Programming Support Tool
### Programming Support Tool SX-Programmer Expert (D300win): NP4H-SEDBV3

■ Features

• Complete conformity to IEC 61131-3 International Standard

D300win supports five types of program representations completely conforming to the IEC 61131-3 International Standard. It allows the programmer to code the combination of program representations best suited for the control target.

• Supported representations
- IL (Instruction List)
- LD (Ladder Diagram)
- FBD (Function Block Diagram)
- ST (Structured Text)
- SFC (Sequential Function Chart)
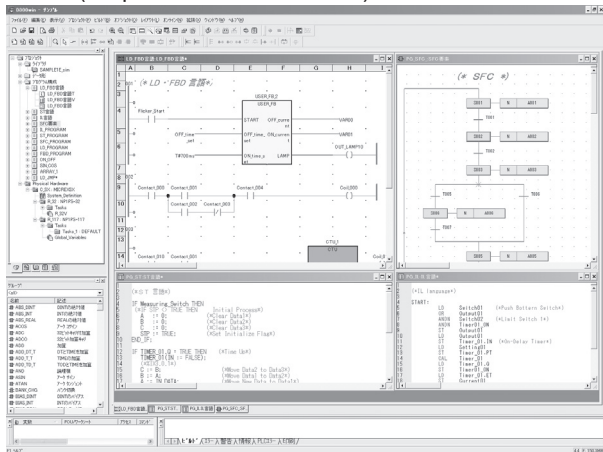

• Structured programming

Programming in units of POU or worksheets allows the use of the structured design method by which a program is created by dividing it by functionality or process. This method enables multiple designers to divide the program design among them so that substantial reduction in the program creation time can be achieved.
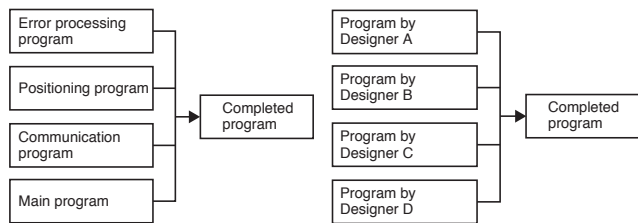
• Ladder programming using key operations (grid fixed method)

Ladder programming can be performed using familiar key operations:
· Standard display mode (variable only)
· Extended display mode (variable + AT specification address)
· All display mode (variable name + AT specification address + variable comment)
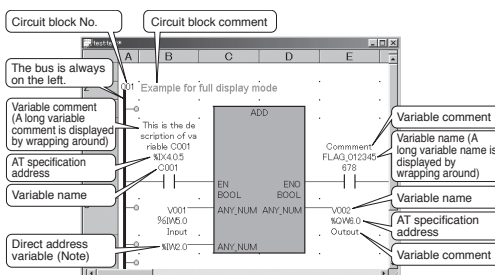
Note: If a direct address variable (= no variable name) is used, no variable comment is displayed, even if it is registered.

#### • Free description of programs and comments (Free editing style)

Programs can be described in any location on a worksheet to facilitate understanding of the processing relationships such as in linkage between the interlock condition and the sequence processing section/computing section, allowing efficient programming.

In addition, when a comment is described on a worksheet, the programmer can put a local comment for each circuit block as well as a comment in units of contacts, coils, or circuits, greatly contributing to ease of reading and understanding.
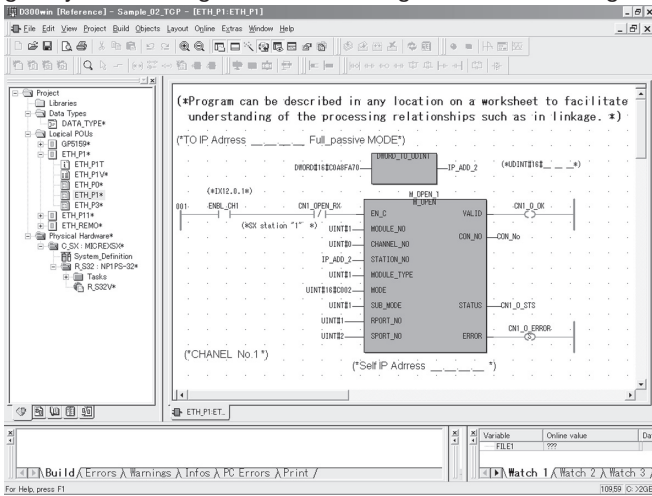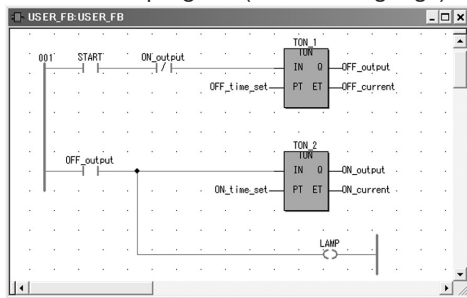

