YOKOGAWA

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vigilance™

PT. Yokogawa Indonesia
Wisma Aldiron Dirgantara 2nd floor, suite 202-209
Jl. Jend. Gatot Subroto Kav.72 Jakarta 12780
Phone : 021-799 0102, Fax : 021-799 0070

Engineering Course

CENTUM VP

Common Item Definition

Engineering Environment

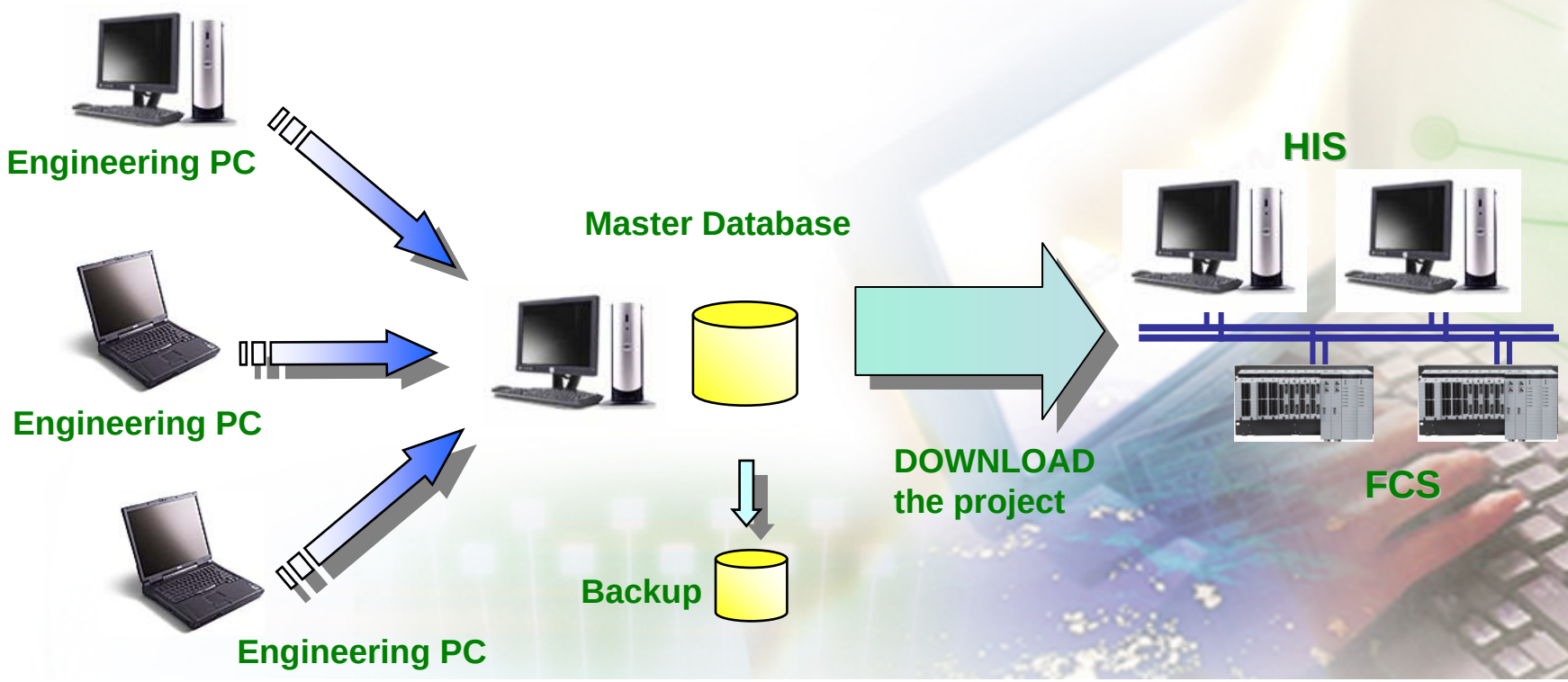
ENGINEERING ENVIRONMENT

CENTUM VP

- There are potentially the following two types of engineering environments:
  - Engineering on the target system.
  - Engineering on other than the target system.
- Platform: **Generic PC**
- Concurrent Engineering
  - Uses multiple machines for parallel engineering
- It is able to exchange data with general Windows applications
- Virtual Test Functions
  - Multiple-FCS simulation is possible on a PC
  - FCSs can communicate with each other

CONCURRENT ENGINEERING

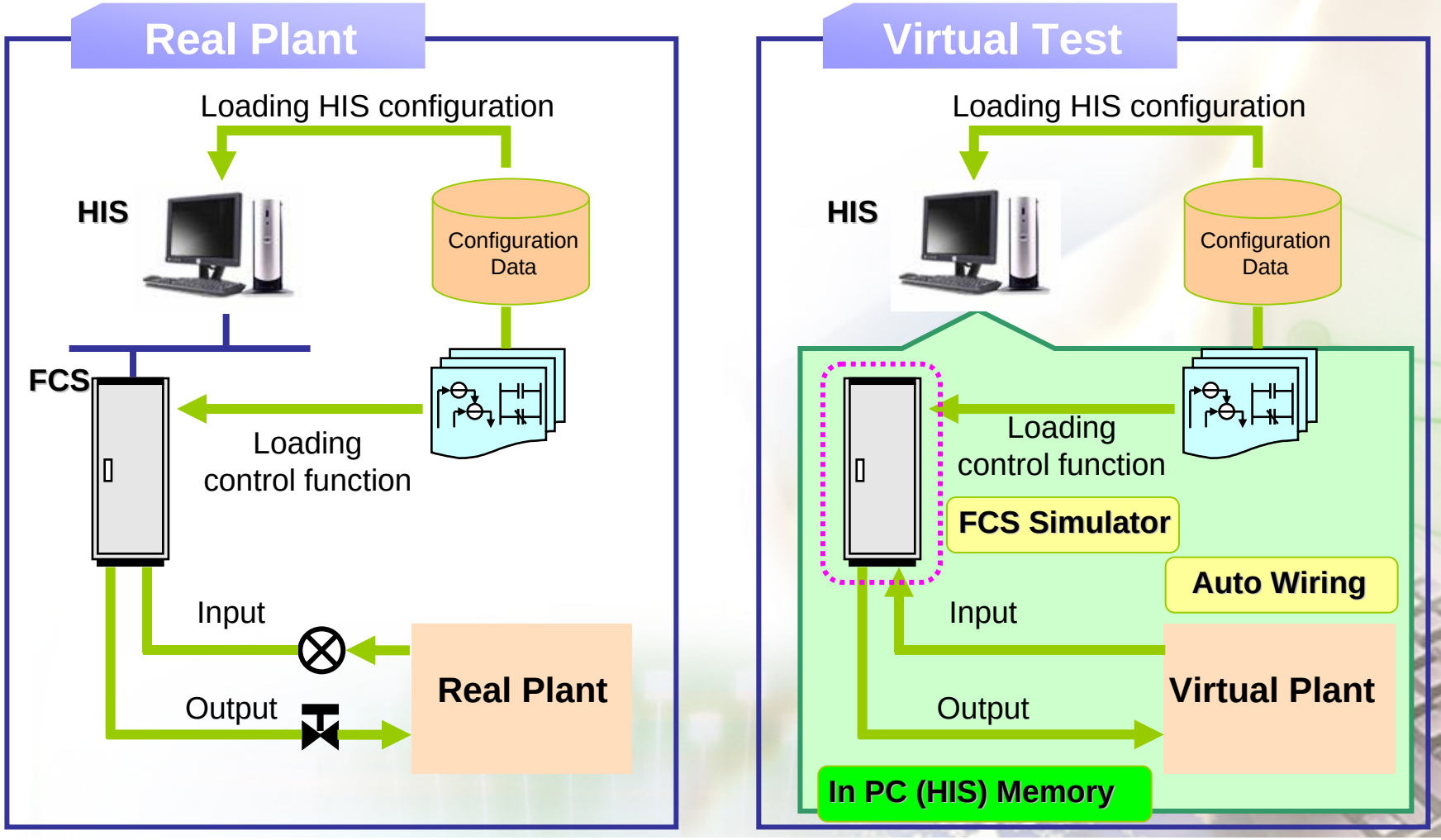
- Engineering can be done by multiple PCs simultaneously
- Contributes to reducing engineering time



VIRTUAL TEST FUNCTION

CENTUM VP

Full-scale system test can be performed without target hardware.



CPU usage and FCS internal status are displayed.

Target Test Function

These use actual HIS and FCS for the test.

