Simple - smaller - stronger

SIMATIC ET 200SP
SIMATIC ET 200SP
Overview of ET 200 portfolio

Control cabinet
SIMATIC S7-1500
CPU + S7-1500 I/O

SIMATIC ET 200MP
IM + S7-1500 I/O

SIMATIC ET 200SP
Overview of ET 200 portfolio

SIMATIC ET 200AL
IP67 Block IO on ET 200SP

SIMATIC ET 200eco PN
IP67 stand alone block IO

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SIMATIC ET 200SP
The highly modular IO system

- Fail-safe modules
- Compact design
- Energy efficiency
- Ruggedness
- Intelligence in the I/O
- Push-in terminals
- Tool-free connections
- Reduced parts variance

Easy to use - smaller size - more powerful performance
Simple - smaller - stronger
## SIMATIC ET 200SP

**Mechanical design**

### Feature/function

<table>
<thead>
<tr>
<th>Feature/Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interface module</strong></td>
</tr>
<tr>
<td><strong>I/O modules</strong></td>
</tr>
<tr>
<td><strong>Base Unit</strong></td>
</tr>
<tr>
<td><strong>Server module</strong></td>
</tr>
</tbody>
</table>

### Benefits

- Flexible connection to PROFINET/PROFIBUS via copper or fiber optic
- Large selection of I/O modules flexible in use
- Reduced module variance through module/BaseUnit combination
- 1- to 3-conductor connection with the same space requirements

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[Image showing mechanical design of SIMATIC ET 200SP]
## SIMATIC ET 200SP
The right connection for every performance requirement

<table>
<thead>
<tr>
<th>Tier</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>Up to 12 modules</td>
</tr>
<tr>
<td></td>
<td>• Basic functions (all modules except Safety can be used)</td>
</tr>
<tr>
<td></td>
<td>• Operation with gaps</td>
</tr>
<tr>
<td></td>
<td>• 2 x Ethernet ports</td>
</tr>
<tr>
<td>Standard</td>
<td>Up to 32 modules</td>
</tr>
<tr>
<td></td>
<td>• Safety Integrated modules</td>
</tr>
<tr>
<td></td>
<td>• Expansion in IP 67 (ET 200AL connection)</td>
</tr>
<tr>
<td></td>
<td>• Single hot swapping</td>
</tr>
<tr>
<td>High Feature</td>
<td>Up to 64 modules</td>
</tr>
<tr>
<td></td>
<td>• Flexible connection via copper or fiber optic BusAdapter</td>
</tr>
<tr>
<td></td>
<td>• Isochronous mode: 250 µs</td>
</tr>
<tr>
<td></td>
<td>• Multi hot swapping</td>
</tr>
<tr>
<td>CPU</td>
<td>Up to 64 modules</td>
</tr>
<tr>
<td></td>
<td>• S7-1500 CPU integrated</td>
</tr>
<tr>
<td></td>
<td>• Web server onboard</td>
</tr>
<tr>
<td></td>
<td>• Local data backup using memory card</td>
</tr>
</tbody>
</table>
SIMATIC ET 200SP
The I/O system with all the options

<table>
<thead>
<tr>
<th>Basic</th>
<th>Standard</th>
<th>High Feature</th>
<th>High Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Basic diagnostics</td>
<td>+ Adjustability using parameters</td>
<td>+ Channel-specific diagnostics</td>
<td>+ Isochronous mode</td>
</tr>
<tr>
<td>• Basic functions</td>
<td>+ Module-based diagnostics</td>
<td>+ Alternative operating modes</td>
<td>+ Fastest possible data exchange</td>
</tr>
<tr>
<td></td>
<td>+ Faster data processing</td>
<td>+ Expanded functionalities</td>
<td>+ Oversampling</td>
</tr>
</tbody>
</table>

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**SIMATIC ET 200SP**  
The I/O system with all functionalities

<table>
<thead>
<tr>
<th><strong>Digital inputs</strong></th>
<th><strong>Digital outputs</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• 24V/ 120V / 230V</td>
<td>• 24V/ 120V / 230V – 0.5 -&gt; 5A</td>
</tr>
<tr>
<td>• 4-16 channels per module</td>
<td>• 4-16 channels per module</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Analog inputs</strong></th>
<th><strong>Analog outputs</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• I , U, RTD, TC Messung</td>
<td>• I, U output</td>
</tr>
<tr>
<td>• 2-8 channels per module</td>
<td>• 2-4 channels per module</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Communication</strong></th>
<th><strong>Technology and special modules</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• IO Link, PtP, AS-i (incl. F)</td>
<td>• Counting, positioning, cams</td>
</tr>
<tr>
<td>• PROFIBUS master module</td>
<td>• Energy measurement, weighing</td>
</tr>
</tbody>
</table>
SIMATIC ET 200SP
Added values

Quick and easy station setup
- Tool-free cabling with push-in terminals
- Shield terminal element for analog signals
- Tool-free setup of the station

Effective footprint
- About 50% narrower than other distributed I/O systems
- BaseUnits enable sufficient space for standardized bending radii, even in the smallest control cabinets

Maximum clarity
- Reference identification labels for assigning the module/BU
- Clear terminal assignments with color coding of the terminal
- Color and data matrix code on the module
SIMATIC ET 200SP
Added values

Simple expansion in IP67
- Direct connection of the ET 200AL IO modules
- Integrated diagnostics from IP20 to IP67
- Integrated functionality, e.g. configuration control

Safety Integrated
- Safety-related communication
- SIL 3 with Safety DI/DQ modules
- SIL 2 with Standard AQ/DQ via safe group shutdown

Höchste Flexibilität
- Configuration control with option handling
- Easy expandability thanks to design with gaps
- Quick replacement of modules with multiple hot-swapping
SIMATIC ET 200SP
Intelligence in the I/O with the distributed controller

S7-1500 in ET 200SP design:
The controllers can be configured with the TIA Portal and they support the programming languages LAD/FBD/STL/SCL and S7-Graph. Blocks can be transferred directly from another S7-1500 or S7-1200.

Safety Integrated:
One controller for distributed standard and fail-safe automation reduces space requirements and complexity

Open controller:
- High-level language applications in C and C++ or VB can be integrated
- Available with pre-installed WinCC Advance Runtime for direct connection of a SIMATIC Flat Panel
The I/O system for the advanced controller

SIMATIC ET 200MP / S7-1500 IO
SIMATIC ET 200MP
The modular I/O system for the central control cabinet

- Multifunctional IO modules
- Universal IO system central / distributed
- Voltage ranges 24V DC to 230V AC
- Ruggedness
- High-channel modules
- Push-in/screw terminals
- Fail-safe modules
- Reduced parts variance

Ideally suited for use with S7-1500
### SIMATIC ET 200MP
#### Mechanical design

<table>
<thead>
<tr>
<th>Feature/function</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface module</td>
<td>Flexible connection to PROFINET/PROFIBUS</td>
</tr>
<tr>
<td>Power supply</td>
<td>Enable a structure of up to 30 modules per row</td>
</tr>
<tr>
<td>I/O modules</td>
<td>Large module range of high-channel modules (up to 32 digital or 8 analog signals per module)</td>
</tr>
<tr>
<td>Front connector</td>
<td>Selection options for optimum wiring</td>
</tr>
</tbody>
</table>
SIMATIC ET 200MP
The I/O system with all the options

- **Basic**
  - Basic functions
  - Push-in terminals

- **Standard**
  - Adjustability using parameters
  - Selection of screw/push-in terminals
  - Module-based diagnostics

- **High Feature**
  - Alternative operating modes
  - Extended functionalities, such as counter functions or PWM
  - Channel-specific diagnostics

- **High Speed**
  - Isochronous mode
  - Fastest possible data exchange
  - Oversampling
**SIMATIC ET 200MP**
the flexible approach to connection technology

| Front connector | • Can be used universally  
|                 | • Screw terminals/push-in terminals 
|                 | • Integrated potential bridges for simple formation of potential groups 
|                 | • Latching position, for de-energized wiring during operation |

| Flexible connection technology (Top Connect) | + Pre-wired front connectors  
|                                            | + Easy connection of sensors and actuators in the control cabinet  
|                                            | + Considerable time savings through a reduction in the wiring effort by approx. 50% |

| Fully modular connection technology (Top Connect) | • Modular system with minimum installation costs  
|                                                | • Up to 80% less wiring overheads when connecting sensors and actuators in the field  
|                                                | • Significant reduction in error causes during wiring |
SIMATIC ET 200MP

Added-value

Quick and easy station setup
- Tool-free wiring with push-in terminals
- Shield terminal element for analog signals
- Tool-free setup of the station

Safety Integrated
- Safety-related communication
- SIL 3 with Safety DI/DQ modules
- Module replacement without DIP switches

Diagnostics directly on the module
- Uniform display on the module
- 1:1 Assignment LED to channel
- Fast troubleshooting via the S7-1500 display
SIMATIC ET 200MP
SIPLUS extreme: A plus for extreme requirements

Extended temperature range
- -40° to 70° C
- 100 % condensation and icing allowed

Extreme conditions
- Chemically active substances
- Salt mist
- Dust (suspended solid or deposition)
- Biologically active substances

Proven portfolio
- Most of the standard portfolio available
- Seamless integration into TIA Portal
Order and commission your ET 200MP soon!

Configure your I/O system simply online!

Product selection with the TIA Selection Tool

Simple and free test of your I/O system

I/O check with Proneta

www.siemens.de/tia-selection-tool

www.siemens.de/proneta
ET 200AL
Positioning Within ET 200 IP65/67

- Modular
  - M12-shaped market: ET 200eco
  - M12-shaped market: ET 200eco PN
  - M8-shaped market: ET 200AL

- Compact
  - PROFIBUS: ET 200pro
  - PROFINET: ET 200AL
Typical ET 200AL Application Case

Applications / plants with the following characteristics:

1. **Confined space conditions?**
   (typical image on the right, rugged and with M8 connection)

2. **Assembly, handling technology, packing applications**
   Are we dealing with moved machines?
   (typically drag chains)

3. **Is the I/O also moved?**
   (required: small, light-weight I/O)

**Confined installation conditions** require a small footprint (width, M8) and flexible assembly options
ET 200AL (Assembly Line)
Typical Plant Assemblies

- Interlinked assembly units
- Moved applications / drag chains
- M8 connection / M8 sensors / actuators
- Confined space conditions
ET 200AL
Communication und Safety

**Communication**
- Communication via PROFINET or PROFIBUS
- Communication via IP20 I/O: Integration of ET 200AL modules in ET 200SP
- IO-Link master for communication with sensors and actuators

**Safety**
- Safety-related group disconnection (SIL2) (in preparation)
## ET 200AL
### Product Data Overview

<table>
<thead>
<tr>
<th>Short designation</th>
<th>Type</th>
<th>Capabilities / highlights</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interface modules</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM 157-1 DP</td>
<td>PROFIBUS</td>
<td>DPV1 slave</td>
</tr>
<tr>
<td>IM 157-1 PN</td>
<td>PROFINET</td>
<td>Realtime characteristics RT, IRT, MRP-capable</td>
</tr>
<tr>
<td>BU-Send</td>
<td>Connecting module ET200SP</td>
<td></td>
</tr>
<tr>
<td>BA-Send 1x FC</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>I/O modules</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DI 8x24 VDC; M8</td>
<td>Digital input module</td>
<td>8x M8 socket, 3-pole</td>
</tr>
<tr>
<td>DIQ 4 + DQ 4x24 VDC/ 0.5A; 8x M8</td>
<td>Digital mixed module</td>
<td>8x M8 socket, 3-pole</td>
</tr>
<tr>
<td>AI 4x U/I/RTD; 4x M12</td>
<td>Analog module</td>
<td>4x M12 socket, 5-pole, resolution: 16-bit</td>
</tr>
<tr>
<td>CM 4x IO-Link; 4x M12</td>
<td>Communication module</td>
<td>IO-Link protocol V1.1</td>
</tr>
<tr>
<td><strong>Connection cables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M8, 4-pole, shielded, straight/angled; plug on both sides / one side</td>
<td>For internal bus connection</td>
<td></td>
</tr>
<tr>
<td>M8, 4-pole, straight/angled; plug on both sides / one side</td>
<td>For power supply</td>
<td></td>
</tr>
</tbody>
</table>