0
TD 200C text display with individual user interface, 2 lines with cable (2.5 m) and fitting accessories, 187.5 kbaud	6ES7 272-1AA10-0YA0
TD 400C text display with customized operator interface, 4 lines with cable (2.5 m) and fitting accessories, 187.5 kbaud	6AV6 640-0AA00-0AX1
OP 73micro, operator panel, pixel graphics 3" display, configurable with WinCC flexible Micro	6AV6 640-0BA11-0AX0
TP 177micro, touch panel, pixel graphics 5.7" display, configurable with WinCC flexible Micro	6AV6 640-0CA11-0AX0
Accessories	
Battery module	6ES7 291-8BA20-0XA0
Data logger cartridge, 64 KB (from CPU ... 23 0XB0)	6ES7 291-8GF23-0XA0
Data logger cartridge, 256 KB (from CPU ... 23 0XB0))	6ES7 291-8GH23-0XA0
Clock module, incl. battery (221, 222 from ... 23 0XB0)	6ES7 297-1AA23-0XA0
Extension cable for expansion module, 0.8 m	6ES7 290-6AA20-0XA0
PC/PPI cable, RS 232/485 cable for PC/laptop/modem/xxx to S7-200, max. 187.5 kbit/s, Multimaster, ASCII, Freeport	6ES7 901-3CB30-0XA0
PC/PPI cable, USB/485 cable for PC/laptop to S7-200, max. 187.5 kbit/s, Multimaster	6ES7 901-3DB30-0XA0
MPI cable	6ES7 901-0BF00-0AA0
TD 100C connecting cable to CPU	6ES7 901-3EB10-0XA0
SITOP smart 24 V / 2.5 A (3 A up to +45 °C)	6EP1 332-2BA10
SITOP smart 24 V / 5 A (6 A up to +45 °C)	6EP1 333-2AA01
SITOP smart 24 V / 10 A (12 A up to +45 °C)	6EP1 334-2AA01
Blank template sheets for the front panel of the TD 100C (DIN A4, 10 sheets, each with 6 templates, perforated)	6ES7 272 1BF00 7AA0
Blank template sheets for the front panel of the TD 200C (DIN A4, 10 sheets, each with 3 templates, perforated)	6ES7 272-1AF00-7AA0
Blank template sheets for the front panel of the TD400C (DIN A4, 10 sheets each with 2 templates, perforated)	6AV6 671-0AP00-0AX0
SIWATOOL connecting cable between SIWAREX MS and PC	7MH4 702-8CA
Grounding terminal for MS module, 10 pcs./unit	6ES5 728-8 MA11

Product	Order No.
Software	
STEP 7-Micro/WIN programming software, V4 for Win 2000, XP, 6 languages, incl. documentation on CD; single-user license	6ES7 810-2CC03-0YX0
STEP 7-Micro/WIN programming software, V4 for Win 2000, XP, 6 languages, incl. documentation on CD; upgrade from Micro/DOS and Micro/WIN Vx.x to V4	6ES7 810-2CC03-0YX3
STEP 7-Micro/WIN add-on Instruction library V1.1, control of drives (USS protocol) and data transmission via Modbus protocol, for STEP 7-Micro/WIN, V4	6ES7 830-2BC00-0YX0
WinCC flexible 2004 Micro: Single license on CD-ROM, without authorization: Engineering software for the configuration of the micro panels OP 73micro, and TP 177micro	6AV6 610-0AA01-2CA8
S7-200 PC Access V1.0 (OPC sserver) (single license)	6ES7 840-2CC01-0YX0
S7-200 PC Access V1.0 (OPC server) (multi-copy license – 15)	6ES7 840-2CC01-0YX1
SIWAREX MS configuration software	7MH4 930-0AK01
SINAUT Micro SC (license for 8 stations)	6NH9910-0AA10-0AA3
SINAUT Micro SC (license for 64 stations)	6NH9910-0AA10-0AA6
SINAUT Micro SC (license for 256 stations)	6NH9910-0AA10-0AA8
Complete systems	
SIMATIC S7-200 entry-level box with CPU 222, software STEP 7-Micro/WIN, V4 on CD incl. manual, 1-hour manual, PC/PPI data transmission cable, simulator, motor module	6ES7 298-0AA20-0AA3
Starter pack OP 73micro (OP 73micro, WinCC flexible Micro, manual collection on CD-ROM, MPI cable 5 m)	6AV6 650-0BA01-0AA0
Starter pack TP 177micro (TP 177micro, WinCC flexible Micro, manual collection on CD-ROM, MPI cable 5 m)	6AV6 650-0DA01-0AA0

Further information ...

... about SIMATIC S7-200

on the Internet: www.siemens.com/s7-200

- Command list (Quick Reference Card)
- Tips & tricks
- Demo software
- Free software updates
- Download manuals

... about SIPLUS extreme –

Ruggedizing and refining

on the Internet: www.siemens.com/siplus

- Extended temperature range
- Protection against aggressive atmospheres/condensation

... about SIMATIC panels

on the Internet: www.siemens.com/panels

... about Micro Automation

on the Internet: www.siemens.com/microset

... about SITOP

on the Internet: www.siemens.com/sitop

Infoservice – by post or fax:

Siemens AG, Infoservice, AD/Z 461

P.O. Box 23 48, D-90713 Fürth

Fax: +49 (0) 911/978-3321

Direct by phone:

You need assistance and are not sure who to contact?

We can assist you with our

Helpline +49 (0) 180 50 50 111

You can obtain technical assistance on the use of products and systems from Automation and Drives by ringing:

Technical Support +49 (0) 180 50 50 222

Infoline Switzerland (01) 495 48 84

Siemens AG
Industry Sector
Industry Automation
Postfach 48 48
90026 NÜRNBERG
GERMANY

www.siemens.com/s7-200

Subject to change without prior notice 05/08
Order No. E20001-A1020-P272-X-7600
DISPO 06313
2100/11666 MK.AS.S2.S2S2.52.8.07 WS 05085.0
Printed in Germany
© Siemens AG 2008

SIMATIC® is a registered trademark of Siemens. Other designations used in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owners. The information provided in this brochure contains merely general descriptions or characteristics of performance which in actual case of use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.