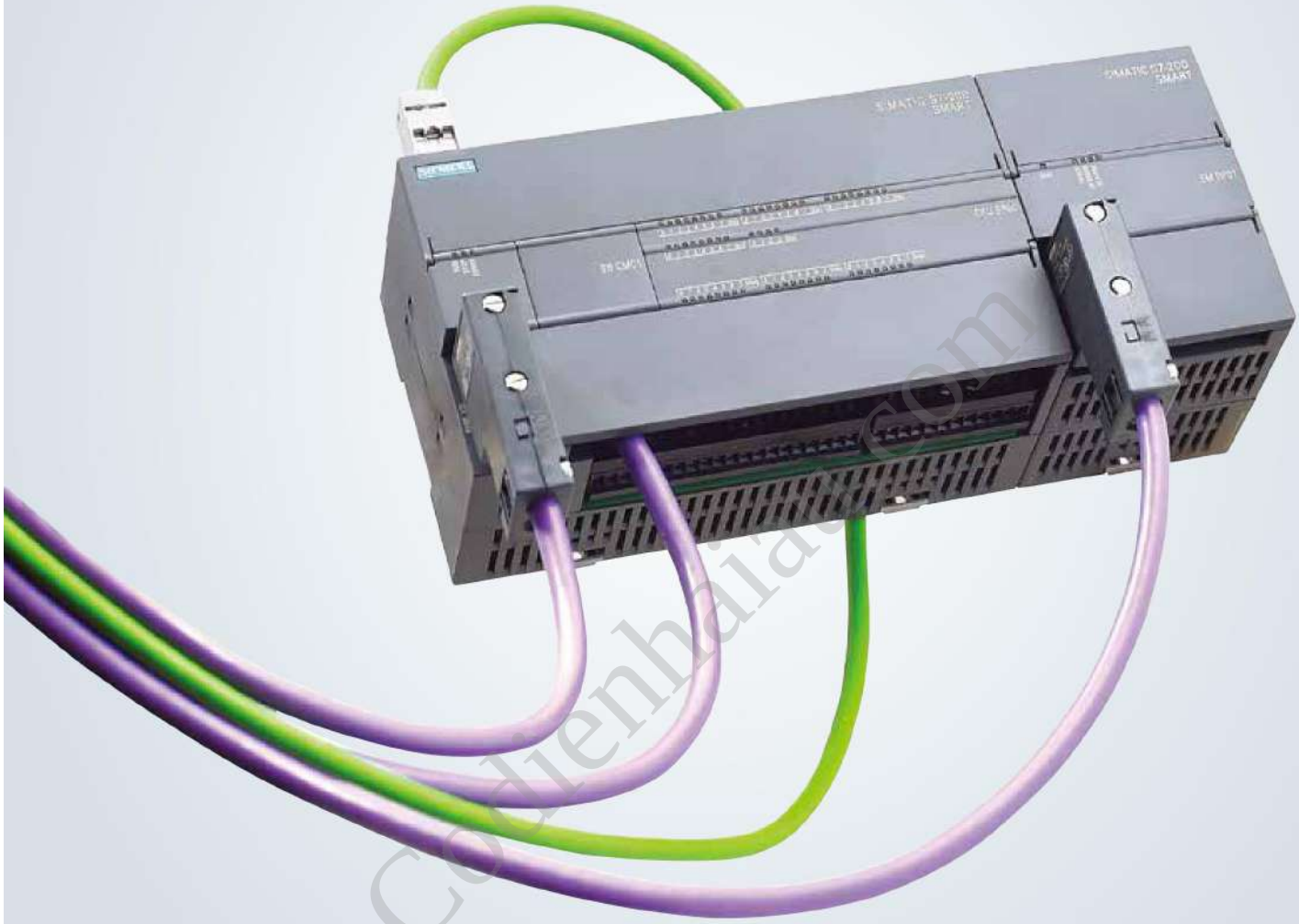
SIEMENS



SIMATIC S7-200 SMART

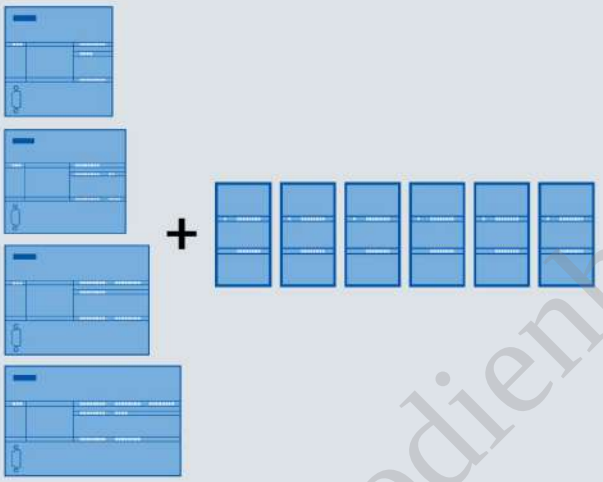
S7-200 SMART Programmable controller

www.siemens.co.in/smartplc

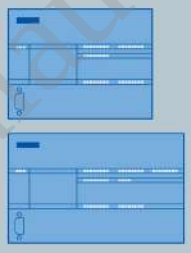
CPU module

The new S7-200 SMART has two different types of CPU modules, i.e. standard type and compact type. Standard type CPU is expandable with I/O expansion modules and signal boards. Compact type CPUs are non expandable with I/O expansion modules and signal boards.

Standard type CPU module
CPU SR20/SR30/SR40/SR60
CPU ST20/ST30/ST40/ST60



Compact type
CPU module
CPU CR40/CR60



Ethernet interface
I/O expansion module
RS485 serial port
Signal board expansion
Supporting Micro SD card