• Programming with variables (labels)

Differing from conventional programming, the Expert (D300win) Programming Support Tool uses label programming (addresses are automatically assigned) in which the address section is described like conventional comments, enabling program coding without being conscious of memory addressing. After the programming, any changes in address assignment can be accommodated by merely changing the corresponding label definition to update the program.
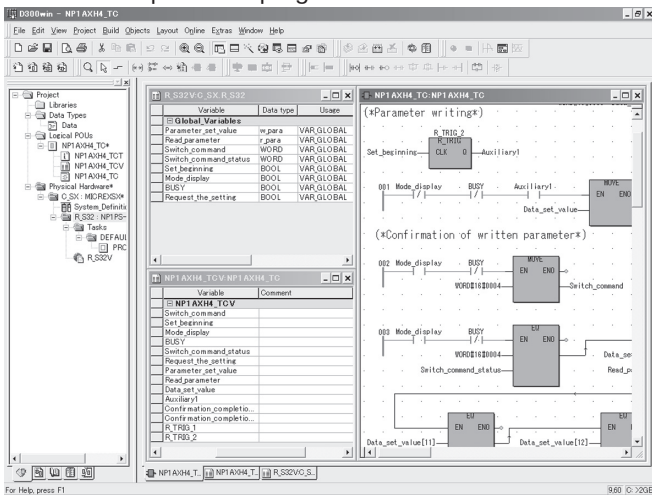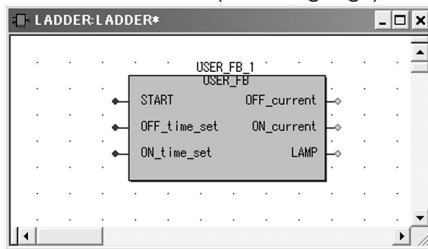
• Integrates user-original circuits into an FB

Frequently used routine programs or circuits can be integrated into an FB so that the programmer can easily reuse them. For FB generation, the user can select a language compatible with IEC 61131-3 supported by Expert (D300win) instead of a special language. If the programs or circuits are stored in library form, the target function can be effectively used without being conscious of debugging.
This is also effective for circuit standardization or structuring if a single control block is integrated into an FB.

• FB internal program (LD/FBD language)

• When FB is used (FBD language)

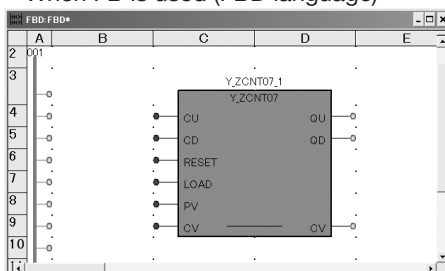• FB internal program (ST language)


• When FB is used (FBD language)


• Simulation function

This tool enables program logic test using the software PLC function for simulation built in Expert (D300win), without using the actual unit.
It performs operating simulation of a program written with a programming language conforming to IEC 61131-3. It enables forced ON/OFF and monitoring of any signal, exhibits its power in remarkable improvement of the programming and debugging efficiency for the SX series.
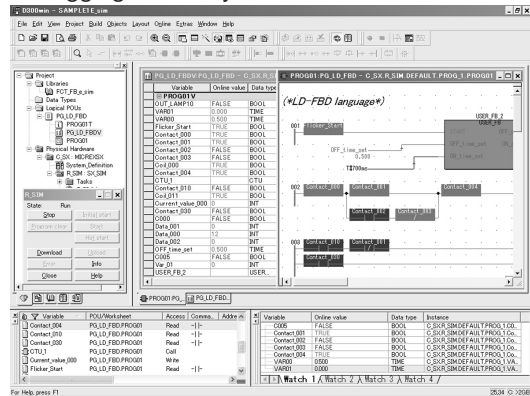
• Error & jump check function

The tool performs program syntax check at the time of program compilation to detect syntax errors. It is possible to jump to an error position by double-clicking an error detection section. This function, together with the cross-reference function and data watch window function, exhibits its power in program correction and testing.
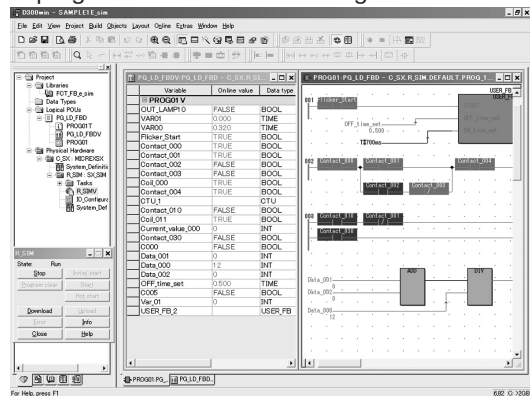
• Sampling trace