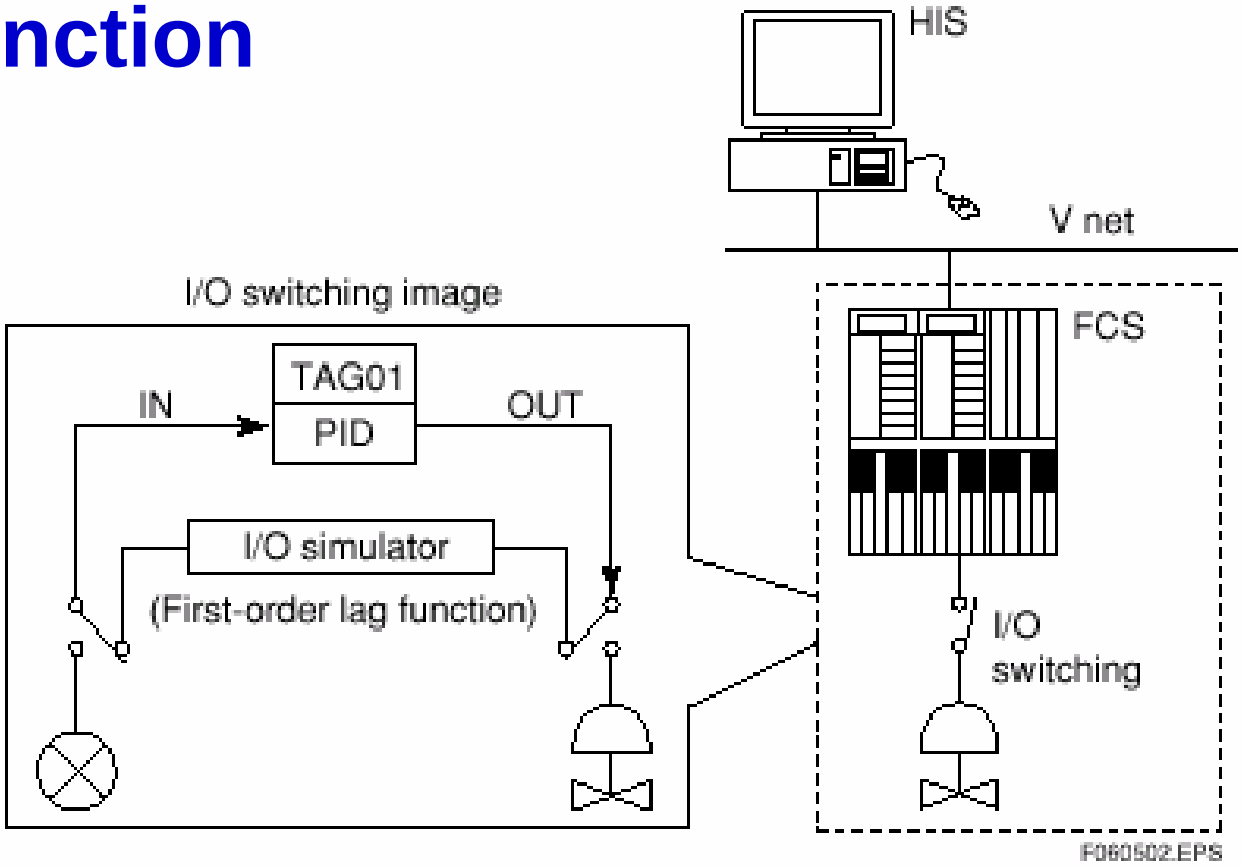
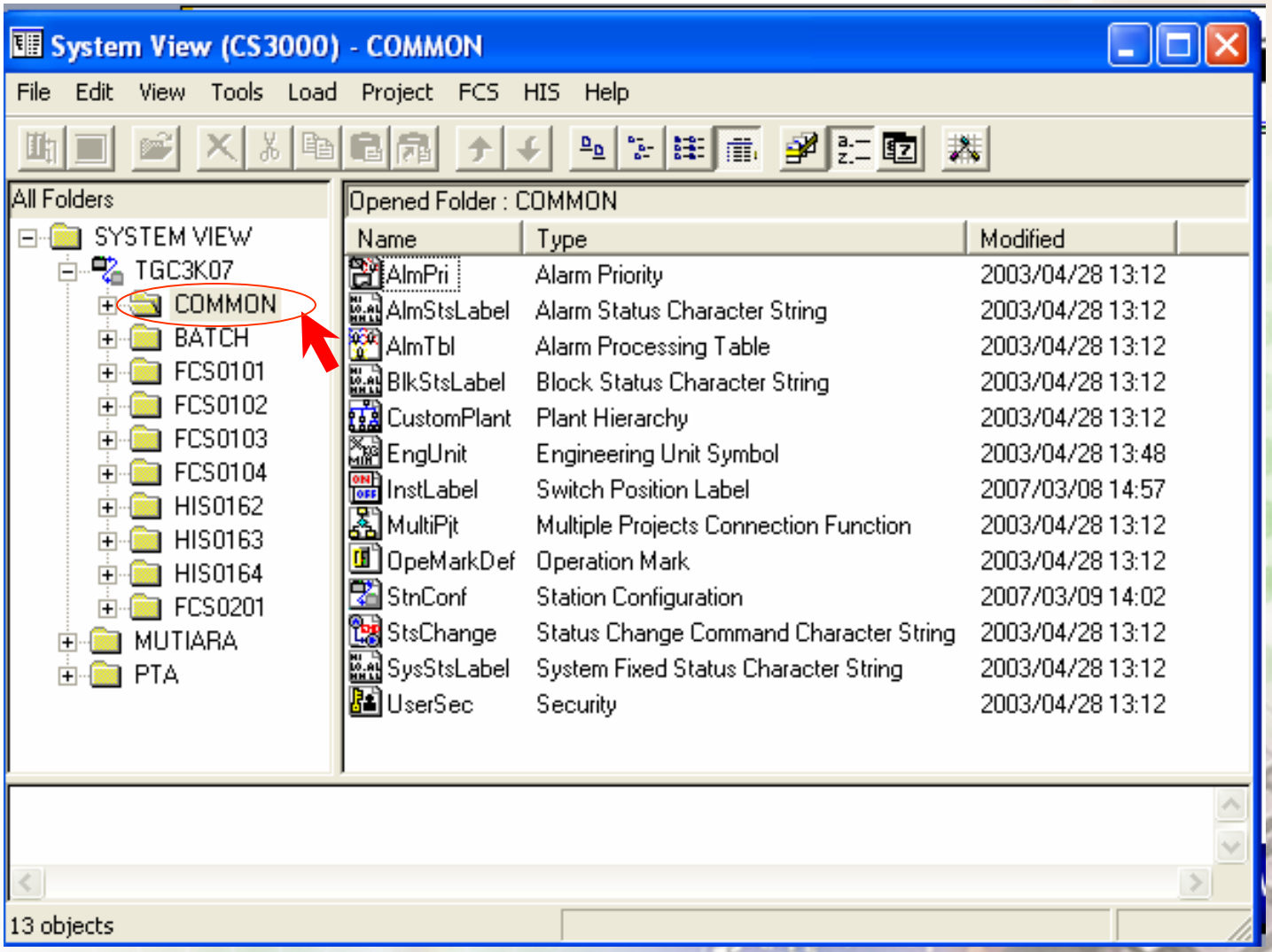


Figure Target Test Functions (I/O Switching)

PROJECT COMMON ITEM

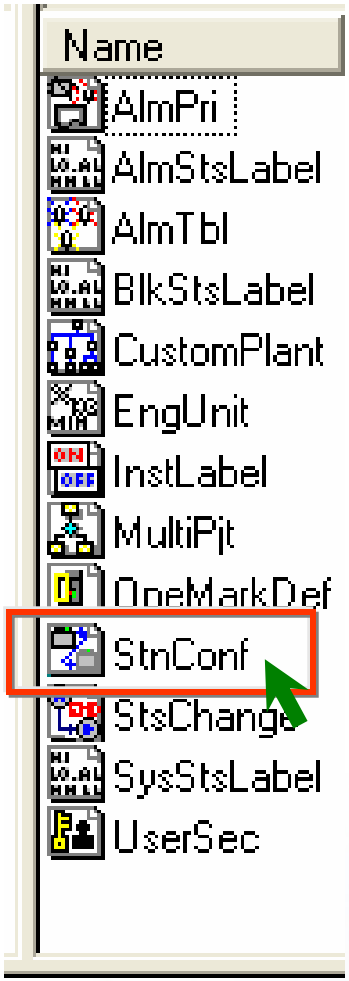
Click folder [Common]

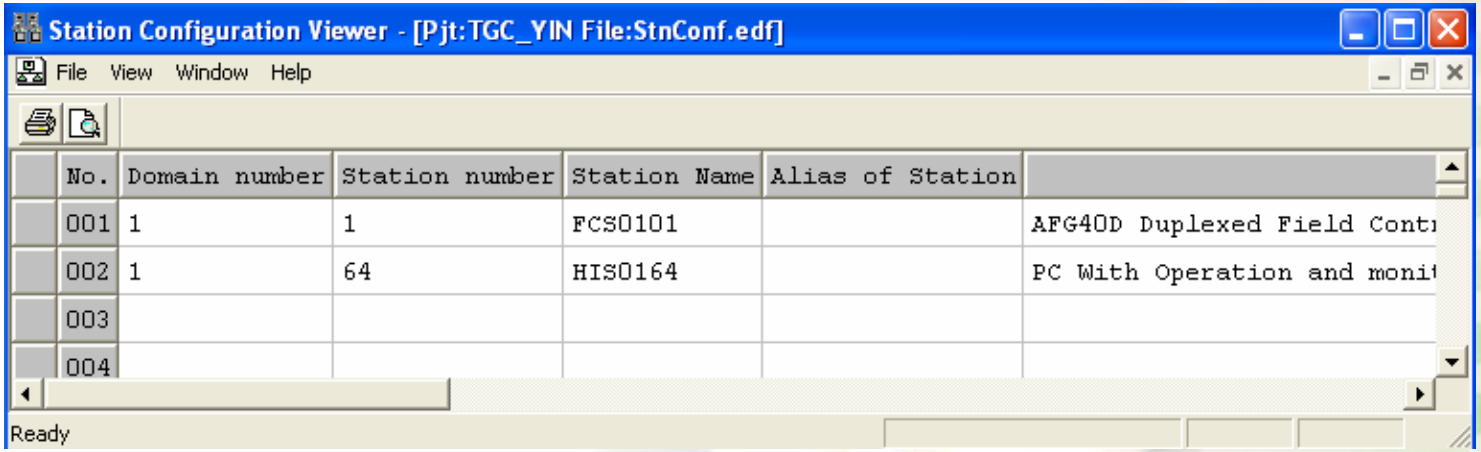
to open the Common item

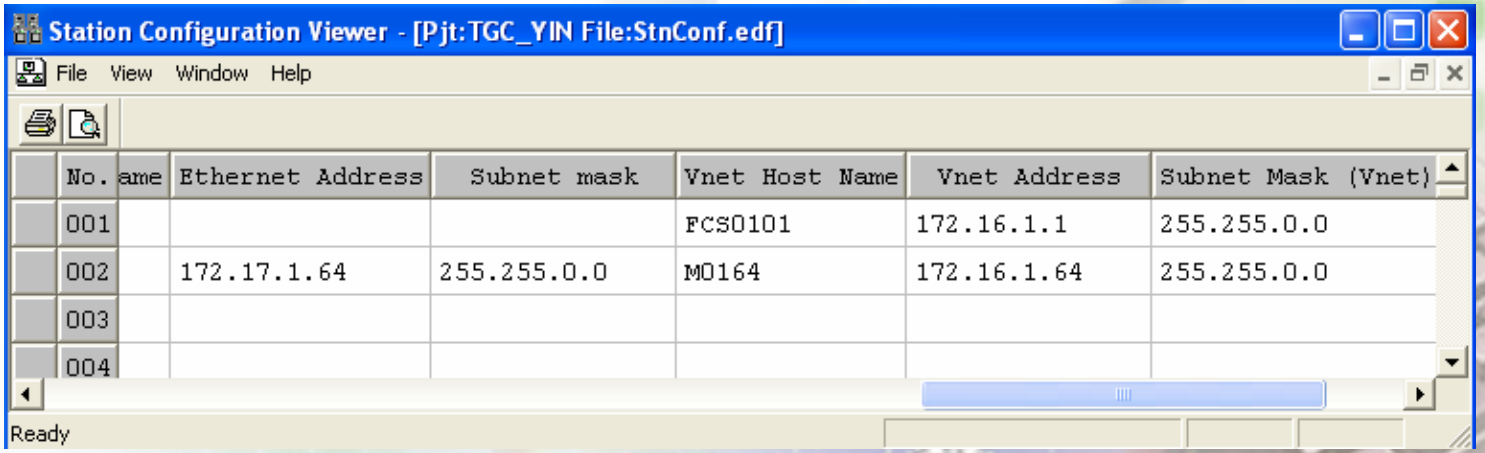


STATION CONFIGURATION VIEWER

The Station Configuration Viewer **displays the overview** of the station configured for the project and a printout can be generated. However, modification to the configuration is **not allowed** in this viewer.



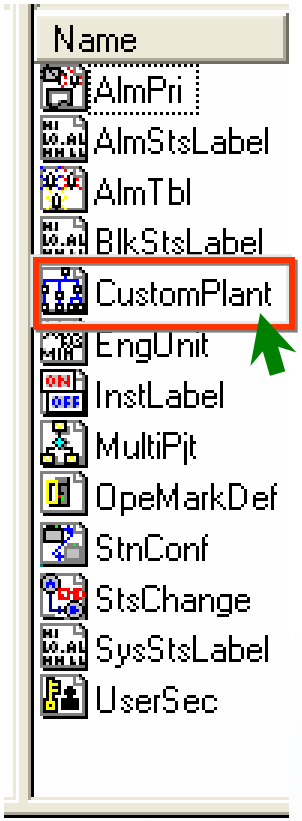




Custom Plant (Plant Hierarchy)

A plant hierarchy refers to the various equipment used to operate the plant such as, factories, departments, lines, unit instruments, and devices that are organized into layered architectures according to the ISA S88.01 physical model.

The plant hierarchy of the CS 1000/CS 3000 consists of five levels that are assigned features, such as project, station, control drawing, unit, and device, respectively.



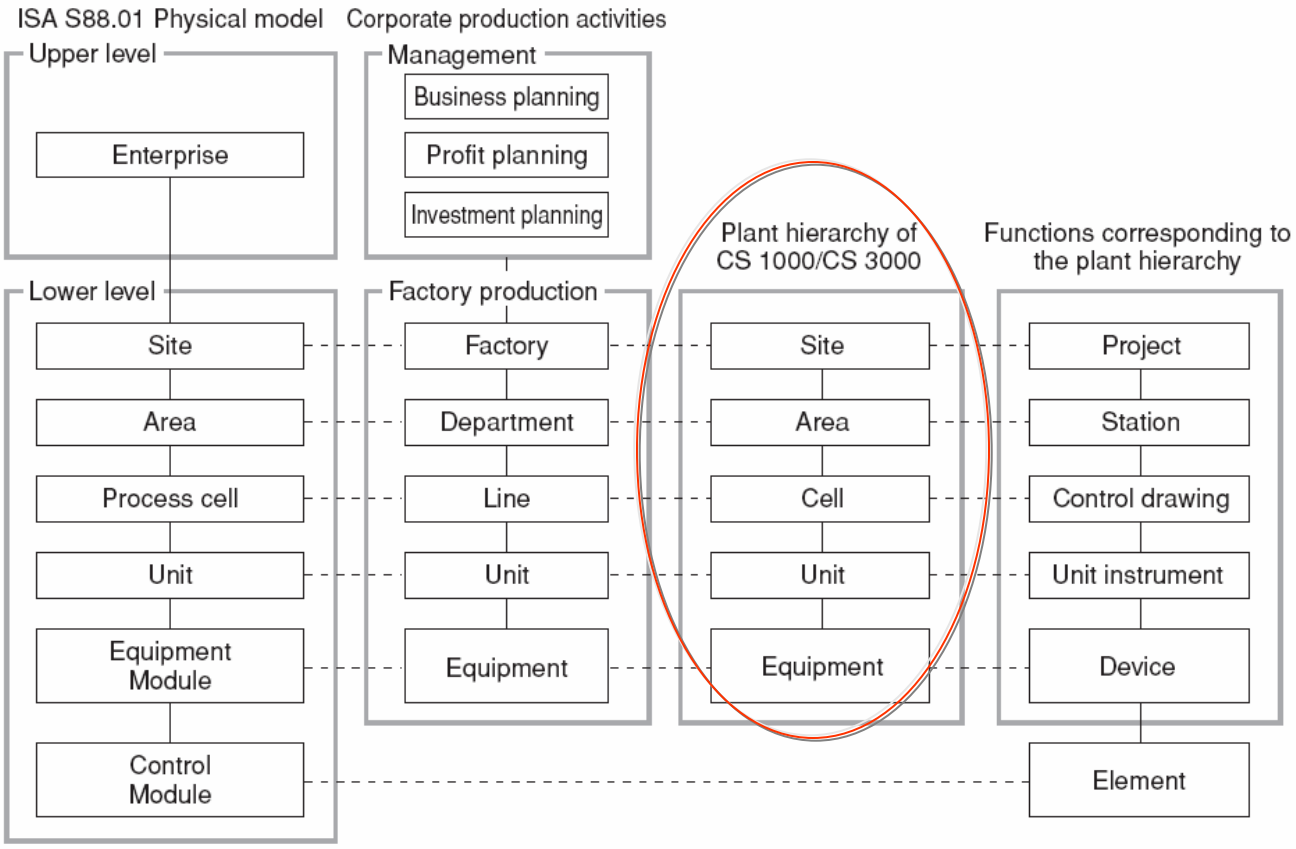


Figure Positioning of CS 1000/CS 3000 Plant Hierarchy

Custom Plant (Plant Hierarchy)

The CS 1000/CS 3000 system project is usually comprised of multiple stations, while each station is comprised of multiple control drawings. Each multiple control drawing is then comprised of multiple unit instruments, and each unit instrument consists of multiple devices.
A function block or element is assigned to each device.

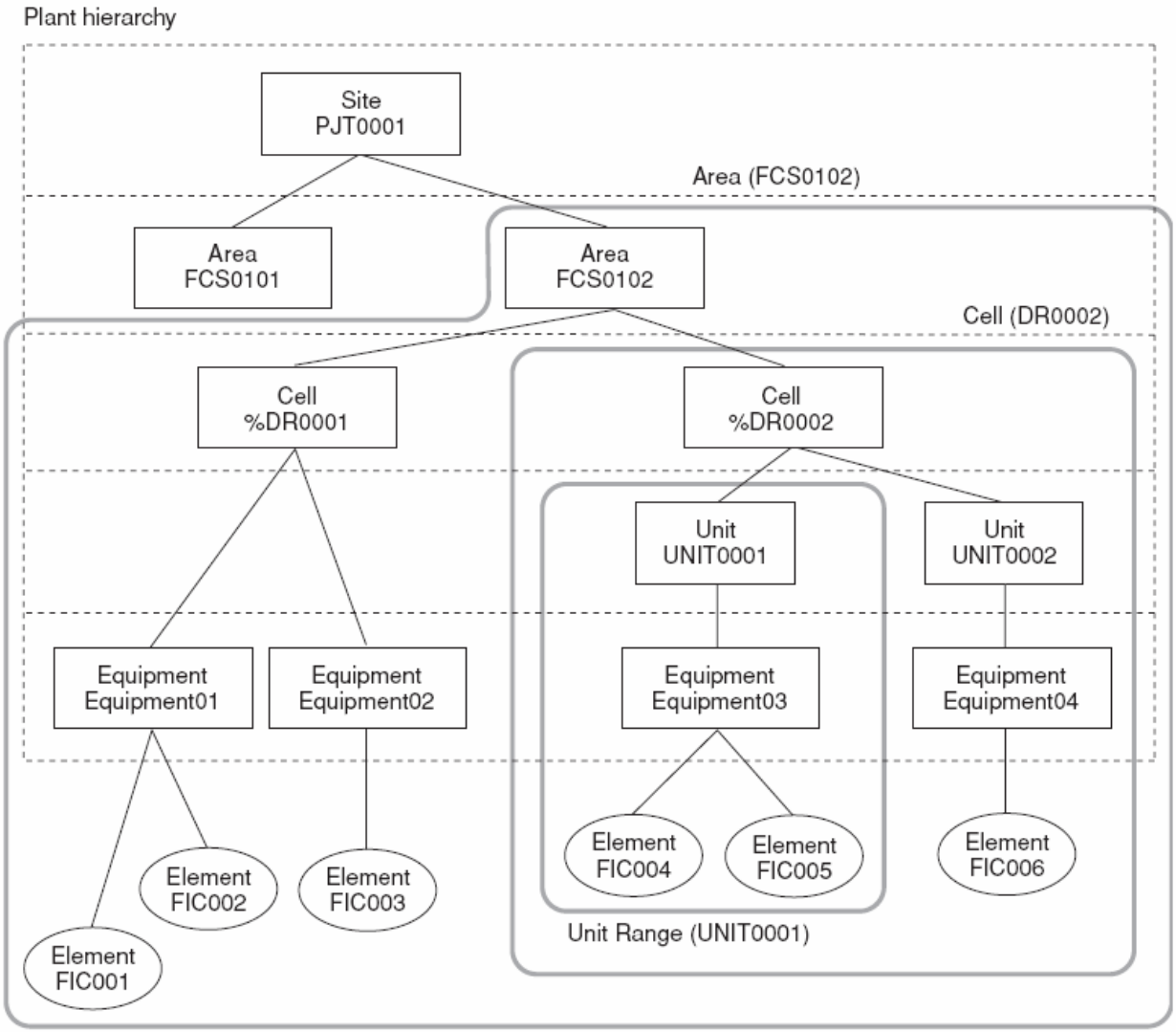


Figure Example of CS 1000/CS 3000 Plant Hierarchy

Custom Plant (Plant Hierarchy)

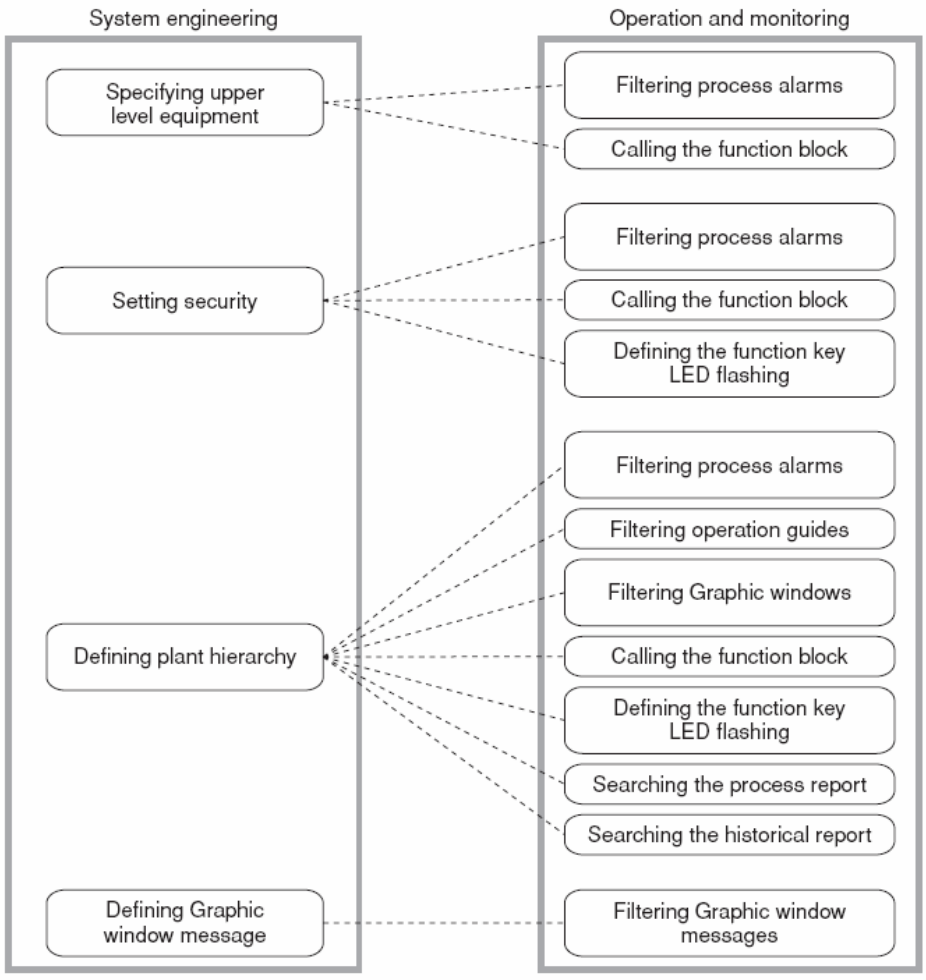
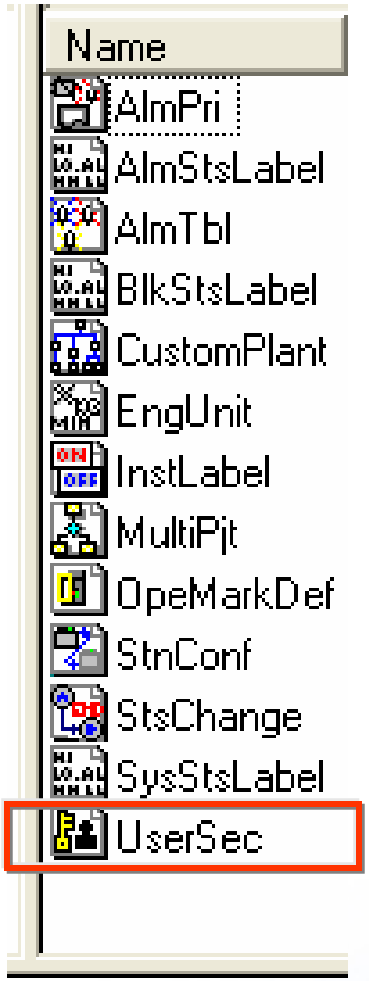


Figure Typical Usage of the Plant Hierarchy

By using the plant hierarchy, a range of equipment in the system can be used in hierarchical and systematic manner, according to the plant's running and operating states, as well as, the equipment format. This, in turn, allows efficient implementation of engineering, operation and monitoring tasks. In such cases, the operation and monitoring can easily be targeted to a certain range by specifying the name of the equipment in the hierarchy.

SECURITY BUILDER



Security Builder - [Pjt:ENGPJT File:UserSec.edf]

File Edit View Tools Window Help

User Group

DEFGRP
NONEGRP

Valid User | User Group | Window Monitoring | Window Operation | Tag View | Item Operation | Operator Action | Operation-mark On | Passw

No.	User Name	User Group	Privilege Levels	Set Automatic User Out Time	Automatic User Out Time[Hour]	Automatic User
1	OFFUSER	DEFGRP	S1	NONE	0	
2	ONUSER	DEFGRP	S2	NONE	0	
3	ENGUSER	DEFGRP	S3	NONE	0	
4	PROG	DEFGRP	S1	NONE	0	
5		DEFGRP	S1	NONE	0	
6		DEFGRP	S1	NONE	0	
7		DEFGRP	S1	NONE	0	
8		DEFGRP	S1	NONE	0	
9		DEFGRP	S1	NONE	0	
10		DEFGRP	S1	NONE	0	
11		DEFGRP	S1	NONE	0	
12		DEFGRP	S1	NONE	0	
13		DEFGRP	S1	NONE	0	
14		DEFGRP	S1	NONE	0	
15		DEFGRP	S1	NONE	0	
16		DEFGRP	S1	NONE	0	
17		DEFGRP	S1	NONE	0	
18		DEFGRP	S1	NONE	0	
19		DEFGRP	S1	NONE	0	
20		DEFGRP	S1	NONE	0	
21		DEFGRP	S1	NONE	0	
22		DEFGRP	S1	NONE	0	
23		DEFGRP	S1	NONE	0	
24		DEFGRP	S1	NONE	0	
25		DEFGRP	S1	NONE	0	
26		DEFGRP	S1	NONE	0	

Ready

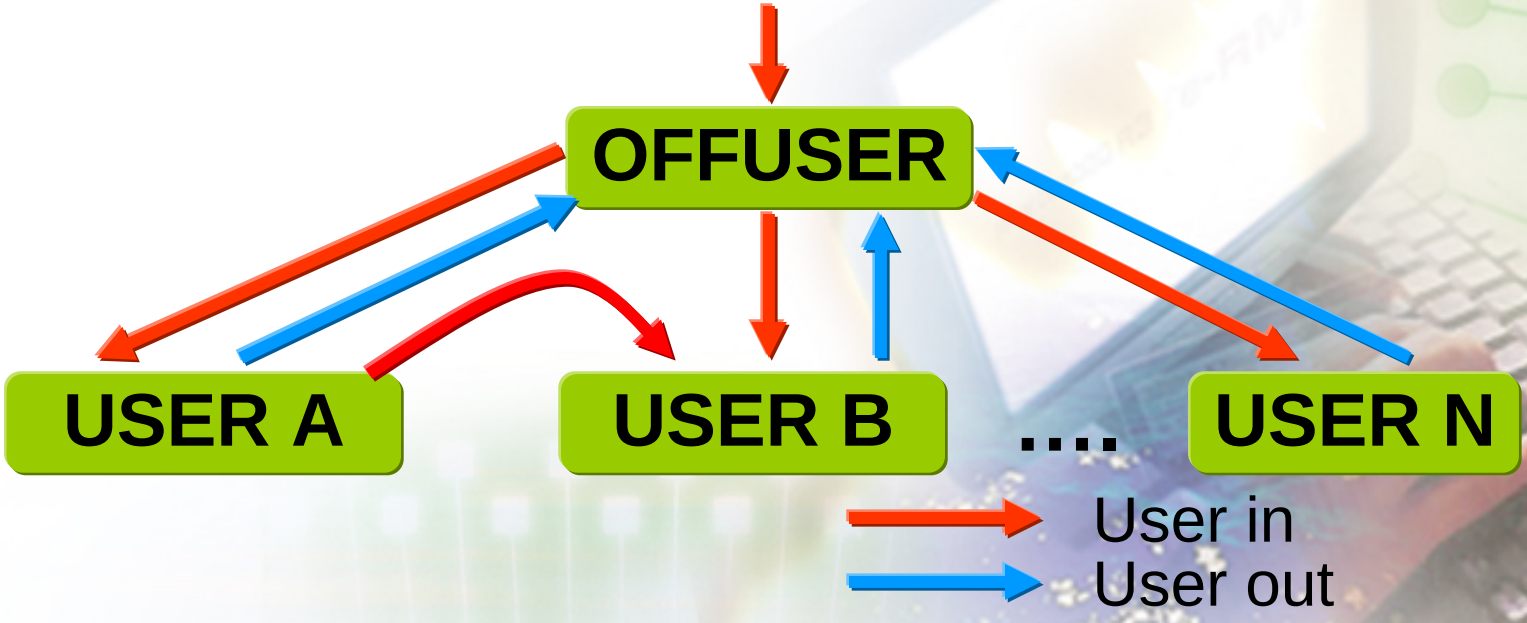
Position: Line 1 Column 3

USER NAME & USER SWITCHING

Table Default User Names

User name	Privilege level	User group	Description
OFFUSER (*1)	S1	DEFGRP	User name for monitoring data
ONUSER	S2	DEFGRP	User name for operation and monitoring data
ENGUSER	S3	DEFGRP	User name for maintenance
PROG (*2)	S1	DEFGRP	User name for accessing data from a user program
TESTUSER	S3	DEFGRP	User name for conducting a virtual test

Start the Operation and Monitoring Function



SECURITY LEVEL

Level	Monitoring			Operation		
	OFFUSER	ONUSER	ENGUSER	OFFUSER	ONUSER	ENGUSER
1	O	O	O	O	O	O
2	O	O	O	1*	O	O
3	O	O	O	2*	O	O
4	O	O	O	X	O	O
5	X	O	O	X	X	X
6	X	O	O	X	X	O
7	X	X	O	X	X	X
8	X	X	X	X	X	X

O : Allowed
X : Not allowed
1* : Only alarm settings, sv, mv and block mode can be changed.
2* : Only sv, mv, and block mode can be changed.

An attribute called **"security level"** is assigned to the function blocks.

The security policy is set to prevent illegal operations and other problems and ensuring the safety of the system.

PRIVILEGE LEVEL

The users' rights and abilities on operation and monitoring are defined according to privilege levels.

Default privilege levels

Table Relationship Among Mode Selection Key Position, Privilege Level and Operation Mode

Key position	Security level	Operation key	Engineering key
OFF/no-key	Security level of the user (logged-in user) during operation	Y	Y
ON	S2	Y	Y
ENG	S3	N	Y

Table Rights and Abilities of three levels of privilege

Privilege level	Monitoring	Operation	Maintenance (*1)
S1	Y	N	N
S2	Y	Y	N
S3	Y	Y	Y

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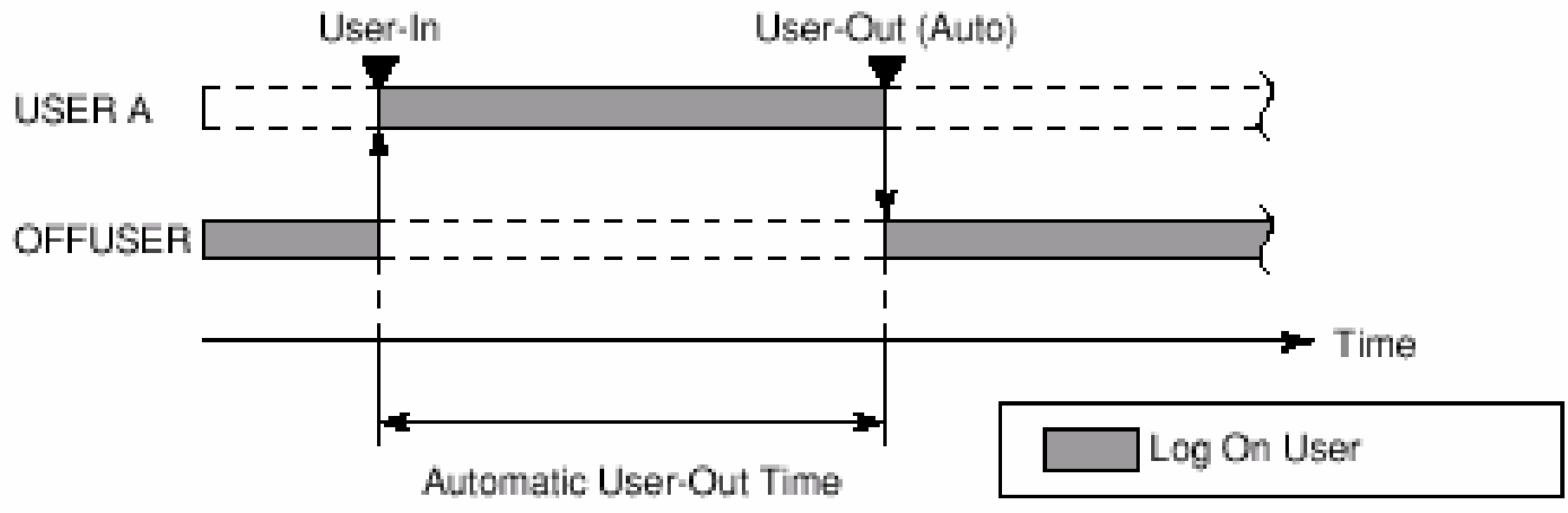
Y: Authorized
N: Unauthorized
*1: Rights on operating and monitoring the window for system administration.

AUTOMATIC USER OUT TIME

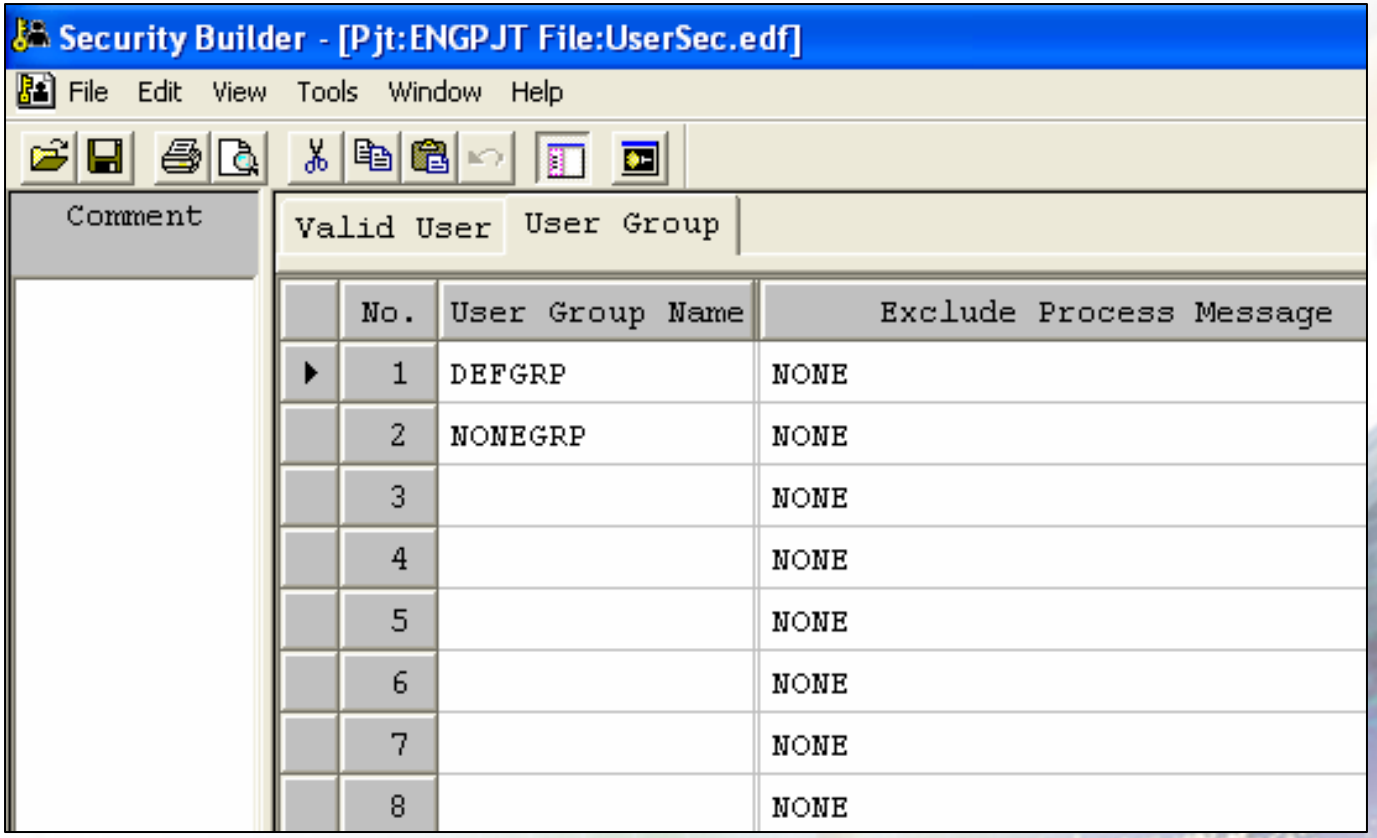
When an automatic user out-time is defined, the user automatically changes to the OFFUSER when the automatic user-out time elapsed.



USER GROUP

Users group classified into groups based on their operation and monitoring authorities/scopes.

The following attributes are assigned to each user group :
User group name, Operation scope, Operation and monitoring scope, Windows scope, Confirmation operation scope, Messaging scope, Comment

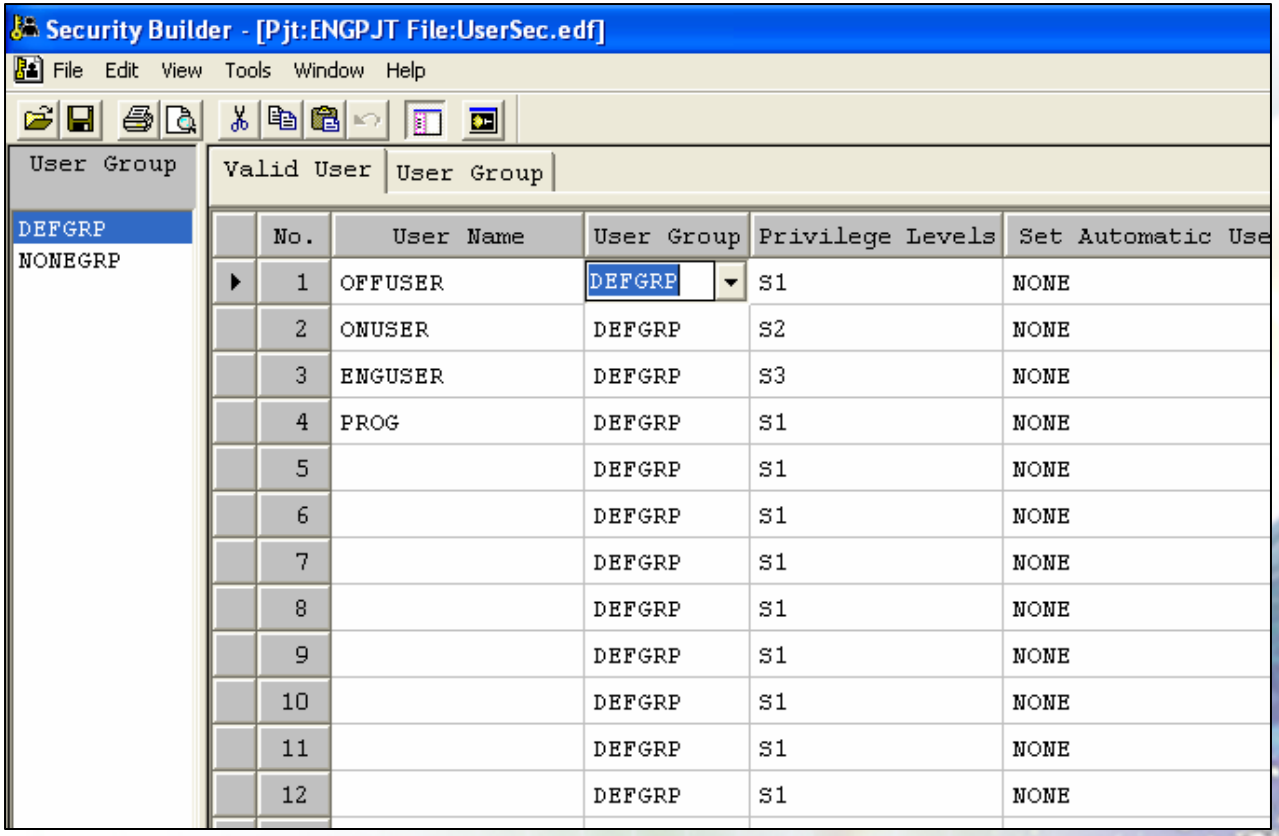


No.	User Group Name	Exclude Process Message
1	DEFGRP	NONE
2	NONEGRP	NONE
3		NONE
4		NONE
5		NONE
6		NONE
7		NONE
8		NONE

VALID USER

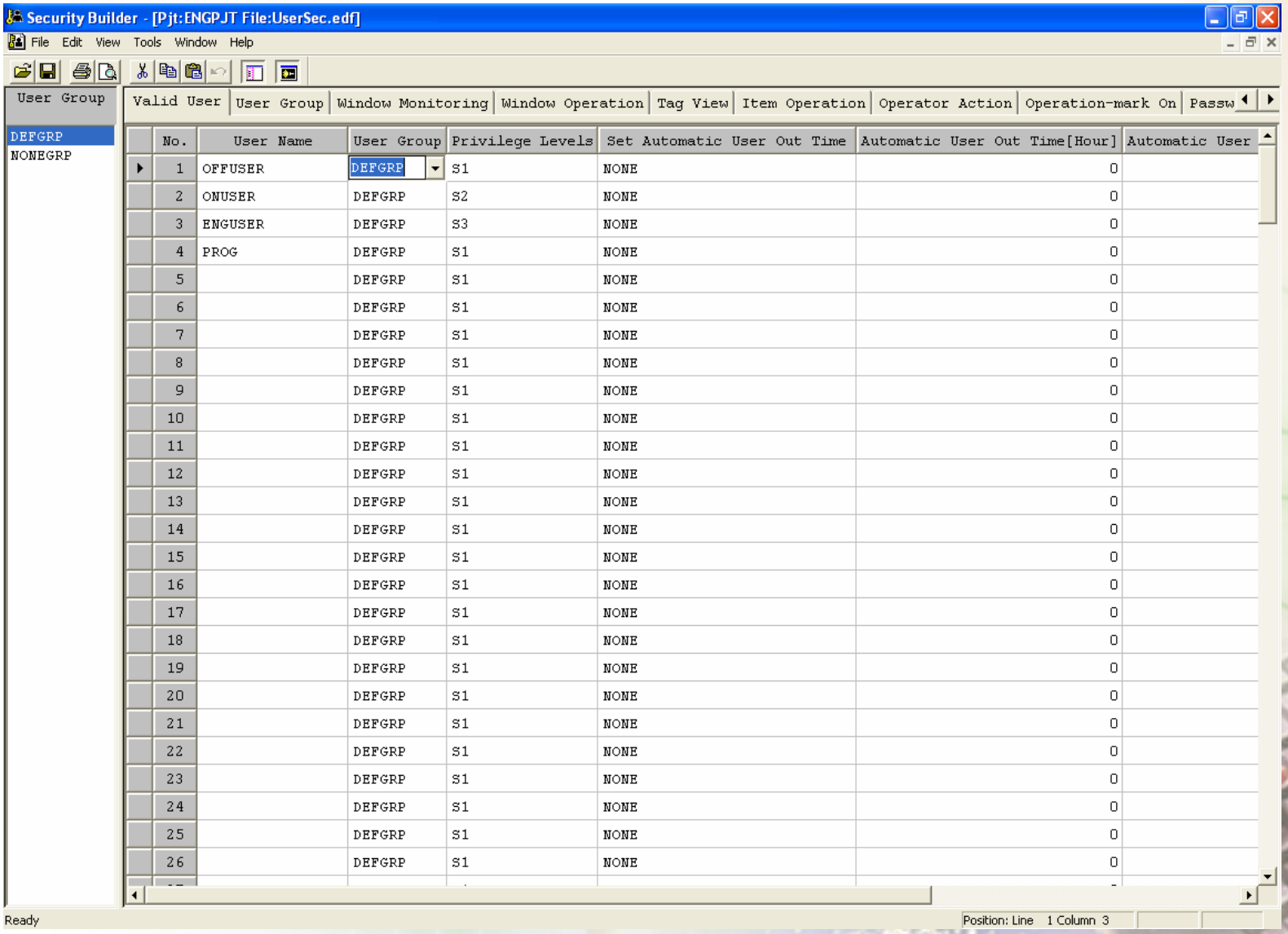
Valid User classified into User name based on their users group of operation and monitoring authorities/scopes.

Users can be defined to automatic user out time, the users **automatically changes to OFFUSER** when automatic user out time elapsed.



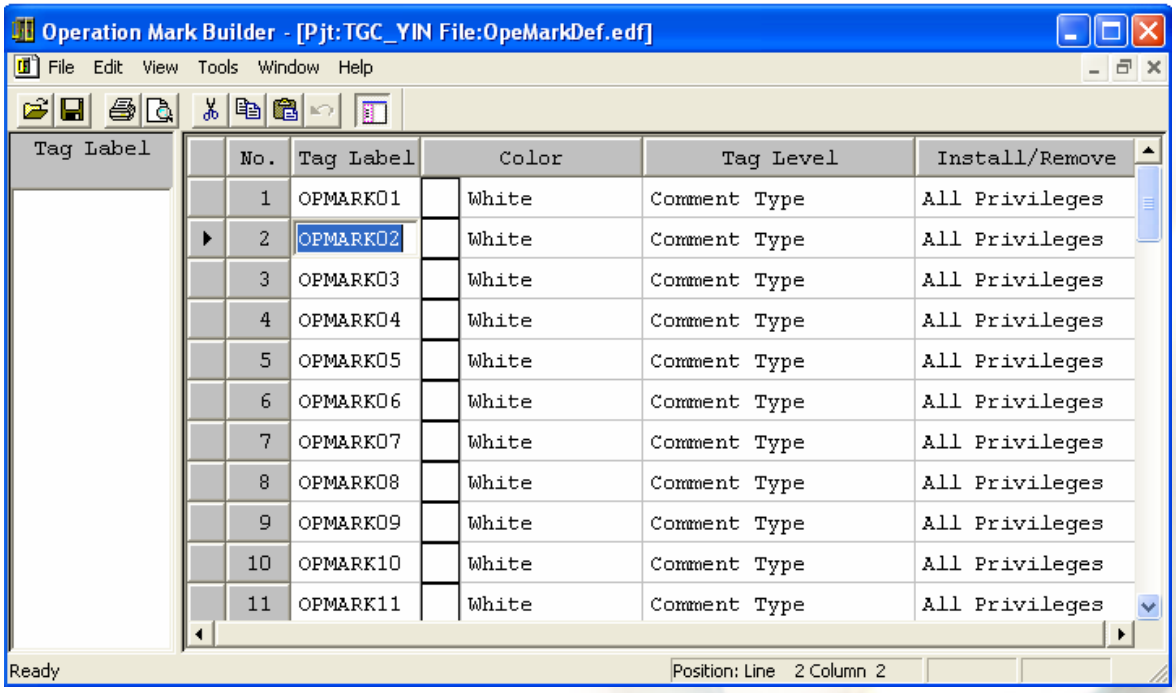
No.	User Name	User Group	Privilege Levels	Set Automatic Use
1	OFFUSER	DEFGRP	S1	NONE
2	ONUSER	DEFGRP	S2	NONE
3	ENGUSER	DEFGRP	S3	NONE
4	PROG	DEFGRP	S1	NONE
5		DEFGRP	S1	NONE
6		DEFGRP	S1	NONE
7		DEFGRP	S1	NONE
8		DEFGRP	S1	NONE
9		DEFGRP	S1	NONE
10		DEFGRP	S1	NONE
11		DEFGRP	S1	NONE
12		DEFGRP	S1	NONE

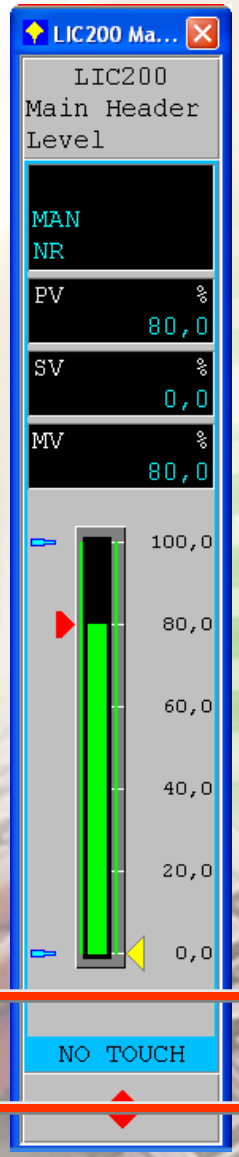
DETAIL SETTING OF SECURITY BUILDER



No.	User Name	User Group	Privilege Levels	Set Automatic User Out Time	Automatic User Out Time[Hour]	Automatic User
1	OFFUSER	DEFGRP	S1	NONE	0	
2	ONUSER	DEFGRP	S2	NONE	0	
3	ENGUSER	DEFGRP	S3	NONE	0	
4	PROG	DEFGRP	S1	NONE	0	
5		DEFGRP	S1	NONE	0	
6		DEFGRP	S1	NONE	0	
7		DEFGRP	S1	NONE	0	
8		DEFGRP	S1	NONE	0	
9		DEFGRP	S1	NONE	0	
10		DEFGRP	S1	NONE	0	
11		DEFGRP	S1	NONE	0	
12		DEFGRP	S1	NONE	0	
13		DEFGRP	S1	NONE	0	
14		DEFGRP	S1	NONE	0	
15		DEFGRP	S1	NONE	0	
16		DEFGRP	S1	NONE	0	
17		DEFGRP	S1	NONE	0	
18		DEFGRP	S1	NONE	0	
19		DEFGRP	S1	NONE	0	
20		DEFGRP	S1	NONE	0	
21		DEFGRP	S1	NONE	0	
22		DEFGRP	S1	NONE	0	
23		DEFGRP	S1	NONE	0	
24		DEFGRP	S1	NONE	0	
25		DEFGRP	S1	NONE	0	
26		DEFGRP	S1	NONE	0	

OPERATION MARK BUILDER





Tag label

Up to 8 single-byte characters can be entered as the text on the label (string).
The operation mark label may be temporarily changed during the operation on the HIS Setup window.

OPERATION MARK

PRIVILEGE LEVEL & COLOR

Table Security Levels Exerted by Operation Marks and the Types Of Operation Marks

Types of Operation Marks	Security Levels Exerted by Operation Marks	Privilege level		
		S1	S2	S3
1 (Comment Type)	1	Y	Y	Y
2 (S2, S3 privilege levels)	2	N	Y	Y
3 (S3 Privilege level)	3	N	N	Y
4 (Operation-prohibited)	4	N	N	N
5	5	N	Y	Y
6	6	N	N	Y
7	7	N	N	Y
8	8	N	N	N

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Table User's rights on Attaching/Removing Operation Mark

Attach/Remove Operation Mark	Privilege level		
	S1	S2	S3
Regardless Privilege level	Y	Y	Y
S2, S3 Privilege level	N	Y	Y
S3 Privilege level	N	N	Y

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Y: Attachment/removal operation permitted
N: Attachment/removal operation not permitted

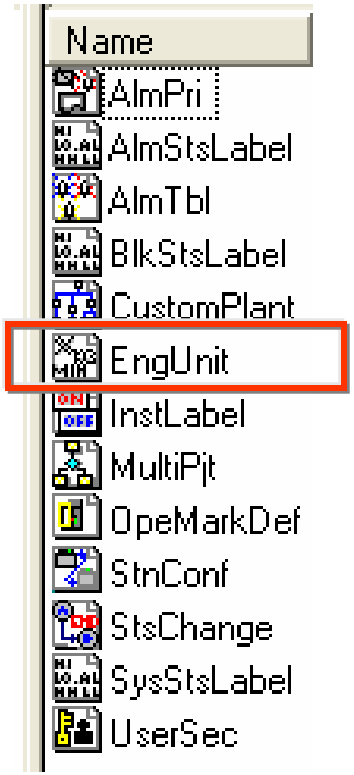
The privilege level required for a user to attach/remove the operation mark.

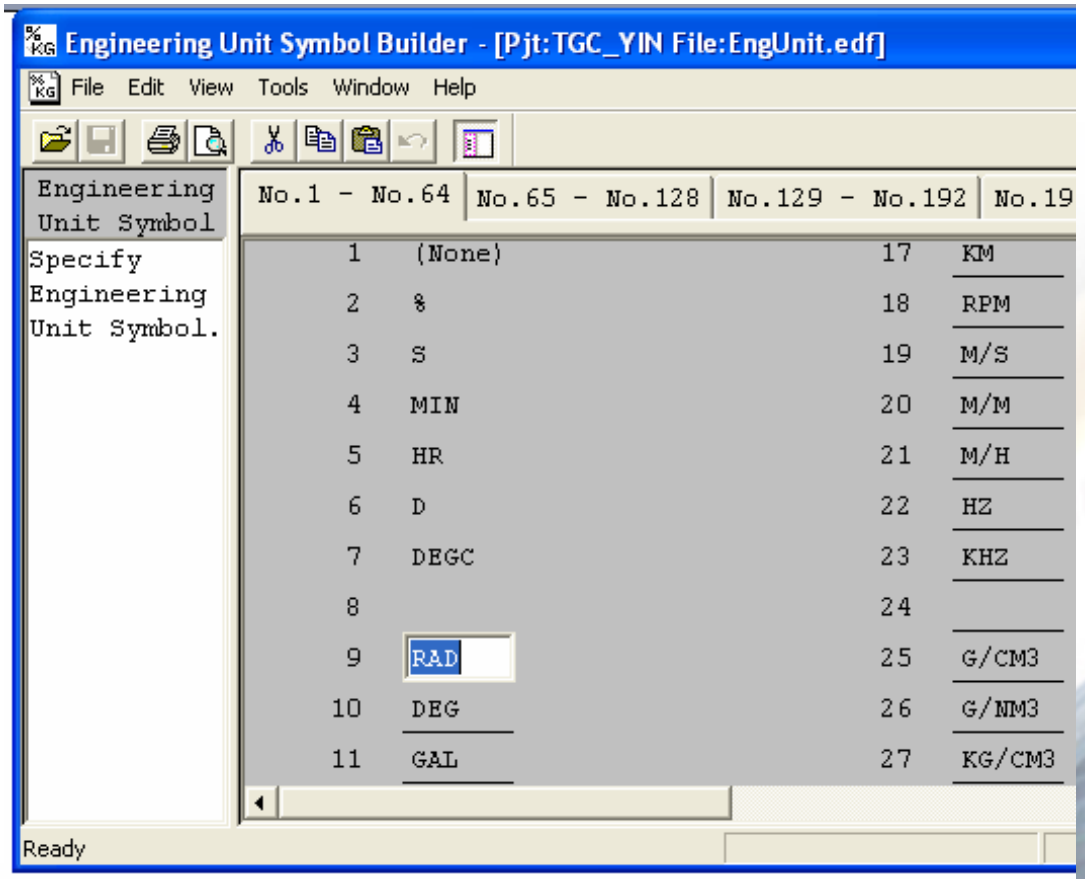
Color

The following colors may be used on operation marks.
The color of the operation mark may be temporarily changed on the HIS Setup window.

Color	Color Code	Color	Color Code
Black	N	Steel Blue	SB
Red	R	Pink	PK
Green	G	Spring Green	SG
Yellow	Y	Orange	OR
Blue	B	Yellow Green	YG
Magenta	M	Violet	VO
Cyan	C	Deep Sky Blue	DB
White	W	Gray	GR

ENGINEERING UNIT SYMBOL BUILDER





One engineering unit symbol can be defined with up to **six alphanumeric characters.**

The engineering unit symbol is **case-sensitive.**

Multiple engineering unit symbols can be defined.

Engineering unit symbols **No.1 to 8** cannot be changed or deleted.

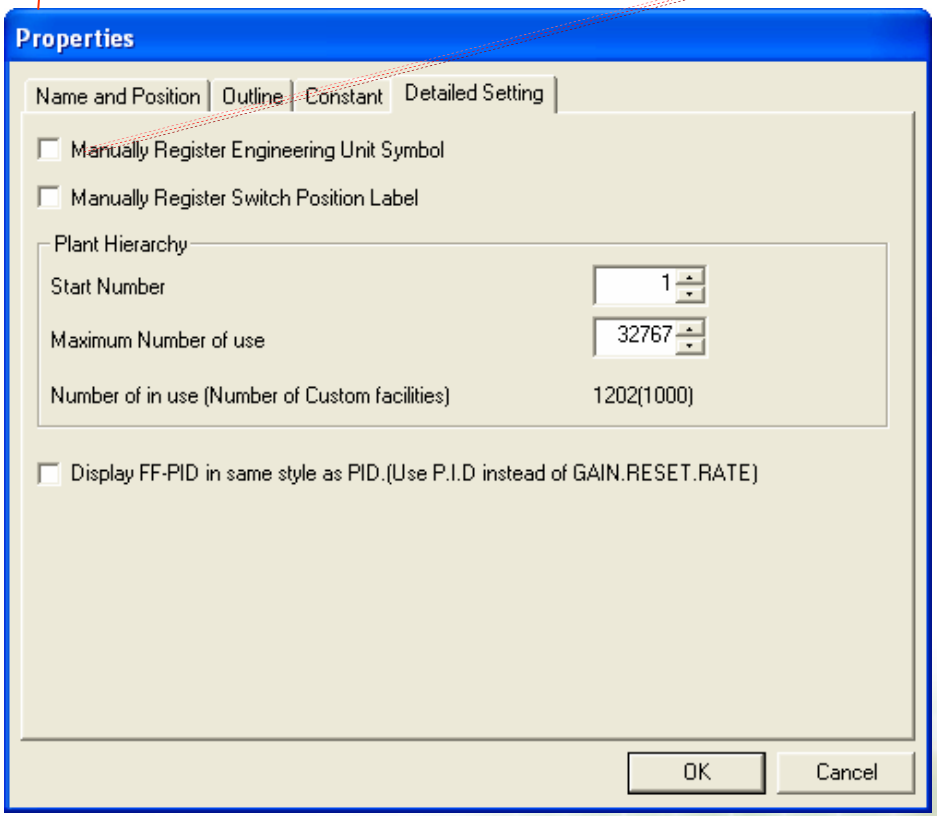
Define the engineering unit symbol starting at **No.9.**

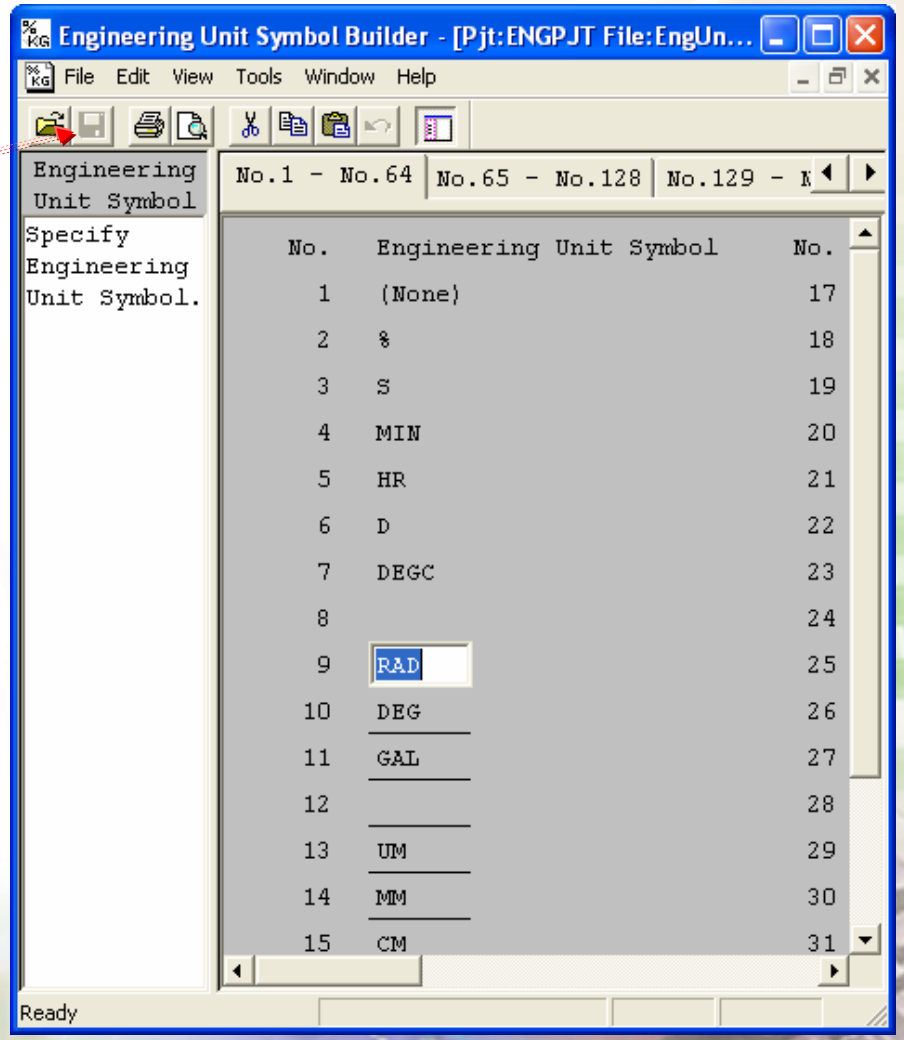
Note : that the following characters cannot be used to define the engineering unit symbol: , (comma), | (pipe), ‘ (single quotation mark), “ (double quotation mark), @, \ ((backslash), and #

MANUALLY REGISTER ENGINEERING UNIT

CENTUM VP

Uncheck the option button to manually register the engineering unit symbol

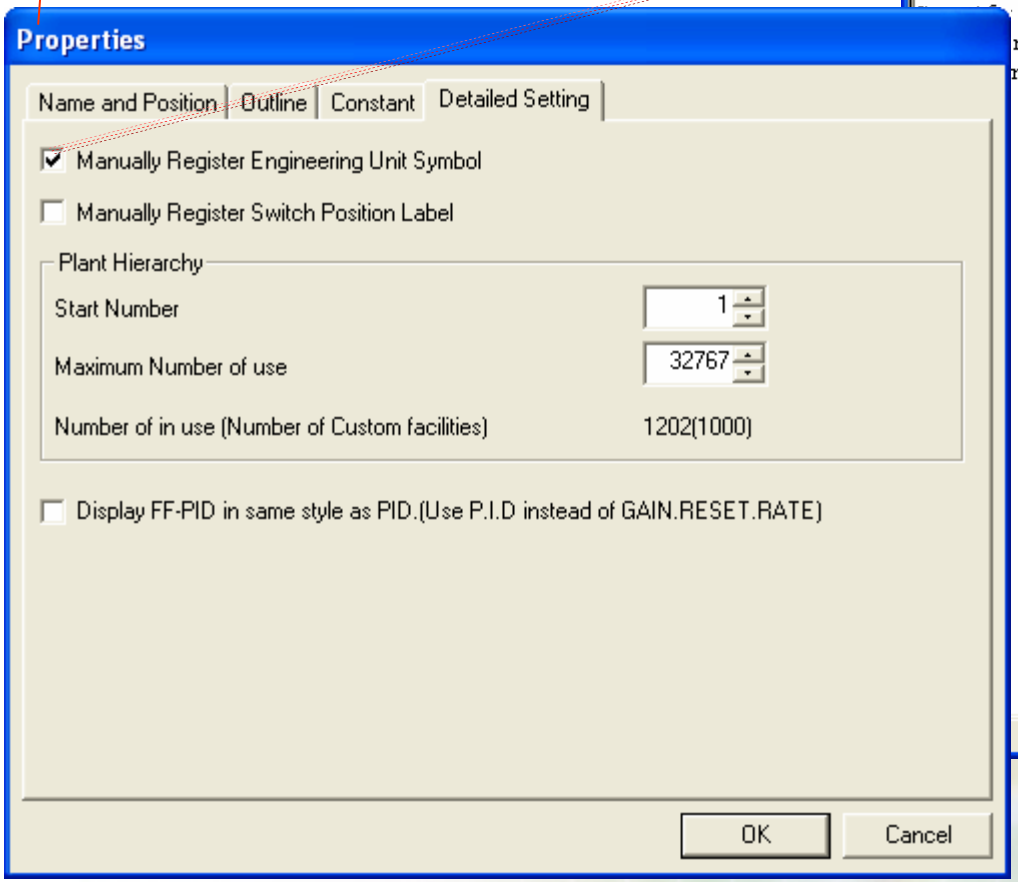


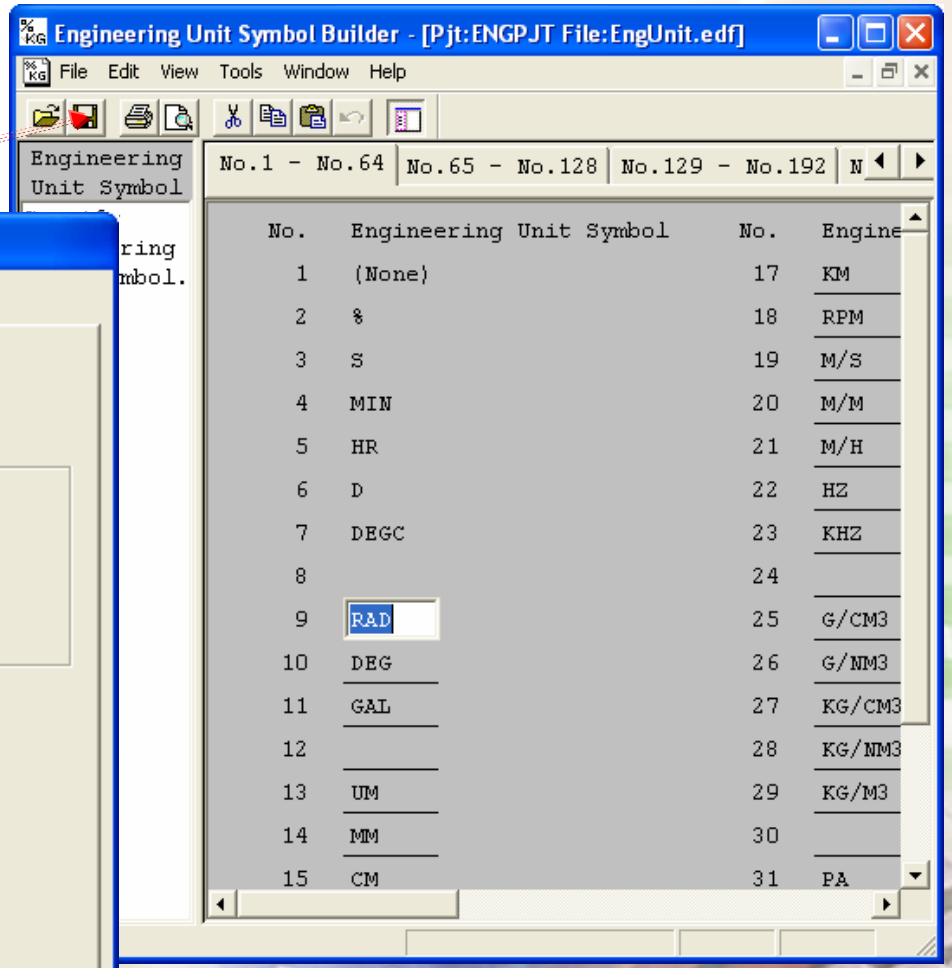


AUTOMATIC REGISTER ENGINEERING UNIT

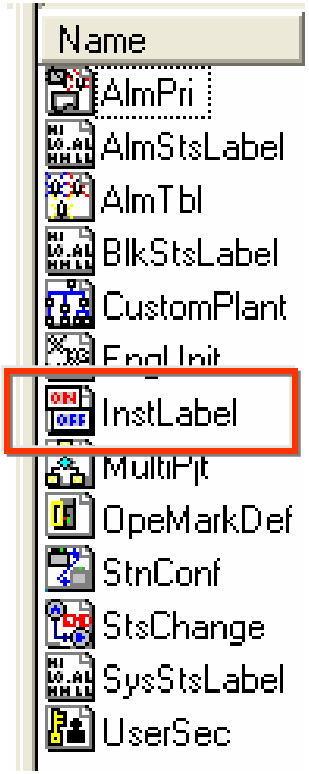
CENTUM VP

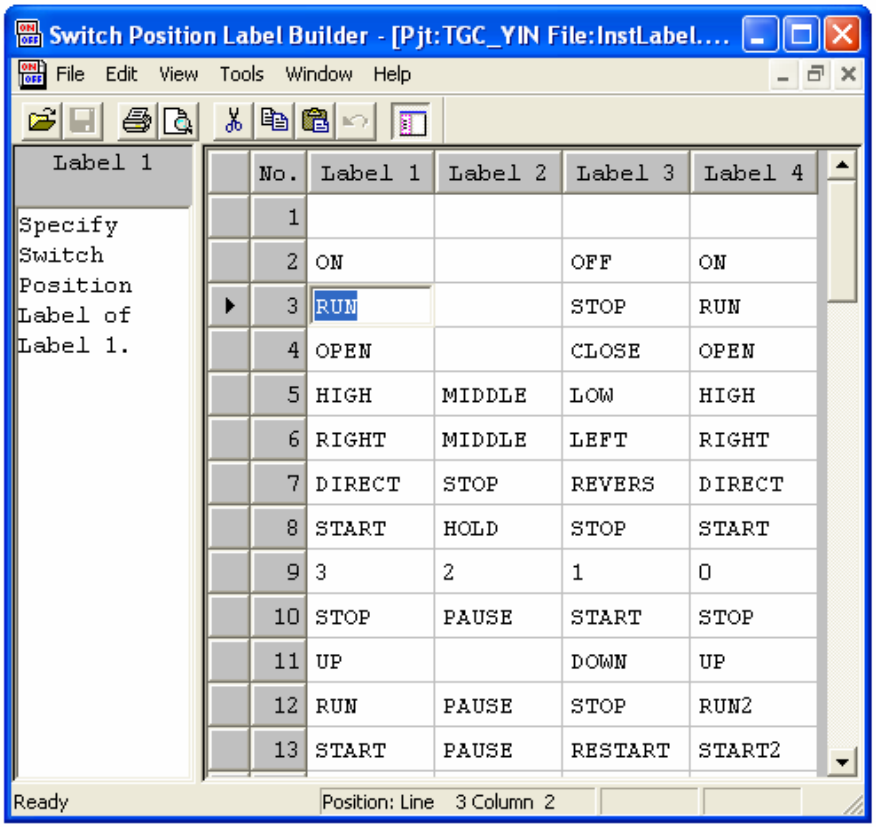
Check the option button to automatic register the engineering unit symbol

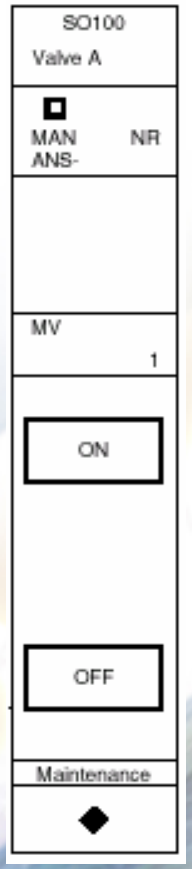




SWITCH POSITION LABEL BUILDER



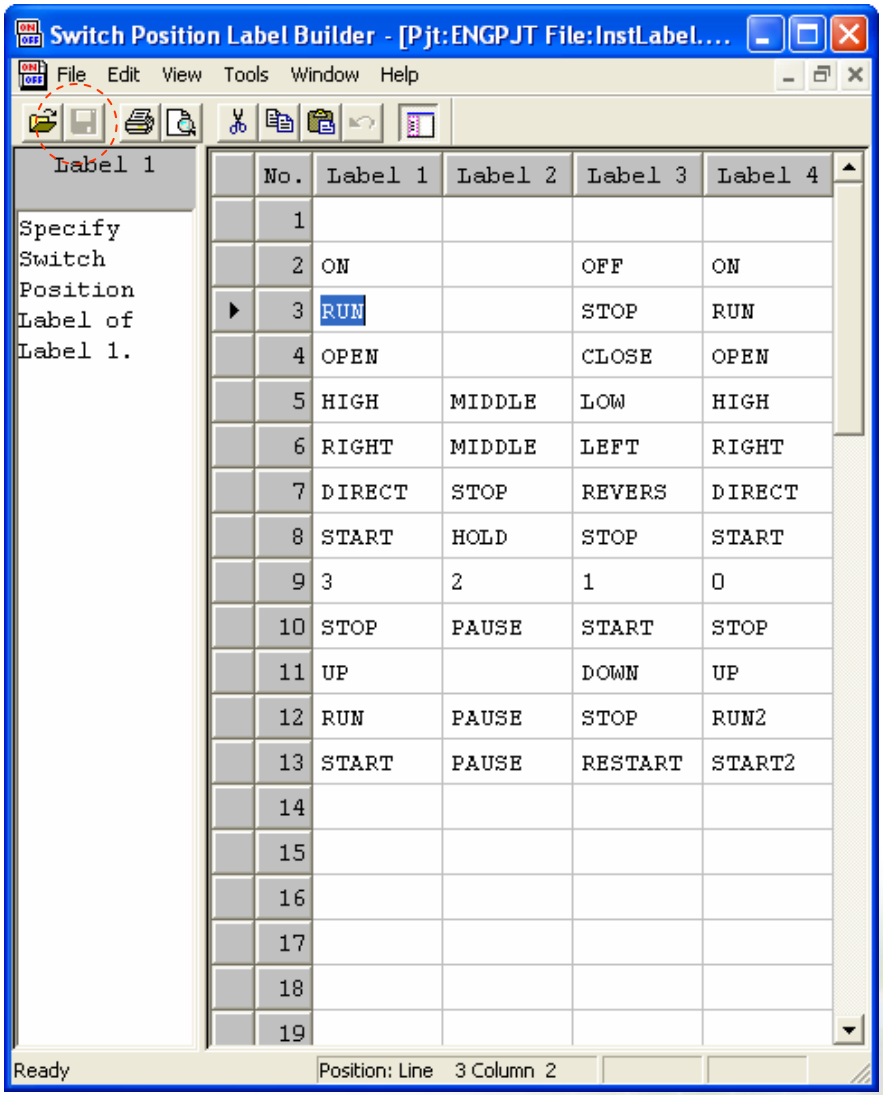


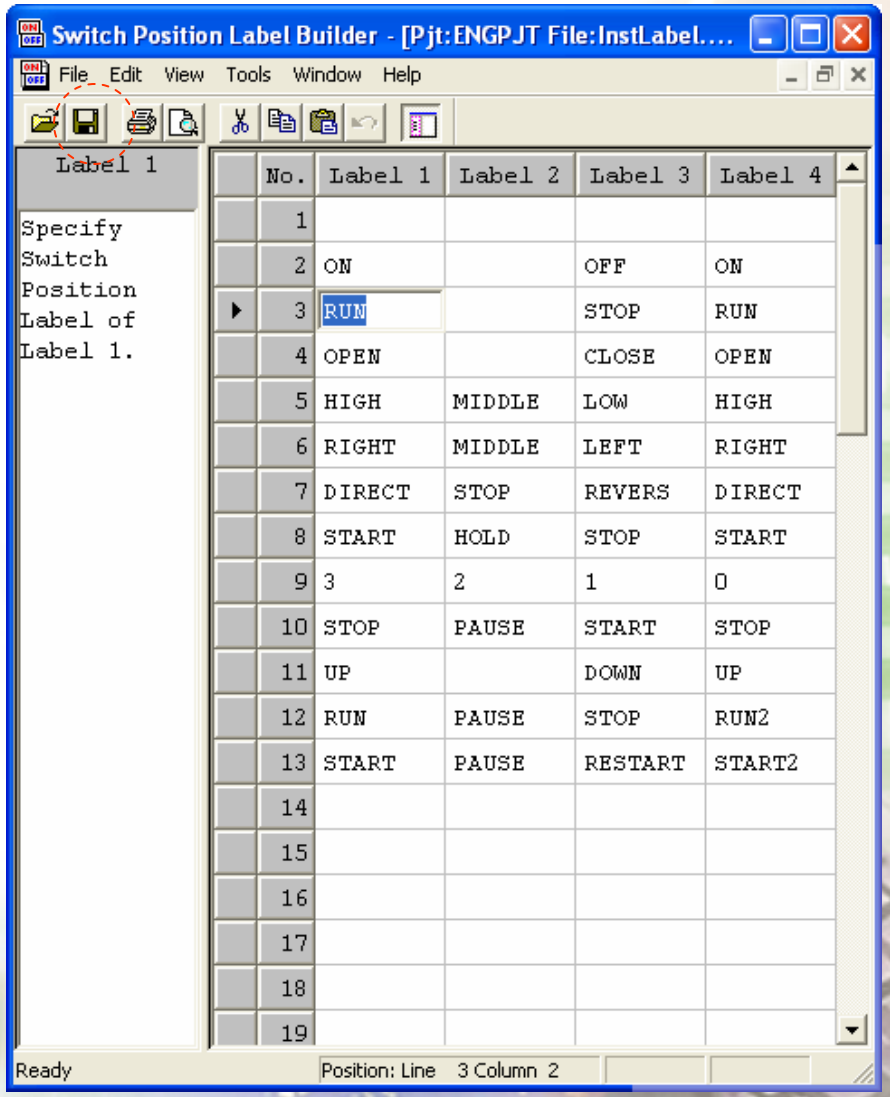


The switch position labels refer to character strings displayed as labels for switches on the switch instruments,the operations, the logic operation blocks, etc.

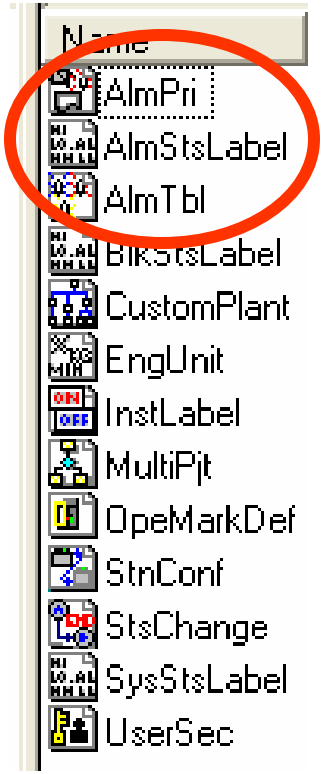
Up to 64 switch position labels can be used for one project.

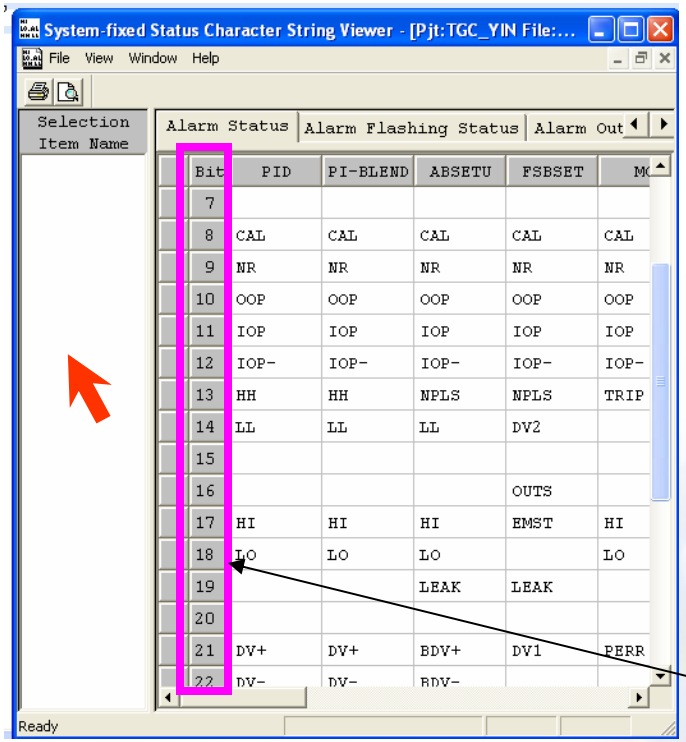
MANUALLY OR AUTOMATIC

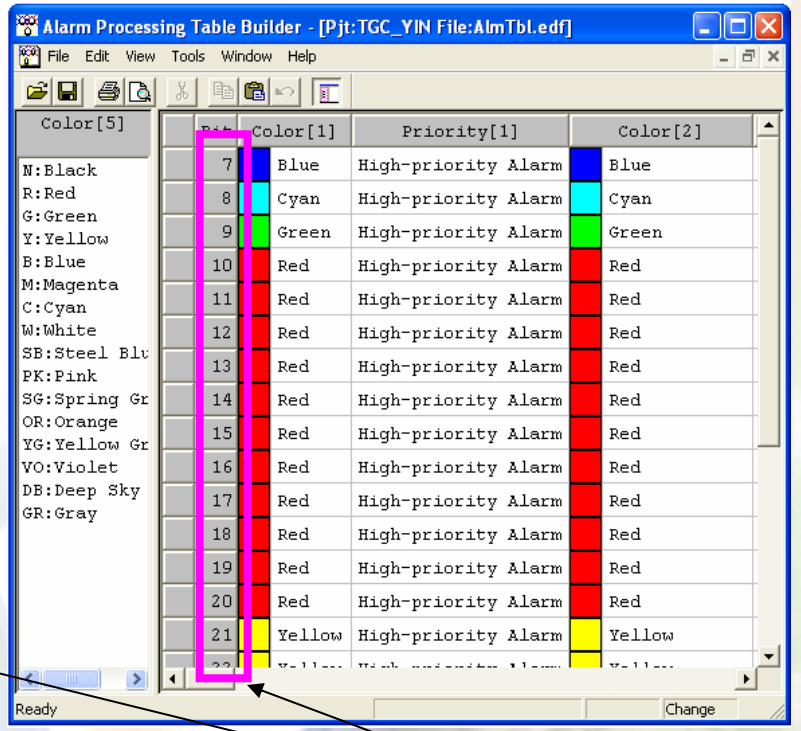


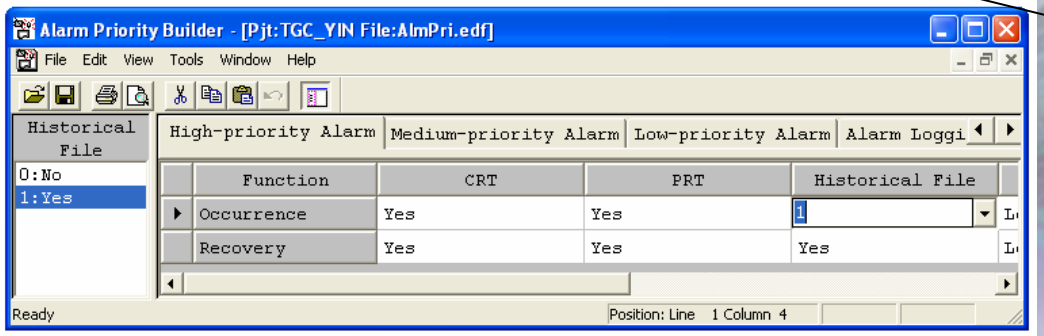


ALARM BUILDER









Alarm status bit position


To be continued.....