Real-time clock [1]
High speed counters
High speed pulse output[2]

[1] Only supports the standard type CPU module

[2] Only supports the standard type transistor output;

Type	CR40	CR60	SR20	SR30	SR40	SR60	ST20	ST30	ST40	ST60
High speed counter	4 at 100 kHz for single phase		4 at 200 kHz for single phase							
High speed pulse output	—						2 at 100 kHz	3 at 100 kHz		
Number of communication ports	2		2 ~ 3							
Number of Expansion modules	—		6							
Maximum I/O handling capacity [3]	40	60	212	222	232	252	212	222	232	252
Maximum analogue I/O[3]	—		36							

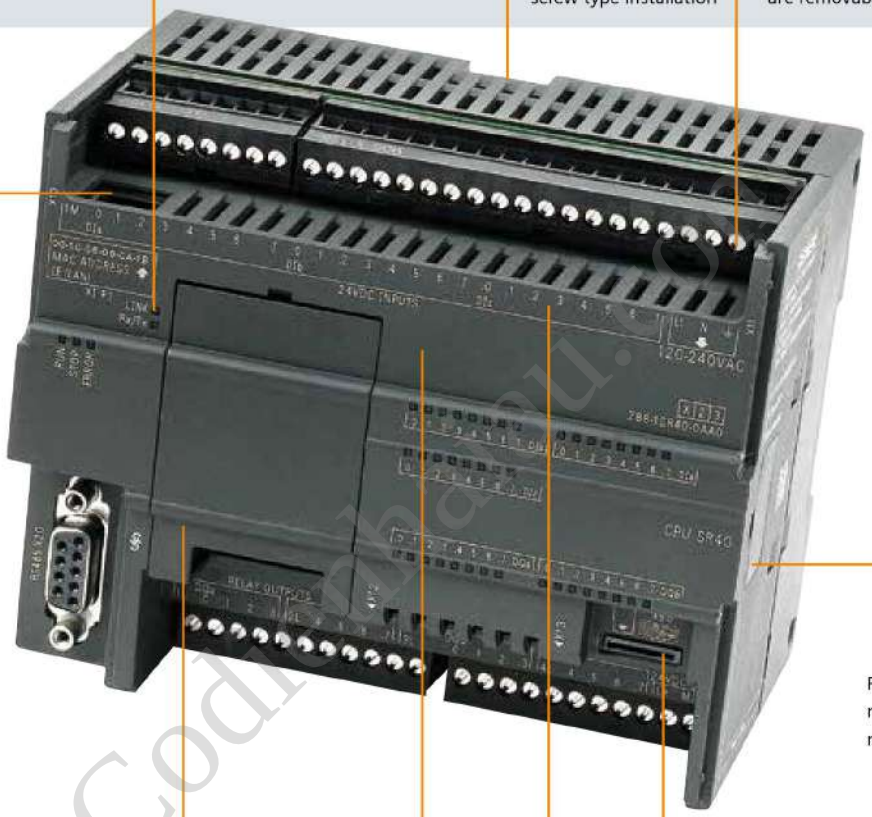
[3] The maximum I/O handling capacity is considering I/O expansion with Signal boards.

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

Convenient installation, support rail type and screw type installation

The input and output terminals of all modules are removable.

Integrated Ethernet port that makes the downloading and networking equipment more convenient;



Pin plug connection, module can be connected more closely

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

Generic Micro SD card supports program downloading and PLC firmware updating

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

It is equipped with super capacitor, when the power is down, it still can guarantee the normal work of the clock

Signal board

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

Basic information of the signal board

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

Signal board configuration

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

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

Installation steps


Remove the cover board of terminal


Remove the cover board with Screw driver


No fastening screw is required, gently insert it;


The installation is complete

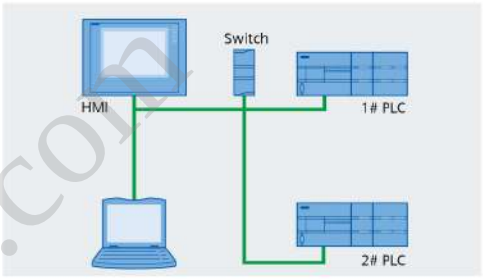
Network communication

All S7-200 SMART CPUs offer 1x Ethernet interface and the 1x RS485 interface onboard. Using Signal board CM01, one can add additional RS485/232 interface.

Ethernet communication

All the CPU modules are equipped with Ethernet interface, which supports Siemens S7 protocol, can support many terminal connections:

- Can be used as the programs downloading port (via general network cable)
- Communicate with Simatic Key/touch HMI with Profinet/Ethernet interface, maximally support 8 sets of equipment
- Communicate with multiple Ethernet equipment through the switch to achieve fast data communication.
- Supports up to 8 active GET/PUT connections and 8 passive GET/PUT connections.



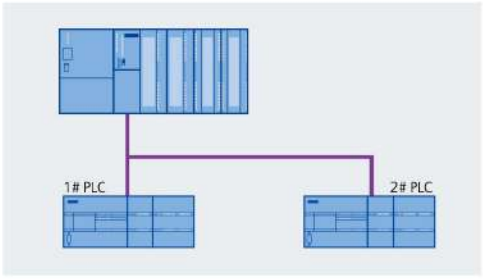
PROFIBUS

With EM DP01 expansion module S7 200 SMART CPU can be used in Profibus DP slave network. Slave ID of the CPU can be selected from the rotary switch on the EM DP01 module. The module supports any PROFIBUS baud rate between 9600 baud to 12M baud, the maximum allowable input 244

Bytes and 244 output bytes.

It supports the following protocols:

- MPI Slave
- PROFIBUS-DP slave

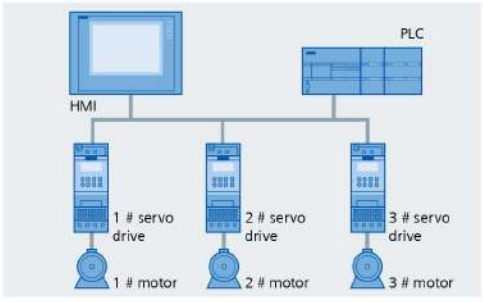


Serial communication

On board RS485 port as well as additional RS232/485 port using CM01 can communicate with the inverter and touch screen and so on third party equipments. Signal board offers configurable RS232/RS485 port, maximally supports for up to 4 devices.

Serial port supports the following protocols:

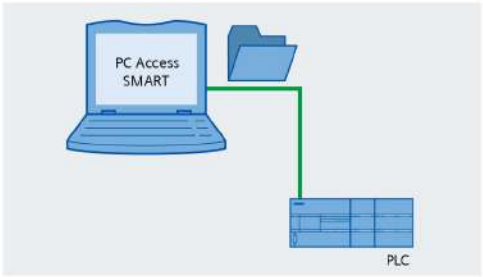
- Modbus RTU
- PPI
- USS
- Free port communication (for interconnection with Bar code scanners, weighing scales, serial printers etc.)



OPC Communication (PC Access SMART)*

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

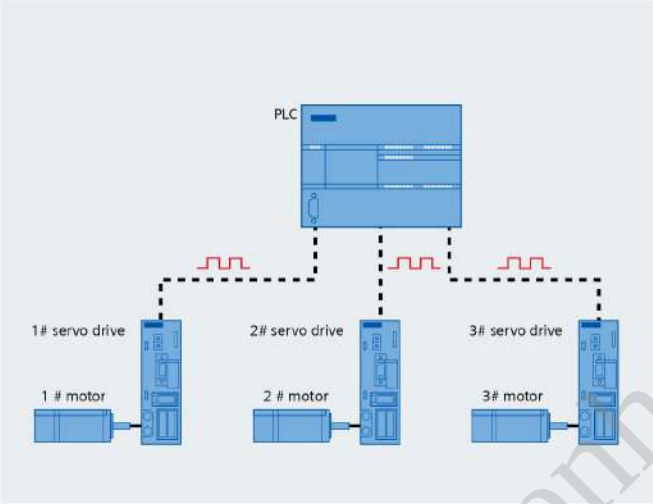
(PC Access SMART is an OPC server protocol specifically developed for S7-200 SMART series PLC, an OPC software dedicatedly developed for interaction between the S7-200 SMART PLC and host computer)



*) please consult the Siemens offices and authorized distributors for the specific information.

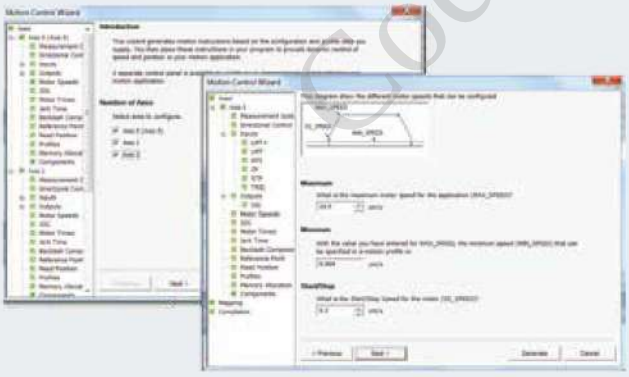
Motion control

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



Basic functions of motion control

- Standard type transistor output module CPU, ST30/ST40/ST60 provides three 100 kHz high speed pulse output (ST20 provides two 100 kHz), supports PWM (pulse width modulation) and PTO (pulse train output).
- In PWM mode, the cycle of the output pulse is fixed, the pulse width and duty cycle are adjusted by the program, which can adjust the speed of the motor, the opening of valves etc.
- In PTO mode (motion control), the output pulse can be configured as multiple modes of operation, including automatically finding the original point, for realising the control of the stepper motor or servo motor, achieving the purpose of speed adjustment and positioning;
- The Q0.0, Q0.1 and Q0.3 on the CPU body can be configured as the PWM output or high speed pulse output, the above functions can be set up via the Wizard;



PWM and motion control wizard settings

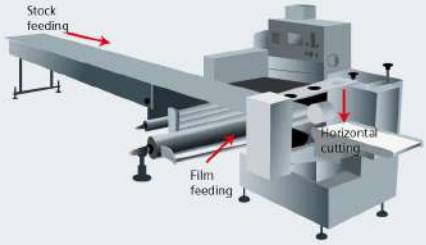
In order to simplify the control functions in your application, the position control wizard provided by the STEP 7- Micro/WIN SMART can help you complete the PWM and the PTO configuration in a few minutes. The wizard can generate the position instructions, you can dynamically control the speed and position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

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

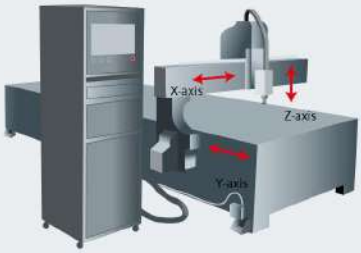
Motion control wizards can maximally provide the settings for three pulse outputs, the pulse output speed is adjustable from 20 Hz to 100 kHz.