Sampling trace function saves variable (memory) data change during PLC is in RUN. It is possible to show sampling data on sampling trace window as graph. Sampling data is automatically saved with project file. This saved sampling data can be exported as csv file (ASCII data).
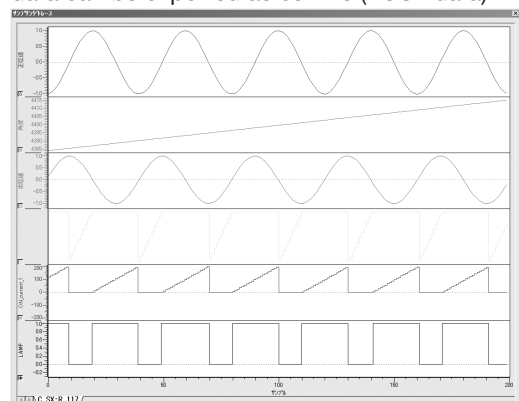
• Documentation function

The documentation preparation function has been substantially improved. Not only can it print drawing numbers, dates, page, and drawing borders, but also company logos and comments.

It also augments the print preview function, which allows the user to verify the print state on the screen before beginning printing, and the scaled printing function which eliminates the need to select the paper size.

• Layout function

The layout function allows the user to print a program list in a free, user-original format. The created layout can be stored as a layout library, which can be used when necessary.

Frame creation: Program list can be printed with frames. The frames can be freely designed facilitating reproduction of a conventionally used drawing sheet.

Company logo: Company logo can be attached to a document. It is created as BMP data and pasted to the frames.

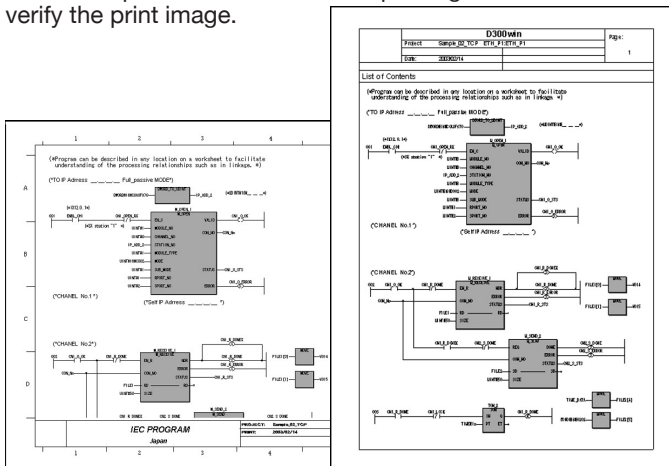Drawing number: Drawing number can be placed in a specified position within the frame.

Page: Page number can be placed in a specified position within the frame.

Comment: Comments can be placed in a specified position within the frame.
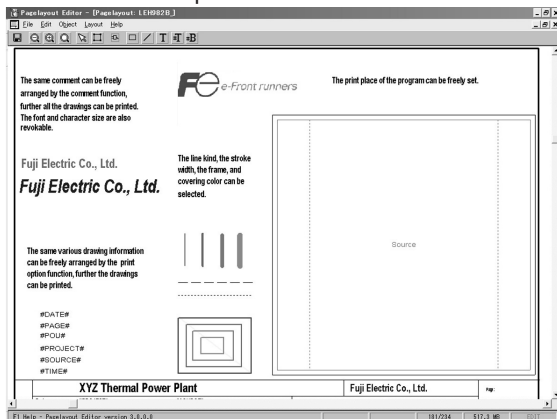
• Preview function

Use of the preview function before printing allows the user to verify the print image.

• Scaled printing

Documents can be printed in enlarged or reduced size. The paper size can be freely selected according to the purpose. The number of programs printed on a single sheet can be freely adjusted to provide united documentation.

• Function module support

The function module support (built-in each extended FB software package) has been realized as a common support tool. Thus, a dedicated loader is not required.

• Sharing program definitions including variable names

Labels and files defined/created with the Expert (D300win) programming support tool can be used as is from the function module support tool. This allows not only reducing the programming workload, but also unifying management of programs.

• Sharing the support tool connection port

The function module support tool can be used even when the IEC programming support tool remains connected to the CPU module. The support function can be used only by starting the function module support tool, thus, it is not necessary to change the connection by replacing the CPU module with the function module. Parameter transmission between the CPU module and the function module is carried out by the extended FB.

