SIMATIC S7-1200

It's the interplay that makes the difference

SIMATIC Controller

Answers for industry.

SIEMENS

In the field of automation, powerful components are a key factor to success. But what really gives you a unique advantage, is all of them working together.

The Panels
The operation of small machines or simple applications can often be further improved with the addition of visualization. With the SIMATIC HMI Basic Panels offering essential functionality, this is an economical option that opens up new possibilities for creative automation solutions. The range of SIMATIC HMI Basic Panels includes high-contrast graphical displays with touch and tactile function keys, simple networking and seamless communication making them ideal for applications with the new SIMATIC S7-1200.

The Software
Our highly integrated engineering system, SIMATIC STEP 7 Basic, which includes SIMATIC WinCC Basic, is task-oriented, intelligent and provides intuitive easy-to-use editors for the efficient configuration of the SIMATIC S7-1200 and SIMATIC HMI Basic Panels. In addition to programming, it is the common engineering framework for hardware and network configuration, diagnostics and more. The functionality provided by this engineering system is the key ingredient that makes the interplay between the controller and HMI so powerful.

A modular concept for compact automation in a scalable design.

The SIMATIC S7-1200 features an integrated PROFINET interface, powerful integrated technology functions and a highly scalable and flexible design. This enables simple communication, efficient solutions for technological tasks, and perfectly fits individual automation requirements in a wide variety of applications.

Scalable and flexible design
The SIMATIC S7-1200 controller family has been designed with maximum flexibility to fit your individual machine requirements. This allows you to custom-design your controller system to meet your needs; it also makes future system expansions quick and easy.

Industrial communication
The SIMATIC S7-1200's integrated PROFINET interface provides seamless communication with the SIMATIC STEP 7 Basic engineering system for programming, with SIMATIC HMI Basic Panels for visualization, with additional controllers for PLC-to-PLC communication and with third-party devices for advanced integration options.

Integrated technology
The name SIMATIC has been a reliable symbol in the field of automation for many years. We have taken our experience and have integrated our proven and innovative technology functions into our new controller – ranging from counting and measuring, speed, position and duty cycle control to simple process control functionality. This wide variety of functionality guarantees you the ability to solve a wide array of applications based on technology that has proven its validity in the field for many years.

Communication modules

Up to 3 communication modules can be added to any of the SIMATIC S7-1200 CPUs. The RS485 and RS232 communication modules provide the connection for performing point-to-point serial communication. This communication is configured and programmed using extended instructions or with the library functions, USS drive protocol and Modbus RTU Master and Slave protocols, which are included within the SIMATIC STEP 7 Basic engineering system.

Integrated PROFINET interface

The integrated PROFINET interface is used for programming, as well as for HMI and PLC-to-PLC communication. Additionally, it supports communication with third-party devices using open Ethernet protocols. This interface features an RJ45 connector with auto-cross-over functionality and provides for data transmis-sion rates at 10/100 Mbit/s. It supports up to 16 Ethernet connections and the following protocols: TCP/IP native, ISO on TCP, and S7 communication.

Integrated technology

High-speed inputs
The new SIMATIC S7-1200 controller comes with up to 6 high-speed counters. Three inputs at 100 kHz and three inputs at 30 kHz are integrated for counting and measuring.

High-speed outputs
Two high-speed pulse train outputs at 100 kHz are integrated for controlling the speed and position of a stepper motor or a servo drive. They can alternatively be used as pulse-width-modulated outputs for controlling the speed of a motor, position

Memory

Up to 50 KB of integrated work memory is provided with a floating boundary between the user program and user data. Up to 2 MB of integrated load memory and 2 KB of integrated retentive memory are also provided.

The optional SIMATIC Memory Card provides an easy way to transfer programs to multiple CPUs. This card can also be used for storing miscellaneous files or to update the firmware of the controller system.

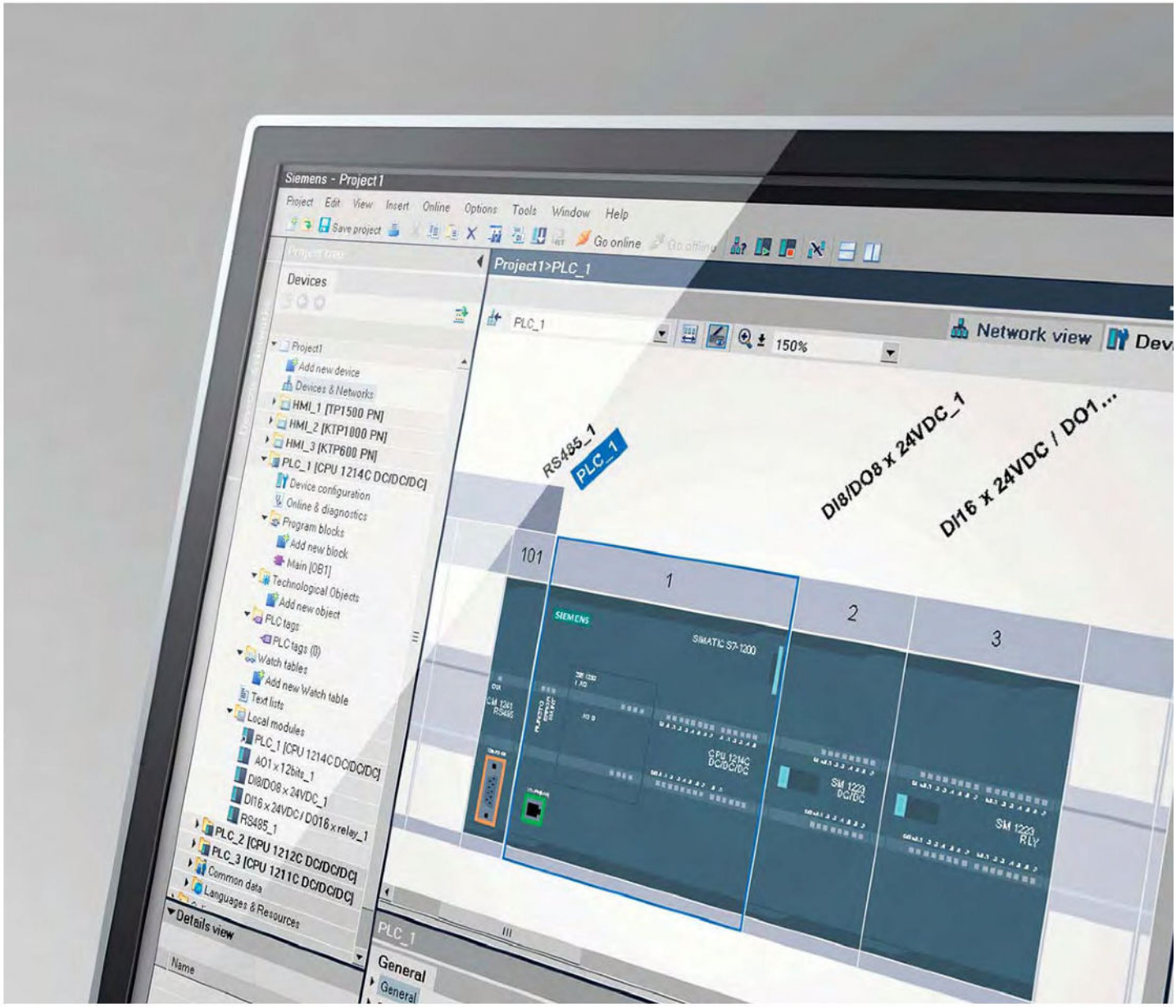
of a valve, or duty cycle of a heating element.

PID control
Up to 16 PID control loops with auto-tune functionality are possible in the SIMATIC S7-1200 controller for simple closed-loop process control applications.

Scalable and flexible design

Signal modules
Up to eight signal modules can be connected to the largest CPUs for the support of additional digital and analog I/Os.

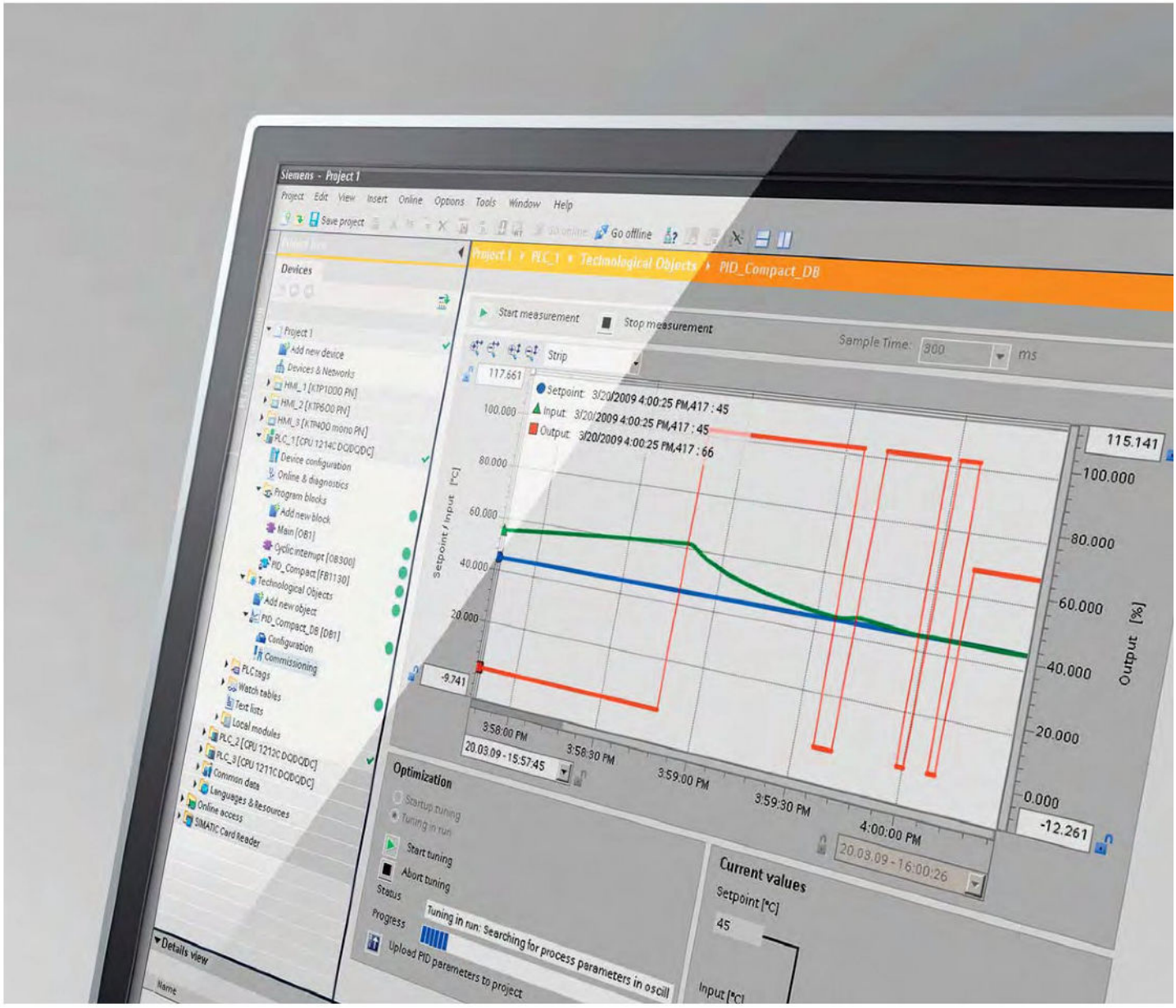
Signal boards
One signal board can be connected to all CPUs, allowing you to customize the CPUs by adding digital or analog I/Os to the controller without affecting its physical size. The modular concept provided by the SIMATIC S7-1200 allows you to design a controller system to exactly fit your application needs.



The device view within the SIMATIC STEP 7 Basic engineering system allows you to easily configure and visualize your SIMATIC S7-1200 controller system.

Removable terminals
All SIMATIC S7-1200 hardware is equipped with removable terminal blocks. This means that wiring only has to be done once, saving valuable time during the start-up and commissioning phases of a project. Additionally, the removable terminal blocks are an added convenience when hardware components must be replaced.

Space-saving design
All SIMATIC S7-1200 hardware has been specifically designed to save space in the control panel. For example, CPU 1214C has a width measuring only 110 mm and both the CPU 1212C and CPU 1211C are only 90 mm wide. Together with the small footprint of the communication modules and signal modules, this modular and compact system saves valuable space and offers you the highest level efficiency and flexibility during the installation process.



The tuning of PID control loops is fast and accurate using the commissioning control panel included with SIMATIC STEP 7 Basic.

PID functionality for closed-loop control
The SIMATIC S7-1200 supports up to 16 PID control loops for simple process control applications. These control loops are easily configured using a PID controller technology object and the supporting editors provided within the engineering system SIMATIC STEP 7 Basic. Additionally, the SIMATIC S7-1200 supports PID auto-tuning to automatically compute the optimum tuning values for the gain, integral time and derivative time.

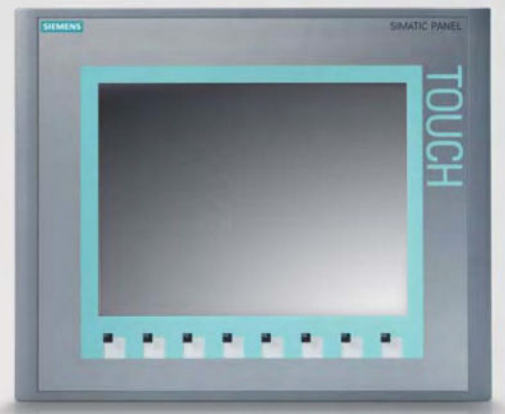
PID commissioning control panel
The PID commissioning control panel included within SIMATIC STEP 7 Basic simplifies the loop tuning process. It provides both automatic tuning and manual control capabilities for a single control loop and it also provides a graphical trend view of the tuning process.

KTP400 Basic mono PN

KTP600 Basic color PN

The SIMATIC HMI Basic Panels: high-quality panels at attractive prices.

The SIMATIC HMI Basic Panels are designed for seamless compatibility with the new SIMATIC S7-1200 controller. Our new SIMATIC HMI Basic Panels for compact applications provide a solution that adapts to your specific visualization requirements with optimized performance and functionality, a wide variety of screen sizes and mounting compatibility for easy upgrades.



KTP1000 Basic color PN

TP1500 Basic color PN

Optimized performance and functionality
The SIMATIC S7-1200 integrates perfectly with the SIMATIC HMI Basic Panels to provide simple visualization and control options for compact automation applications. With the seamless integration between the controller and HMI engineering software, SIMATIC STEP 7 Basic and SIMATIC WinCC Basic, the perfect solution with the best results can be achieved in the shortest amount of time.

Touch screen and tactile keys
The new SIMATIC HMI Basic Panels feature a touch display for intuitive operation. Apart from touch screen operation on 4", 6" or 10" displays, the panels also have fully programmable keys with tactile feedback. A device with a 15" touch screen is also available for applications where visualization requires a larger display area. With an IP65 degree of protection, the SIMATIC HMI Basic Panels are suitable for use in rough industrial environments.

SIMATIC HMI Basic Panels

KTP400 Basic mono PN
Touch Screen + 4 Function Keys,
3.8" LCD mono FSTN display,
4 gray scales

6AV6 647-0AA11-3AX0

KTP600 Basic mono PN
Touch Screen + 6 Function Keys,
5.7" LCD mono FSTN display,
4 gray scales

6AV6 647-0AB11-3AX0

KTP600 Basic color PN
Touch Screen + 6 Function Keys,
5.7" LCD TFT display, 256 colors

6AV6 647-0AD11-3AX0

KTP1000 Basic color PN
Touch Screen + 8 Function Keys,
10.4" LCD TFT display, 256 colors

6AV6 647-0AF11-3AX0

TP1500 Basic color PN
Touch Screen,
15.0" LCD TFT display, 256 colors

6AV6 647-0AG11-3AX0

Compact Switch Module

CSM 1277
4-port unmanaged switch,
4xRJ45 sockets,
10/100 Mbit/s

6GK7 277-1AA00-0AA0

Power Module

PM 1207
Input: AC 120/230 V,
50/60 Hz, 1.2 A/0.67 A,
Output: DC 24 V/2.5 A

6EP1 332-1SH71

Engineering System

SIMATIC STEP 7 Basic
6ES7 822-0AA00-0YA0

Software Update Service
6ES7 822-0AA00-0YL0

Communication Modules

CM 1241 RS232
6ES7 241-1AH30-0XB0

CM 1241 RS485
6ES7 241-1CH30-0XB0

Signal Boards

SB 1221 DC 200 kHz

DI 4x5 V DC	6ES7 221-3AD30-0XB0
DI 4x24 V DC	6ES7 221-3BD30-0XB0

SB 1222 DC 200 kHz

DQ 4x5 V DC 0.1 A	6ES7 222-1AD30-0XB0
DQ 4x24 V DC 0.1 A	6ES7 222-1BD30-0XB0

SB 1223 DC/DC

DI 2x24 V DC / DQ 2x24 V DC 0.5 A	6ES7 223-0BD30-0XB0

SB 1223 DC/DC 200 kHz

DI 2x5 V DC / DQ 2x5 V DC 0.1 A	6ES7 223-3AD30-0XB0
DI 2x24 V DC / DQ 2x24 V DC 0.1 A	6ES7 223-3BD30-0XB0

SB 1232 AQ

AQ 1x12 Bit ±10 V DC or 0–20 mA	6ES7 232-4HA30-0XB0

SIMATIC S7-1200 Compact Controllers

CPU 1211C
DI 6x24 V DC, DQ 4x24 V DC or 4xRLY, AI 2x10 Bit 0–10 V DC
DC/DC/DC 6ES7 211-1AD30-0XB0
AC/DC/RLY 6ES7 211-1BD30-0XB0
DC/DC/RLY 6ES7 211-1HD30-0XB0

CPU 1212C
DI 8x24 V DC, DQ 6x24 V DC or 6xRLY, AI 2x10 Bit 0–10 V DC
DC/DC/DC 6ES7 212-1AD30-0XB0
AC/DC/RLY 6ES7 212-1BD30-0XB0
DC/DC/RLY 6ES7 212-1HD30-0XB0

CPU 1214C
DI 14x24 V DC, DQ 10x24 V DC or 10xRLY, AI 2x10 Bit 0–10 V DC
DC/DC/DC 6ES7 214-1AE30-0XB0
AC/DC/RLY 6ES7 214-1BE30-0XB0
DC/DC/RLY 6ES7 214-1HE30-0XB0

Accessories

SIMATIC Memory Card
2 MB (optional)
24 MB (optional)

SIM 1274 Input Simulator
8 position for CPU 1211C/CPU 1212C
14 position for CPU 1214C

Signal Module Expansion Cable
2.0 m

Signal Modules

SM 1221 DC

DI 8x24 V DC	6ES7 221-1BF30-0XB0
DI 16x24 V DC	6ES7 221-1BH30-0XB0

SM 1222 DC

DQ 8x24 V DC 0.5 A	6ES7 222-1BF30-0XB0
DQ 16x24 V DC 0.5 A	6ES7 222-1BH30-0XB0

SM 1222 RLY

DQ 8xRLY 30 V DC/250 V AC 2 A	6ES7 222-1HF30-0XB0
DQ 16xRLY 30 V DC/250 V AC 2 A	6ES7 222-1HH30-0XB0

SM 1223 DC/DC

DI 8x24 V DC, DQ 8x24 V DC 0.5 A	6ES7 223-1BH30-0XB0
DI 16x24 V DC, DQ 16x24 V DC 0.5 A	6ES7 223-1BL30-0XB0

SM 1223 DC/RLY

DI 8x24 V DC, DQ 8xRLY 30 V DC/250 V AC 2 A	6ES7 223-1PH30-0XB0
DI 16x24 V DC, DQ 16xRLY 30 V DC/250 V AC 2 A	6ES7 223-1PL30-0XB0

SM 1231 AI

AI 4x13 Bit ±10 V DC, ±5 V DC, ±2.5 V DC or 0–20 mA	6ES7 231-4HD30-0XB0
AI 8x13 Bit ±10 V DC, ±5 V DC, ±2.5 V DC or 0–20 mA	6ES7 231-4HF30-0XB0

SM 1231 RTD

AI 4xRTDx16 Bit

Types: Platinum (Pt), Copper (Cu), Nickel (Ni) or Resistance	6ES7 231-5PD30-0XB0

SM 1231 TC

AI 4xTCx16 Bit

Types: J, K, T, E, R, S, N, C, TXK/XK(L) Voltage range: ±80 mV	6ES7 231-5QD30-0XB0

SM 1232 AQ

AQ 2x14 Bit ±10 V DC or 0–20 mA	6ES7 232-4HB30-0XB0
AQ 4x14 Bit ±10 V DC or 0–20 mA	6ES7 232-4HD30-0XB0

SM 1234 AI/AQ

AI 4x13 Bit ±10 V DC, ±5 V DC, ±2.5 V DC or 0–20 mA, AQ 2x14 Bit ±10 V DC or 0–20 mA	6ES7 234-4HE30-0XB0

6ES7 954-8LB00-0AA0
6ES7 954-8LF00-0AA0

6ES7 274-1XF30-0XA0
6ES7 274-1XH30-0XA0

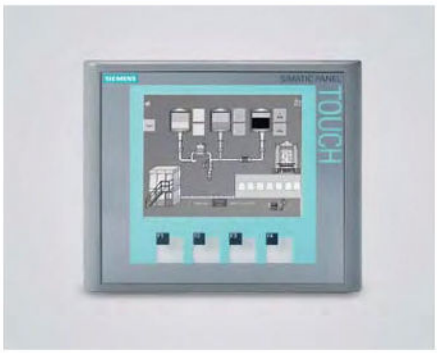
6ES7 290-6AA30-0XA0

SIMATIC S7-1200 Starter Kits

SIMATIC S7-1200 Starter Kit

CPU 1212C AC/DC/RLY,
Input Simulator,
SIMATIC STEP 7 Basic,
IE TP Cord 2 m,
Documentation Collection CD and more ...

6ES7 212-1BD30-4YB0



SIMATIC S7-1200
+ KTP400 Basic Starter Kit

CPU 1212C AC/DC/RLY,
Input Simulator,
KTP400 Basic mono PN,
SIMATIC STEP 7 Basic,
IE TP Cord 2 m,
Documentation Collection CD and more ...

6AV6 651-7AA01-3AA0

SIMATIC S7-1200
+ KTP600 Basic Starter Kit

CPU 1212C AC/DC/RLY,
Input Simulator,
KTP600 Basic color PN,
SIMATIC STEP 7 Basic,
IE TP Cord 2 m,
Documentation Collection CD and more ...

6AV6 651-7DA01-3AA0

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www.siemens.com/simatic-s7-1200

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