Typical applications

Labelling machine



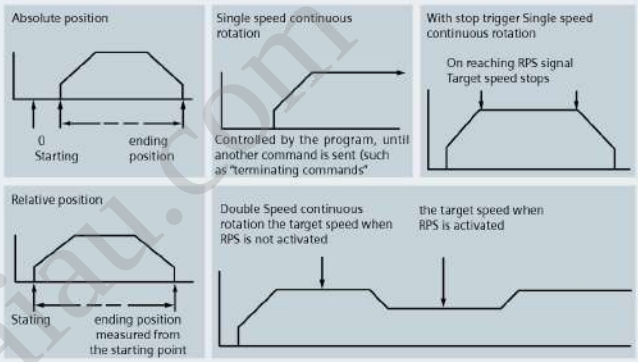
Pillow-type packaging machine



Woodworking machinery

Motion control features

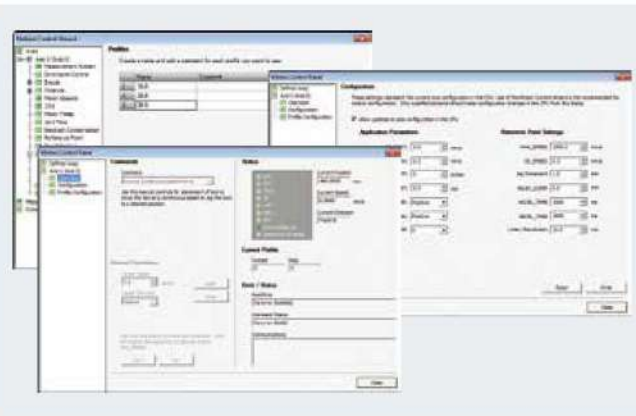
- It provides configurable measurement system, it can use the engineering units (such as inches or centimetres) when inputting the data, and can also use the pulse number.
- it provides configurable backlash compensation;
- it supports the absolute, relative and manual control modes;
- it supports the continuous operation;
- it provides up to 32 groups of motion envelope, each envelope can set maximally 16 levels of speed;
- it provides 4 different reference point searching modes, each mode can select the initial direction search and the final approach direction.



Monitoring of motion control

In order to help users develop motion control scheme, STEP 7- Micro/WIN SMART provides the motion control panel. The operation, configuration and envelope configuration settings let the users easily monitor, on the motion control function operation, the start and test phases in the development process.

- The use of the motion control panel can verify whether the motion control wiring is correct or not, you can adjust the configuration data and test each mobile envelope;
- Display the current speed, current position and direction of the bit control, as well as the input and output of LED (except pulse LED) status;
- View to modify the configuration settings of the bit control operation stored in the CPU module



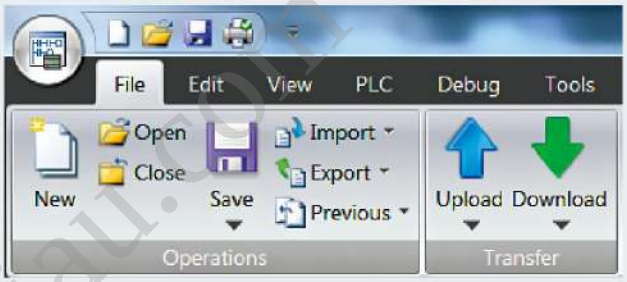
User-friendly software improves programming efficiency

STEP 7- Micro/WIN SMART is the programming software of the S7-200 SMART, it can run smoothly on the Windows XP SP3/Windows 7 Operating System. It supports LAD (ladder diagram), STL (Statement List), FBD (function block diagram) programming languages, freely converting between parts of language, the installation file is less than 100 MB. While inheriting the excellent programming idea of the STEP 7- Micro/WIN, the more user-friendly design makes programming easier and project development more efficient.

New menu design

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

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



Fully movable window design

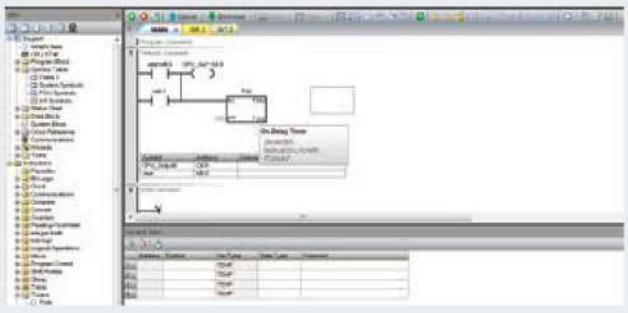
All windows in the software interface can move freely, and provide eight kinds of drag and drop methods.

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

The definitions of variables and program notes

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

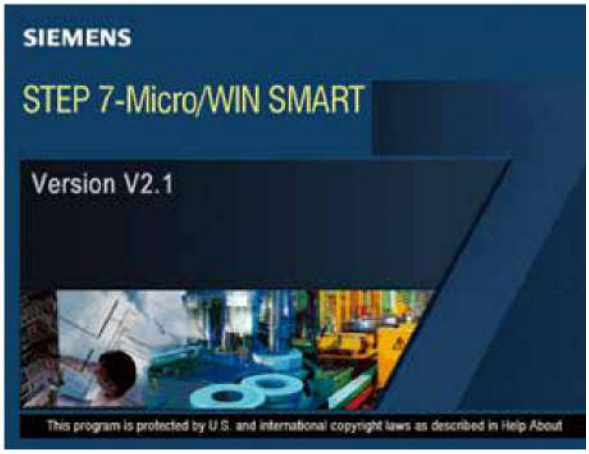
Micro/WIN SMART provides a perfect function for annotation, can add annotations to program block, programming network and variables, with its readability greatly improved. When the mouse is moved to the instruction block, data types supported by each pin are automatically displayed.



STEP 7-Micro/WIN SMART Software features:

1. New menu design
2. Fully movable window design
3. Variable definitions and notes
4. Novel wizard setting
5. Status monitoring
6. Convenient command Library
7. Powerful password protection functions .....

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

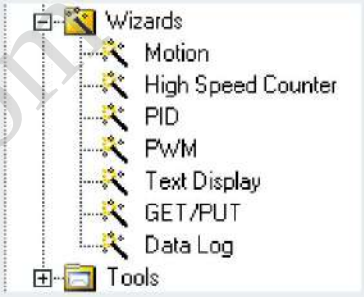


Setup wizard

Micro/WIN SMART integrates simple and quick wizard settings; you can just follow the wizard prompts to set up the parameters for each step of the complex function setting. The new guidance function allows the user to directly set up a step function, and without the need to reset every step, to modify the wizard settings.

The wizard setting supports the following functions:

- HSC (high speed counter)
- Motion control
- PID
- PWM (Pulse width Modulation)
- Text display

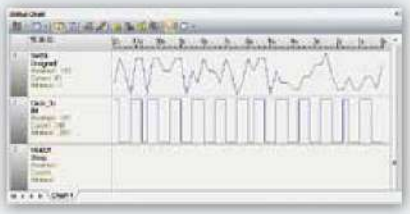


Status monitoring

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

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

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

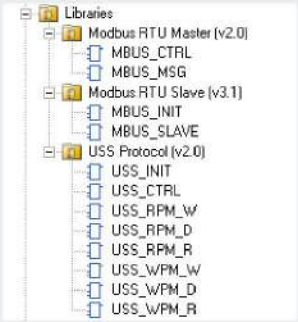


Convenient command Library

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

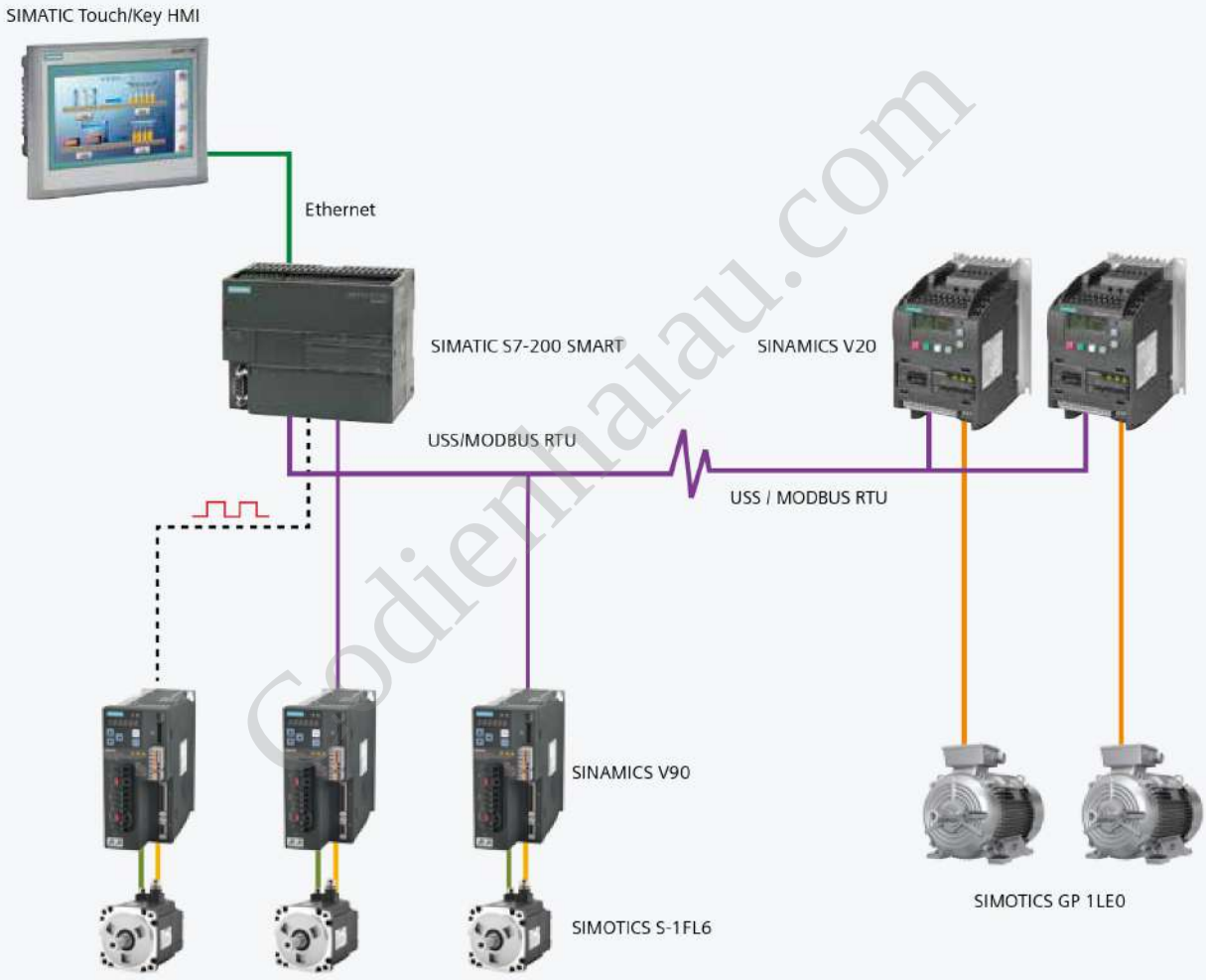
Micro/WIN SMART provides the command library functions, converting the subroutine into a block of instructions, as a common block of instructions, which will be directly dragged and dropped into the programming interface to complete the call. The command library function provides password protection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

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



SMART micro automation solutions

The perfect combination of Siemens SIMATIC micro-automation products and SINAMICS drive products has created new micro automation solutions that are economical, reliable and easy to use. SIMATIC S7-200 SMART PLC, SIMATIC BASIC LINE touch/ Key HMI, SINAMICS V20 inverter and SINAMICS V90 servo system, that are of high performance-to-price ratio helps users to improve the performance of machinery and equipment, reduce the development cost, significantly shorten the launching time of the machine and equipment, and effectively improve the market competitiveness of the user.



Recommendations for the use of S7-200 SMART:

- While programming and debugging, it is suggested to, using 1 set of ordinary switchboard, to connect the related equipment (including PLC, touch screen, computer) to the switch. After downloading the PLC or touch screen programs, they can be directly tested on the touch screen through touch. When testing the PLC working state, there is no need to use a cable to connect the PLC and touch screen.
- Through the use of Micro SD card the fast and batch downloading of the PLC program can be realized. The well-prepared source card can be delivered to the end user by courier, or, in the scenario of urgent demand, the source file stored in the card can be sent via Email directly to the user at the site, the source file will be copied to the SD card and can be used after receiving.

Common SD card – Fast Update!!

The S7-200 SMART CPUs support the use of a microSDHC card for:

- User program transfer.
- Reset CPU to factory default condition.
- Firmware update of the CPU and attached expansion modules as supported

You can use any standard, commercial microSDHC card with a capacity in the range 4GB to 16GB.For detailed information about the software, consult the S7-200 SMART System Manual.

Program Transfer

A memory card can be used to transfer user program content into the CPU's permanent memory, completely or partially replacing content already in the load memory.

For duplication of program from one CPU to other CPUs, you need not require software. Time & cost saving is also achieved.

Firmware upgrade

A memory card can be used to update the firmware in a CPU and any connected expansion modules.

No return to the factory for FW upgrade, it can be done with SD card.

Restore factory settings

A memory card can be used to erase all retained data, putting the CPU back into a factory default condition.