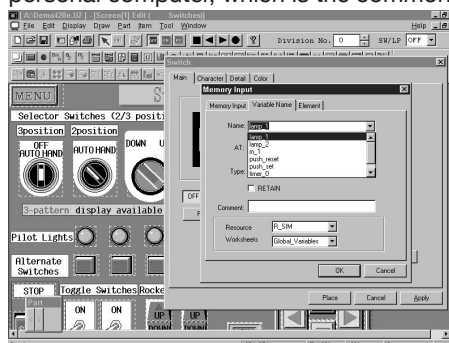CPU support tool connecting slot

Function module
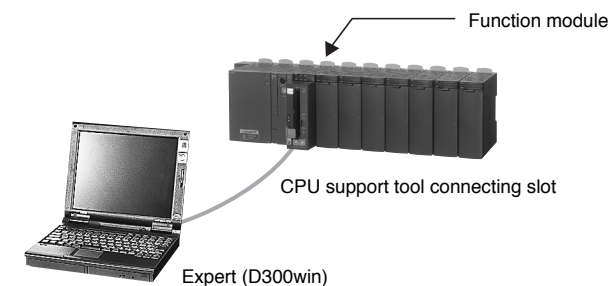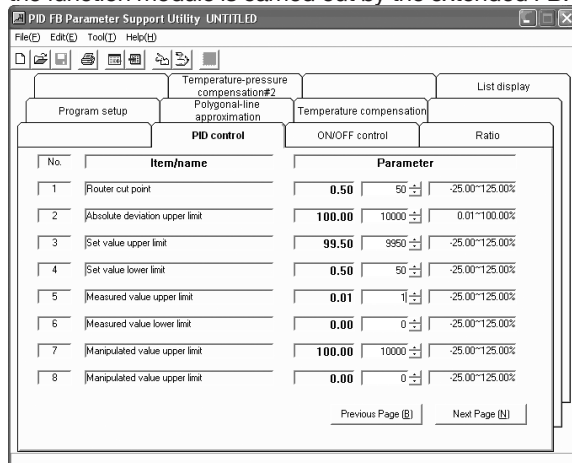
Expert (D300win)

• POD cooperated support

Screen creation for the Programmable Operation Display (POD) can be performed using variable names set with Expert (D300win).

• POD screen creation software

POD screen creation software and Expert (D300win) run on a personal computer, which is the common platform.

• Multi-user support

A development environment that allows multiple users to simultaneously access a source project and has a mechanism for exclusive access control is offered. Exclusive control of projects is automatically performed by support tool operations.

- Management, registration, and creation of client projects with respect to a server project
- Check-in/check-out in units of POU

• USB interface

The connection method using the full-speed USB (Universal Serial Bus) 1.1 has been added as a loader connection method.
Communication with the SPH300 (**NP1PS- □□R**), SPH300EX and SPH2000 or SPH3000 can be performed at high speed using a commercial USB cable.

• Data access to the user ROM

Projects can be downloaded from/uploaded to the user ROM card (compact flash card) supplied with SPH300 (**NP1PS- □□R**), SPH300EX , SPH2000 or SPH3000. Also, data can be written into/read from the user ROM card.

• Password function

By setting an access authentication password for on-line functions, operation of the PLC can be limited to three levels, i.e., level 1, level 2, and level 3.

■ Operating environment

Item		Specification
Hardware		IBM-PC/AT compatible
CPU		Intel Pentium 400MHz or higher (800MHz or higher recommended)
Hard disk		Free space of 140M bytes or more / Expert (D300win) system software: 100MB or more / Standard extension FB software package: 40MB or more
CD-ROM unit		1 unit (x 4 speed or faster), media: ISO 9660 format
Memory capacity		64M bytes or more (256M bytes or more recommended)
Keyboard		101 keyboard
Mouse		USB mouse, bus mouse, or PS2 mouse
Indicator		800 x 600-dots resolution or higher (1024 x 768-dots resolution or higher recommended)
Communication interface	RS-232C	9600bps-57600kbps (default setup according to resource model selection)
	Ethernet	Possible
	ISDN	Possible (analog port is used)
	USB	Possible with V1.1 (Target CPU: **NP1PS- □□R**, SPH300EX and SPH2000 or SPH3000)
	P/PE-link	Possible
	SX bus	Possible
	FL-net	Possible
OS		Windows2000/XP/Vista
Portability		Depends on commercial mobile personal computer.
Environmental durability		Depends on environmental conditions of commercial personal computer.

■ System configuration

SPH2000/SPH3000

Ethernet crossover cable (commercialized product)

USB/USB-miniB cable (commercialized product)

Personal computer

USB/USB-B cable (commercialized product)

SPH300 (R type)/ SPH300EX/SPH3000

SPH200/SPH300/ SPH300EX/SPH2000 /SPH3000

RS-232C

Support tool connection cable: **NP4H-CB2**
+
RS-232C/RS-422 signal converter: **NW0H-CNV**

Expert

USB/RS-232C Signal converter cable (commercialized product)

When PC does not have a RS-232C port: