SIMATIC S7-200

Control technology a class of its own

SIMATIC Controller

Answers for industry.

SIEMENS

Connectivity, modularity, 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 considering its real-time response – it's fast, features great communication options and comes with easy-to-operate software and hardware.
But there's more; the Micro PLC SIMATIC S7-200 has a compact modular design – for customized solutions which aren't too large, but flexible enough to be expanded anytime in the future.
All this makes the SIMATIC S7-200 a great choice for open-loop control in the lower performance range. Become one of the thousands of S7-200 customers that constantly benefit from Siemens PLC innovation and lower cost of ownership.

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 tools make your job even easier: this Micro PLC is easy to program allowing fast and easy realization of applications – and the add-on software libraries accelerate special function configuration even more.
This Micro PLC has been in successful use in millions of applications around the world – in both stand-alone and networked solutions.

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

Open communication

- Built-in RS 485 interface with data transmission rates up to 187.5 kbit/s
- PPI protocol system bus for trouble-free networking
- Freeport mode programmable for user-specific protocols for any peripheral devices
- Fast connection to PROFIBUS using the slave module
- Powerful connection to AS-Interface using the master module
- Communications anywhere using the modem module (for remote maintenance, teleservice or telecontrol)
- Connection to Industrial Ethernet via the Ethernet module
- Internet connectivity, e-mail, HTTP, and FTP server functionality using the 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
- Basic and advanced functionality in all CPU models
- Large program and data memory
- Outstanding real-time response – being in total command of the entire process at any time means increased quality, efficiency and safety
- Easy-to-use STEP 7-Micro/WIN engineering software – 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 communication as a slave
  - AS-Interface communication 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 instruction library
- Compelling systems engineering – now featuring precise dimensioning and optimum solutions for a wide range of different requirements for the complete automation task

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

Tried and tested worldwide featuring:
- Compact design
- Practical functionality
- Modular expansion options
- Built-in RS 485 serial networking port(s)
- Excellent real-time behavior
- Extremely fast and precise process and sequence control
- Seamless control of time-critical processes by means of timed interrupts
- Simple and user-friendly wiring with removable terminal strips on the CPU and expansion modules – permanent wiring

Highlights
- Memory card for data logging, recipe management, saving of STEP 7-Micro/WIN project, and storage of documentation in various formats
- PID auto-tune function
- 2 built-in serial ports for extended communication options, e.g. with other manufacturers' devices (CPU 224 XP, CPU 226)
- CPU 224 XP with built-in analog inputs/output

CPUs

CPU 221

6 inputs / 4 outputs
not expandable
10 I/O max.

CPU 222

8 inputs / 6 outputs
+ 2 expansion modules max.
94 I/O max.

CPU 224

14 inputs / 10 outputs
+ 7 expansion modules max.
224 I/O max.

Digital and analog expansions

Input modules

Output modules

Input/output modules

Specific expansions

RTD temperature measurement

TC temperature measurement

SIWAREX MS weighing module

Communication

AS-Interface master
CP 243-2
max. 2 modules

PROFIBUS DP slave
EM 277

Ethernet module
CP 243-1
max. 1 module

Operating and monitoring

TD 100C

TD 200 / TD 200C

TD 400C

CPU 224XP

14 inputs / 10 outputs
2 AI/1 AO
+ 7 expansion modules max.
224 I/O max.

CPU 224XPsi

14 inputs / 10 outputs
(current sinking digital outputs)
2 AI/1 AO + 7 expansion modules max.
224 I/O max.

CPU 226

24 inputs / 16 outputs
+ 7 expansion modules max.
256 I/O max.

STEP 7-Micro/WIN
• Easy to use
• Windows standard
• Configuration instead of programming using Wizards
• Powerful instruction set easy to use via drag-and-drop
• Status for LAD, FBD and STL

Input/output modules

• Modular building block system
• Expansion modules can be scaled according to requirements
• Digital expansion modules from 4/4 to 32/32 inputs/outputs

• Analog expansion modules with 4 or 8 inputs, 2 to 4 outputs, and 4 inputs and 1 output
• 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 or Fahrenheit:
  – RTD module for measurement of resistance temperature sensors
  – TC module for measurements with thermocouples

• EM 253 positioning module for controlling stepper motors and servo drives
• SIWAREX MS compact weighing module for the SIMATIC S7-200

Internet Technology 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 complete functions for PLC communications such as remote maintenance, telecontrol, remote diagnostics, reporting, remote data transmission, etc.
• CP 243-IT, Internet Technology module for communication via FTP, e-mail or HTTP
• SINAUT MD720-3 GSM/GRPS modem; IP communication via GSM NET; quadband

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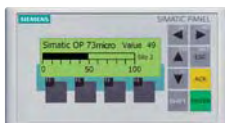
OP 73micro
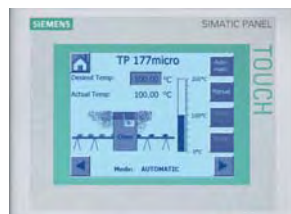
TP 177micro

TD 100C
• Reflective 4-line LCD screen
• Up to 14 configurable keys
• Customizable operator interface
TD 200
• Backlit 2-line LCD screen
• 8 programmable function keys
TD 200C
• Backlit 2-line LCD screen
• Up to 20 configurable keys
• Customizable operator interface
TD 400C
• Backlit 4-line LCD screen
• Up to 15 configurable keys with audible, visible, and tactile feedback
• Customizable operator interface

OP 73micro
• 3" pixel graphic LCD screen
• Signaling system with definable signal classes
• 5 online languages incl. Asian and Cyrillic scripts
TP 177micro
• 5.7" pixel graphic LCD screen, suitable for horizontal or vertical mounting
• Signaling system with definable signal classes
• 5 online languages incl. Asian and Cyrillic scripts

For service, networking, remote control and more: Communication at every level

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

- As a system bus with a maximum of 126 stations. In this capacity, 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 supporting multiple masters from a single port. In a network consisting of other Siemens components (SIMATIC S7-300/400 and SIMATIC HMI, etc.), the S7-200 CPUs are integrated as MPI slaves.
- In Freeport 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, bar-code scanner, PC, non-Siemens PLC and much more.
  By means of the USS protocol for drives, as many as 32 Siemens frequency converters can be controlled without additional hardware.
- The Modbus RTU Library included in the package also enables connection to a Modbus RTU network as a Master or a Slave.

OPC Driver with PC Access

PC Access is the ideal basis for data exchange between S7-200 and a connected 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, or any other OPC client application. As an OPC Client, it can be used for ProTool Pro, WinCC flexible RT, Win CC, etc. With capability up to 8 connections, the configuration, programming and monitoring can be implemented from a central location, saving both time and money.

The Internet Technology 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, HTTP, JAVA, and e-mail. The Ethernet module CP 243-1 allows you to access S7-200 process data quickly over 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.
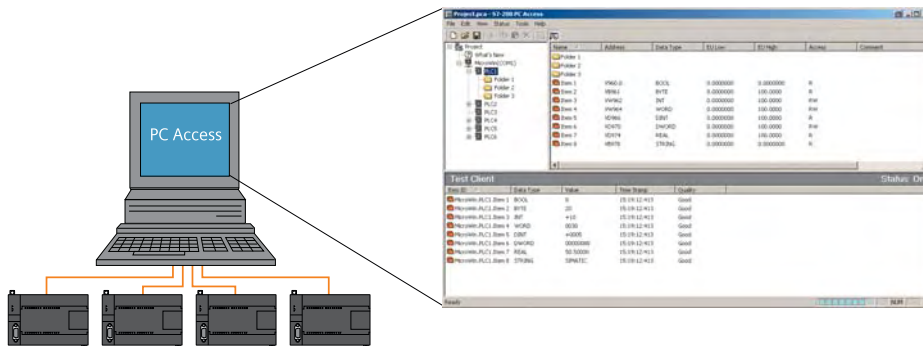
- Teleservice: the modem communication option is useful for avoiding expensive service calls. Two modems are all you need for remote use of the complete range of functions such as program transfer, status or control; the communications tools are integrated as a standard feature. External modems can be 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 base station S7-200 can control a nearly unlimited number of remote 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.
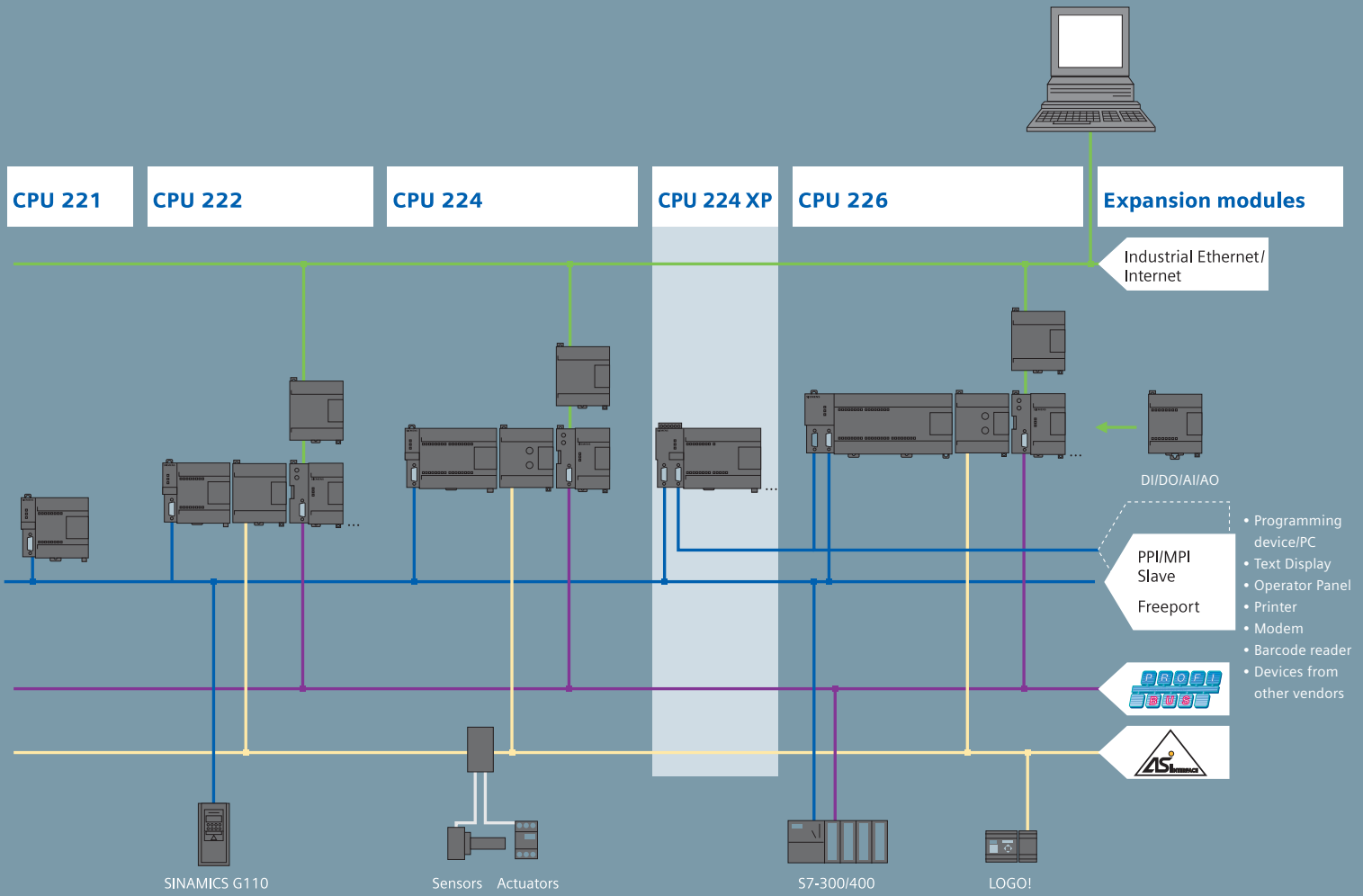
Speedy PROFIBUS connection
All CPUs from 222 upwards can be run via the EM 277 communications module as a norm slave on a PROFIBUS DP network with a transmission rate of up to 12 Mbit/s. This open feature of the S7-200 to higher-level PROFIBUS DP control levels ensures you can integrate individual machines 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 all CPUs from 222 upwards into powerful masters on the AS-Interface network. According to the new AS-Interface specification V 2.1, you can connect up to 62 stations, making even analog sensors easy to integrate. With AS-Interface, you can connect up to 248 DIs + 186 DOs in the maximum configuration. The max. 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.

CPU 221	CPU 222	CPU 224	CPU 224 XP	CPU 226	Expansion modules

Industrial Ethernet/
Internet

DI/DO/AI/AO

PPI/MPI
Slave

Freeport

- Programming
  device/PC
- Text Display
- Operator Panel
- Printer
- Modem
- Barcode reader
- Devices from
  other vendors

SINAMICS G110

Sensors   Actuators

S7-300/400

LOGO!

So easy to use:
The software for plug & play

The STEP 7-Micro/WIN programming software features 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 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 configuration error history, and runtime edit and online download.
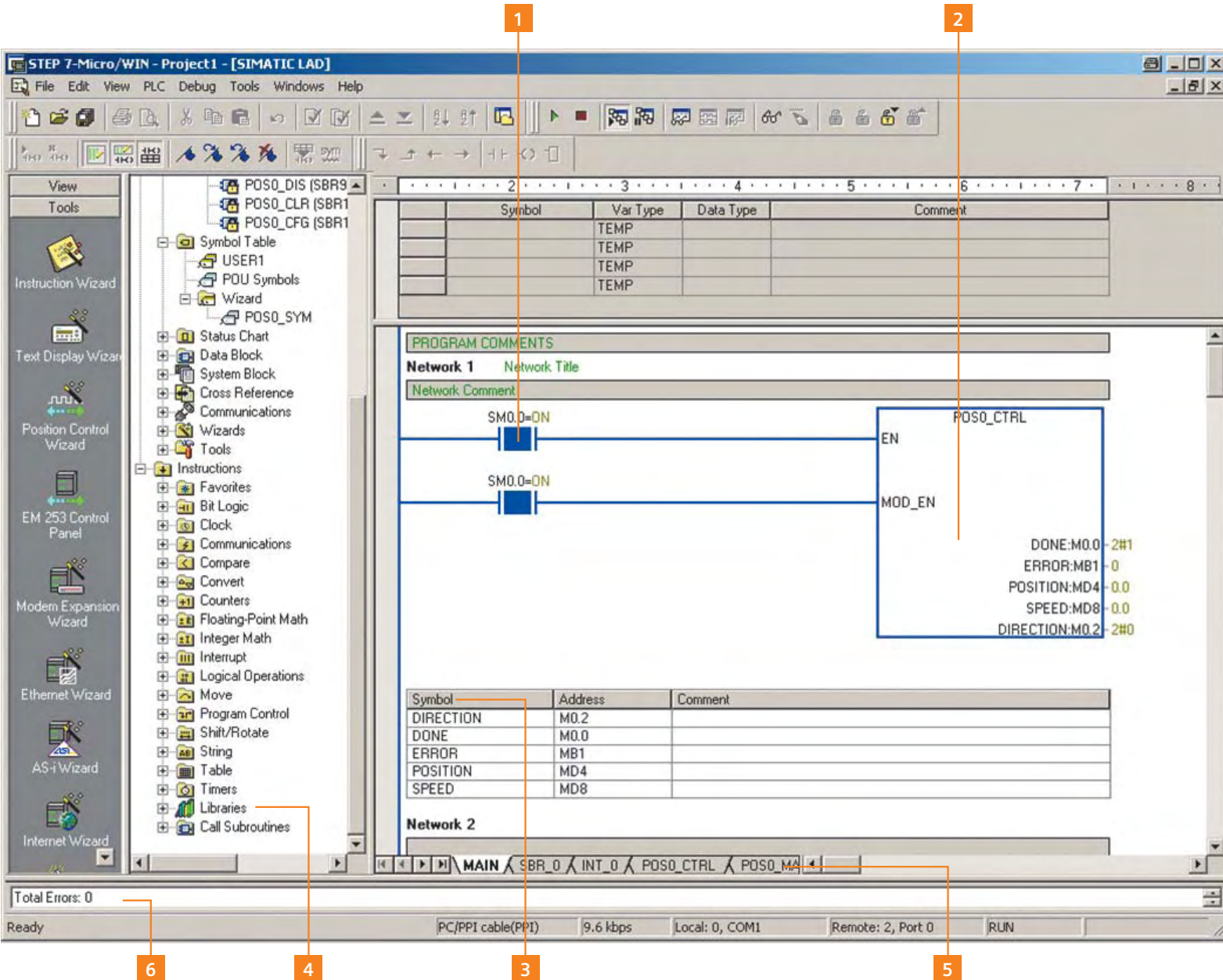
Programming in the standard editors LAD, FBD and STL – and it's easy to change between them.

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
• User-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 Micro –
OP 73micro and TP 177micro**
A special, low-cost engineering software has been developed for configuration of the OP 73micro and TP 177micro HMI panels 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

STEP 7-Micro/WIN - Project1 - [SIMATIC LAD]

File Edit View PLC Debug Tools Windows Help

View
Tools

Instruction Wizard

Text Display Wizard

Position Control Wizard

EM 253 Control Panel

Modem Expansion Wizard

Ethernet Wizard

AS-i Wizard

Internet Wizard

POS0_DIS (SBR9
POS0_CLR (SBR1
POS0_CFG (SBR1
Symbol Table
  USER1
  POU Symbols
  Wizard
    POS0_SYM
Status Chart
Data Block
System Block
Cross Reference
Communications
Wizards
Tools
Instructions
  Favorites
  Bit Logic
  Clock
  Communications
  Compare
  Convert
  Counters
  Floating-Point Math
  Integer Math
  Interrupt
  Logical Operations
  Move
  Program Control
  Shift/Rotate
  String
  Table
  Timers
  Libraries
  Call Subroutines

Symbol	Var Type	Data Type	Comment
	TEMP		
	TEMP		
	TEMP		
	TEMP		

PROGRAM COMMENTS
Network 1   Network Title
Network Comment

SM0.0=ON

SM0.0=ON

POS0_CTRL
EN

MOD_EN

DONE:M0.0 - 2#1
ERROR:MB1 - 0
POSITION:MD4 - 0.0
SPEED:MD8 - 0.0
DIRECTION:M0.2 - 2#0

Symbol	Address	Comment
DIRECTION	M0.2	
DONE	M0.0	
ERROR	MB1	
POSITION	MD4	
SPEED	MD8	

Network 2

MAIN SBR_0 INT_0 POS0_CTRL POS0_MA

Total Errors: 0

Ready   PC/PPI cable(PPI)   9.6 kbps   Local: 0, COM1   Remote: 2, Port 0   RUN

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

**SINAUT Micro SC –
GRPS modem SINAUT MD720-3**
Wireless bi-directional 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. Using 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 weighing technology is easily integrated with the aid of the STEP 7-Micro/WIN program instructions that are included with the SIWATOOL engineering software. Ready-to-use "Getting Started" application examples are also provided. The SIWATOOL MS

software configures the SIWAREX MS weighing module using standard Windows dialogs – without requiring specific PLC 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
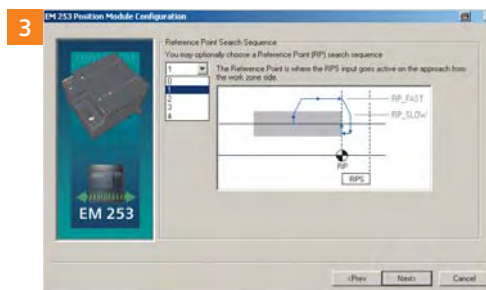
The most important benefits of the wizards
- Parameterization instead of programming
- Graphical configuration of complex tasks
- Automatic check of available memory area
- Automatic generation of program logic and subroutines
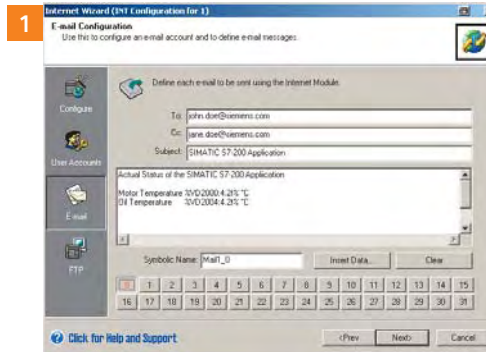
IT Wizard
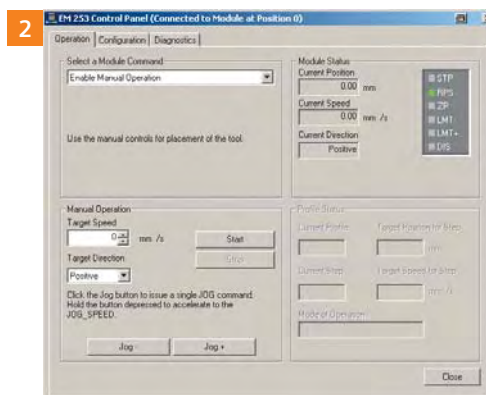
Control Panel

Positioning 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

Perfect match: S7-200 and Micro Panels

With the SIMATIC Micro Panels, we can offer you an excellent 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...
Using the innovative WinCC flexible Micro development software, the OP 73micro and TP 177micro panels can be easily configured – at the highest possible automation level.
Text displays TD 100C, TD 200, TD 200C, and TD 400C are configured using the SIMATIC STEP 7-Micro/WIN software.
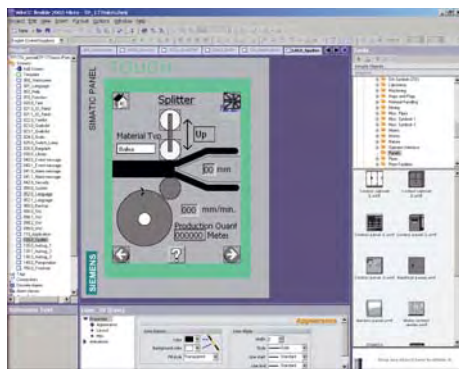
* We take compatibility very seriously – for this reason, you can of course connect any other panel from our SIMATIC HMI range to the S7-200.

Text display TD 100C

- 4-line reflective backlit screen 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

Text displays TD 200 and TD 200C

- Backlit high-contrast LCD screen, 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 setpoints
- 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 | Graphics Operator Panel OP 73micro | Touch Panel TP 177micro |

Text display TD 400C
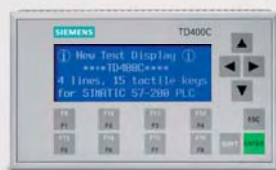
- Backlit, high-contrast LCD screen, 4-line
- Up to 80 text messages with integral variables
- Configuration stored in S7-200: Control program can be manipulated via setpoints
- Setting inputs and outputs (password protection for all functions)
- 6 online languages
- Simplified Asian and Cyrillic character 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 graphic 3" LCD screen: 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)
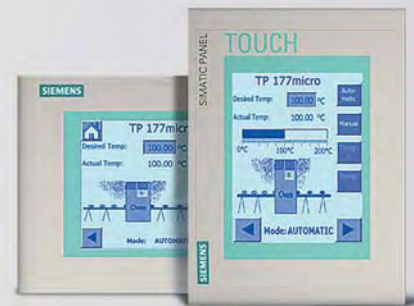
Touch Panel TP 177micro

For demanding users who appreciate a fully capable graphic 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:** Trend display

# Expandable, flexible and powerful: Extras to meet any needs

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 timed interrupts starting at 1 ms and adjustable in increments of 1 ms – for bumpless control of rapidly changing processes
- Fast analog inputs – signal conversion with 25 µs, 12-bit resolution
- Real-time clock

Timed interrupts

- Between 1 and 255 ms, with a resolution of 1 ms
- For example: it is possible to record and process signals on screw insertion machine at 3000 RPM after just a quarter turn. This enables very precise recording, for instance, of tightening torques to ensure optimum fastening of the screw.

Schematic representation of a process with real-time requirements
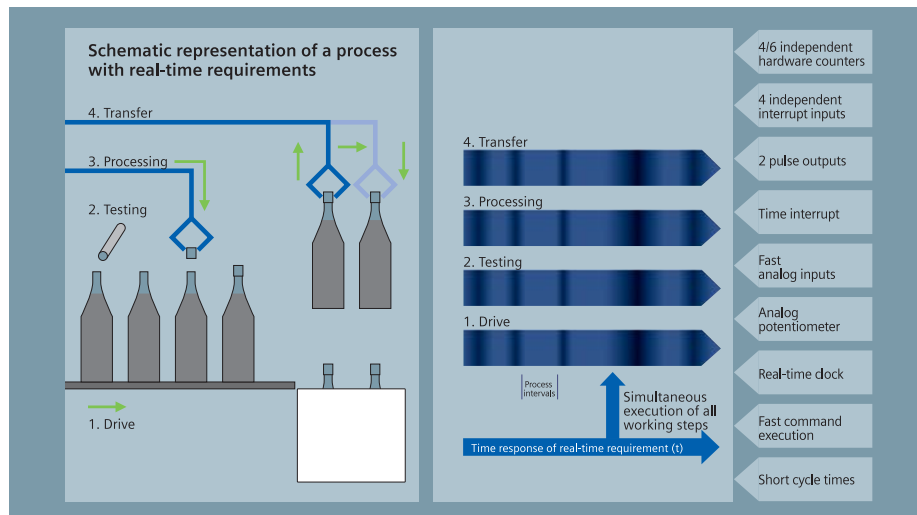
Fast counters

- Operating independently of each other, of other operations and of the program cycle
- Interrupt triggering when user selectable counted values are reached – reaction time from the detection of an input signal to switching of an output is 300 µs
- 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 µs–500 µs for signal detection/300 µs 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 224XPsi	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 µs	0.22 µs	0.22 µs	0.22 µs

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 cost. 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 memory modules are available with 64 KB or 256 KB.

Available options

Project documentation
• Bitmap files, PDF files, DOC files
• Complete STEP 7-Micro/WIN projects can be transferred to the memory card with S7-200 Explorer – giving you onsite access to the current user data at all times even without STEP 7-Micro/WIN

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 S7-200 Explorer

Small and practical

Battery module

To ensure no user data is 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 HMI. 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, 224XP, 224XPsi, 226**
32-bit floating-point math in accordance with IEEE standard	yes
Fully configurable, integrated PID controller	yes, up to 8 independent PID loops
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 dynamic data after a power interruption	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
Backup of dynamic data with battery module	typ. 200 days
Built-in serial port(s)	yes, RS 485 interface supporting the following operating modes: PPI master or slave/MPI slave/Freeport (freely configurable ASCII protocol), Modbus Master/Slave
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 224XPsi[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	4 x 30 kHz, of which 2 x 20 kHz A/B counter usable	4 x 30 kHz, of which 2 x 20 kHz A/B counter usable	6 x 30 kHz, of which 4 x 20 kHz A/B counter usable	4 x 30 kHz, 2 x 200 kHz of 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
Built-in 8-bit analog potentiometer	1	1	2	2	2
(for commissioning, value change)					
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 224XPsi (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	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	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 DI (DC) / 16 DO (DC)	16 DI (DC) / 16 DO (relay)	32 DI (DC) / 32 DO (DC)	32 DI (DC) / 32 DO (relay)
Number of inputs	16	16	32	32
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	yes	yes	yes	yes
In groups of	8 inputs	8 inputs	16 inputs	16 inputs
Number of outputs	16	16	32	32
Output type	24 V DC	relay	24 V DC	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
    P0+, P0−, P1+, P1−
    P0, P1+, DIS, CLR
	RS422/485 driver
	Open drain

Switching frequency P0+, P0−, P1+, P1−	200 kHz

Power supply:
L + supply voltage
Logic output voltage
L + supply current VS, 5 V DC load
    Load current
    0 mA (no load)
    200 mA (rated load)
	11 to 30 V DC
	+5 V DC +/−10%, max. 200 mA
	
	12 V DC Input 24 V DC Input
	120 mA 70 mA
	300 mA 130 mA

V DC Requirement +5 V DC/+24 V DC	190 mA/130 mA
Dissipation	2.5 W
Dimensions (W x H x D in mm)	71.2 x 80 x 62
Weight	190 g

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	Strain gauges in 4-wire or 6-wire system
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
V DC Requirement +5 V DC/+24 V DC	145 mA/max. 130 mA
Dimensions (W x H x D in mm)	71.2 x 80 x 62

Facts, facts, facts:
Human Machine Interface

Technical data:		
Operator panels	**TD 100C**	**TD 200[2]**
Display	Reflective LCD screen	Backlit LCD screen
LCD Screen: 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 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)	IP65, UL 50 Type 4X (when built in)/ IP20	IP65, UL 50 Type 4X (when built in)/ IP20
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 CPU only)	24 V DC
Ambient conditions Operating temperature • vertical mounting • max. angle of inclination Transport/storage temperature	0 °C to 60 °C 0 °C to 60 °C –20 °C to 60 °C	0 °C to 60 °C 0 °C to 60 °C –20 °C to 60 °C
Weight	110 g	190 g
Configuration/programming	STEP 7-Micro/WIN 4.0 SP2	STEP 7-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 LCD screen	Backlit LCD screen	3" LCD screen[1]	5.7" LCD screen, 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 configurable	15 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
•	•	•	•
IP65, UL 50 Type 4X (when built in)/ IP20	IP65 (when built in)/ IP20	IP65 (when built in), NEMA 4, NEMA 4X, NEMA 12/IP20	IP65 (when built in), NEMA 4, NEMA 4X, NEMA 12/IP20
148 x 76	174 x 102	154 x 84	212 x 156
28	31	29	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
200 g	310 g	250 g	750 g
STEP 7-Micro/WIN 4.0	STEP 7-Micro/WIN 4.0 SP6	from WinCC flexible Micro	from WinCC flexible Micro

Facts, facts, facts:
The communication modules

Technical data		
Communication modules	**EM 277 PROFIBUS DP slave module**[1]	**CP 243-2 AS-Interface 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 displays TD 100C, TD 200, TD 200C, TD 400C – Operator panels, touch panels – PG/PC with MPI interface (CPU download/ status via STEP 7-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	no
V DC Requirement +5 V DC/+24 V DC	150 mA/max. 180 mA	220 mA/100 mA
Dissipation	2.5 W	3.7 W
Dimensions (W x H x D in mm)	71.2 x 80 x 62	71.2 x 80 x 62
Weight	175 g	250 g

Modem communication modules	EM 241 modem module	SINAUT MD 720-3[2]
	Analog telephone connection	GPRS/GSM modem connection
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	–
V DC Requirement +5 V DC/+24 V DC	80 mA/70 mA	12–30 V DC (24 V DC nominal)
Dissipation	2.1 W	5.5 W
Dimensions (W x H x D in mm)	71.2 x 80 x 62	22.5 x 99 x 114
Weight	190 g	150 g

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/Internet communication modules	CP 243-1	CP 243-1 IT
Transmission rate	10/100 Mbit/s	10/100 Mbit/s
Interfaces (connection to Industrial Ethernet)	RJ45	RJ45
Supply voltage	24 V DC	24 V DC
V DC Requirement +5 V DC/+24 V DC	55 mA/60 mA	55 mA/60 mA
Dissipation	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 Mbytes

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
Analog input module 8 AI 12 bit	6ES7 231-0HF22-0XA0
Analog output module 2 AO 12 bit	6ES7 232-0HB22-0XA0
Analog output module 4 AO 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	
RTD input module, 2 AI, PT100/200/500/1000/10000, NI100/120/1000, CU10, Resistance 150/300/600 Ohm 15 bit + sign	6ES7 231-7PB22-0XA0
RTD input module, 4 AI, PT100/200/500/1000/10000, NI100/120/1000, CU10, 14 GOST Resistance 150/300/600 Ohm 15 bit + sign	6ES7 231-7PC22-0XA0
TC input module, 4 AI, ± 80 mV and thermo-couple type J, K, S, T, R, E, N, 15 bit + sign	6ES7 231-7PD22-0XA0
TC input module, 8 AI, ± 80 mV and thermo-couple type J, K, S, T, R, E, N, 15 bit + sign	6ES7 231-7PF22-0XA0
Positioning module EM 253, 200 kHz, for controlling stepper or servo drives, open-loop control, configuration with STEP 7-Micro/WIN	6ES7 253-1AA22-0XA0
SIWAREX MS weighing module for connecting one scale	7MH4930-0AA01
Communication	
PROFIBUS DP slave module EM 277	6ES7 277-0AA22-0XA0
AS-Interface master module CP 243-2	6GK7 243-2AX01-0XA0
Modem module EM 241 for analog telephone networks for remote control, signaling, CPU-to-CPU, CPU-to-PC communication	6ES7 241-1AA22-0XA0
Industrial Ethernet module CP 243-1 for connection of S7-200 to Industrial Ethernet	6GK7 243-1EX00-0XE0
Internet Technology module CP 243-1 IT for connection of S7-200 to Industrial Ethernet, e-mail client, HTTP server, FTP client, FTP server, 8 MB flash file system	6GK7 243-1GX00-0XE0
GSM/GPRS modem SINAUT MD 720-3	6NH9720-3AA00
GSM/GPRS modem antenna ANT 794-4 MR	6NH9860-1AA00
Manuals	
S7-200 system manual (English)	6ES7 298-8FA24-8BH0
Operating instructions OP 73micro/TP 177micro (WinCC flexible Micro) (English)	6AV6 691-1DF01-0AB0
User guide WinCC flexible Micro (English)	6AV6 691-1AA01-2AB0
Manual CP 243-2 with example programs (English)	6GK7 243-2AX00-8BA0

Product	Order No.
HMI	
TD 100C text display with custom user interface, 4 lines with mounting accessories, 187.5 kbaud	6ES7 272-1BA10-0YA0
TD 200 text display, 2 lines with cable (2.5 m) and mounting accessories, 187.5 kbaud	6ES7 272-0AA30-0YA0
TD 200C text display with custom user interface, 2 lines with cable (2.5 m) and mounting accessories, 187.5 kbaud	6ES7 272-1AA10-0YA0
TD 400C text display with custom user interface, 4 lines with cable (2.5 m) and mounting accessories, 187.5 kbaud	6AV6 640-0AA00-0AX1
OP 73micro, operator panel, 3" pixel graphic display, configurable with WinCC flexible Micro	6AV6 640-0BA11-0AX0
TP 177micro, touch panel, 5.7" pixel graphic display, configurable with WinCC flexible Micro	6AV6 640-0CA11-0AX0
Accessories	
Battery cartridge	6ES7 291-8BA20-0XA0
Memory cartridge, 64 KB; for program storage, data logging, and recipes; from CPU ...23 0XB0	6ES7 291-8GF23-0XA0
Memory cartridge, 256 KB; for program storage, data logging, and recipes; from CPU ...23 0XB0	6ES7 291-8GH23-0XA0
Real-time clock with battery cartridge; CPU 221/222 from ...23 0XB0	6ES7 297-1AA23-0XA0
Extension cable for expansion modules, 0.8 m	6ES7 290-6AA20-0XA0
PC/PPI cable, RS 232/485 cable for PC/laptop/ modem/etc. 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 (5 m)	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 TD 400C (DIN A4, 10 sheets each with 2 templates, perforated)	6AV6 671-0AP00-0AX0
SIWATOOL cable for PC/laptop to SIWAREX MS weighing module	7MH4 702-8CA
Grounding terminal for SIWAREX MS weighing module, 10 pcs./unit	6ES5 728-8 MA11

Product	Order No.
Software	
STEP 7-Micro/WIN V4.0 engineering software; for Windows 2000, XP, Vista; 6 languages, incl. documentation on CD; single user license	6ES7 810-2CC03-0YX0
STEP 7-Micro/WIN V4.0 engineering software; for Windows 2000, XP, Vista; 6 languages, incl. documentation on CD; upgrade license from Micro/DOS and Micro/WIN Vx.x to V4.0	6ES7 810-2CC03-0YX3
STEP 7-Micro/WIN Add-On Instruction Library V1.1; USS protocol for control of drives and Modbus protocol for data transmission; for STEP 7-Micro/WIN, V3.2 and V4.0	6ES7 830-2BC00-0YX0
WinCC flexible 2007 Micro engineering software; for Windows 2000, XP; 5 languages, incl. documentation on DVD: single user license	6AV6 610-0AA01-2CA8
S7-200 PC Access V1.0 OPC server software; for Win 2000, XP, Vista; 6 languages, incl. documentation on CD; single user license	6ES7 840-2CC01-0YX0
S7-200 PC Access V1.0 OPC server software; for Win 2000, XP, Vista; 6 languages, incl. documentation on CD; multi copy license for 15 installations	6ES7 840-2CC01-0YX1
SIWAREX MS weighing module engineering software; for Windows 2000, XP; 5 languages, incl. documentation on CD; single user license	7MH4 930-0AK01
SINAUT Micro SC 8 OPC Server for GPRS communication with S7-200; for Windows 2000, XP; 2 languages, incl. documentation on CD; single user license (8 remote stations)	6NH9910-0AA10-0AA3
SINAUT Micro SC 64 OPC Server for GPRS communication with S7-200; for Windows 2000, XP; 2 languages, incl. documentation on CD; single user license (64 remote stations)	6NH9910-0AA10-0AA6
SINAUT Micro SC 256 OPC Server for GPRS communication with S7-200; for Windows 2000, XP; 2 languages, incl. documentation on CD; single user license (256 remote stations)	6NH9910-0AA10-0AA8
Complete systems	
SIMATIC S7-200 starter box with CPU 222 AC/DC/RLY, STEP 7-Micro/WIN V4.0, PC/PPI cable (USB/485), simulators and documentation; English	6ES7298-0AA20-0BA3
OP 73micro starter package; OP 73micro, WinCC flexible Micro 2007, MPI cable (5 m), HMI manual collection on CD	6AV6 650-0BA01-0AA0
TP 177micro starter package; TP 177micro, WinCC flexible Micro 2007, MPI cable (5 m), HMI manual collection on CD	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
on the Internet: www.siemens.com/siplus
– Extended temperature range
– Protection against aggressive atmospheres/condensation

... about SIMATIC HMI
on the Internet: www.siemens.com/panels

... about Micro Automation Sets
on the Internet: www.siemens.com/microset

... about SITOP
on the Internet: www.siemens.com/sitop

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