



Engineering Course



Common Item Definition



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





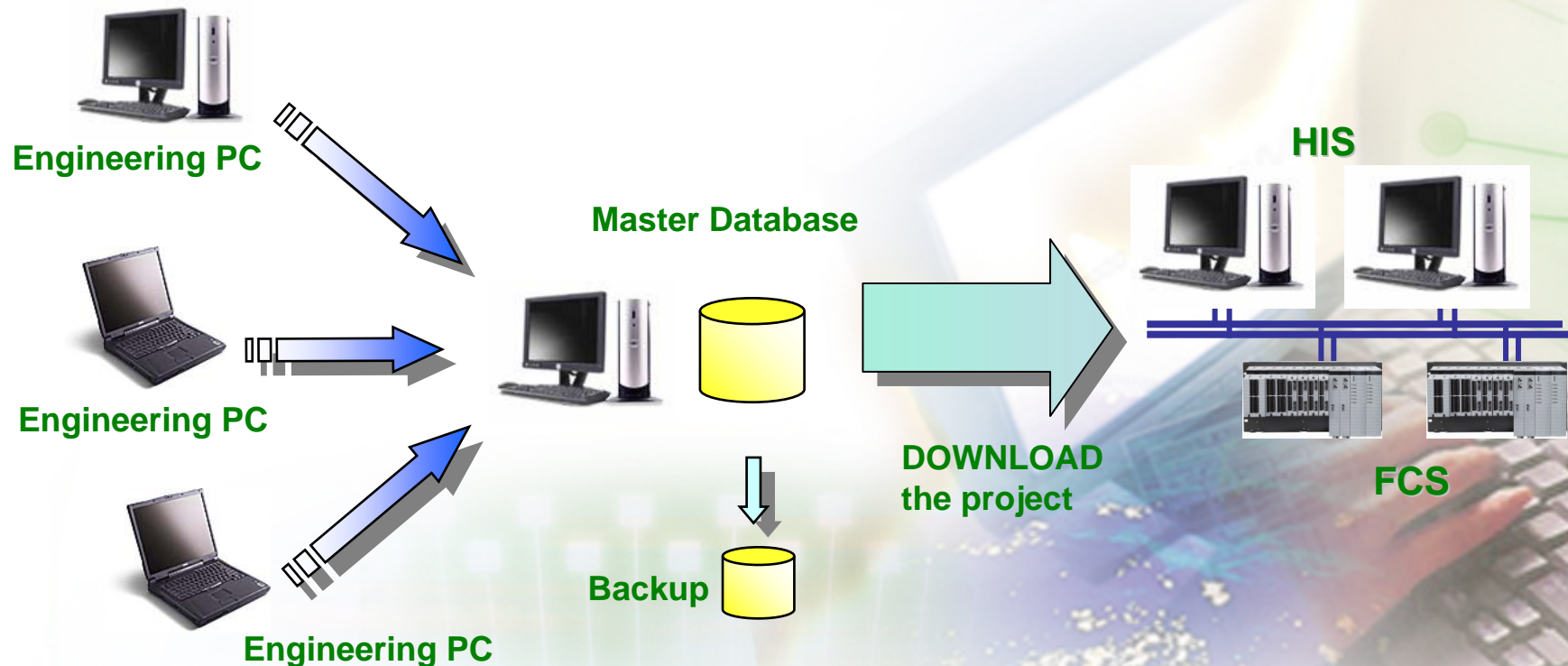
Engineering Environment



- 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

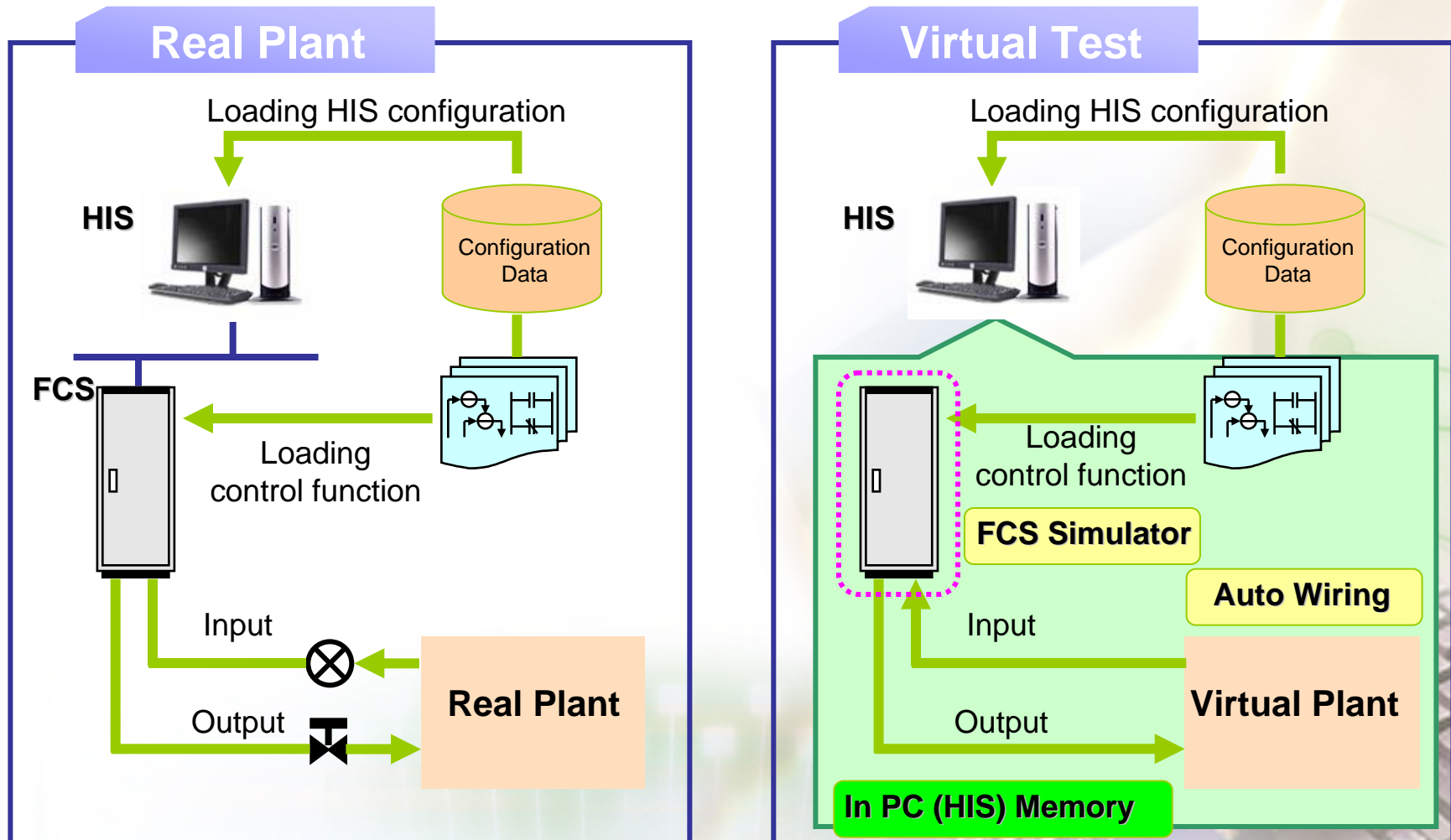
CONCURRENT ENGINEERING

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



VIRTUAL TEST FUNCTION

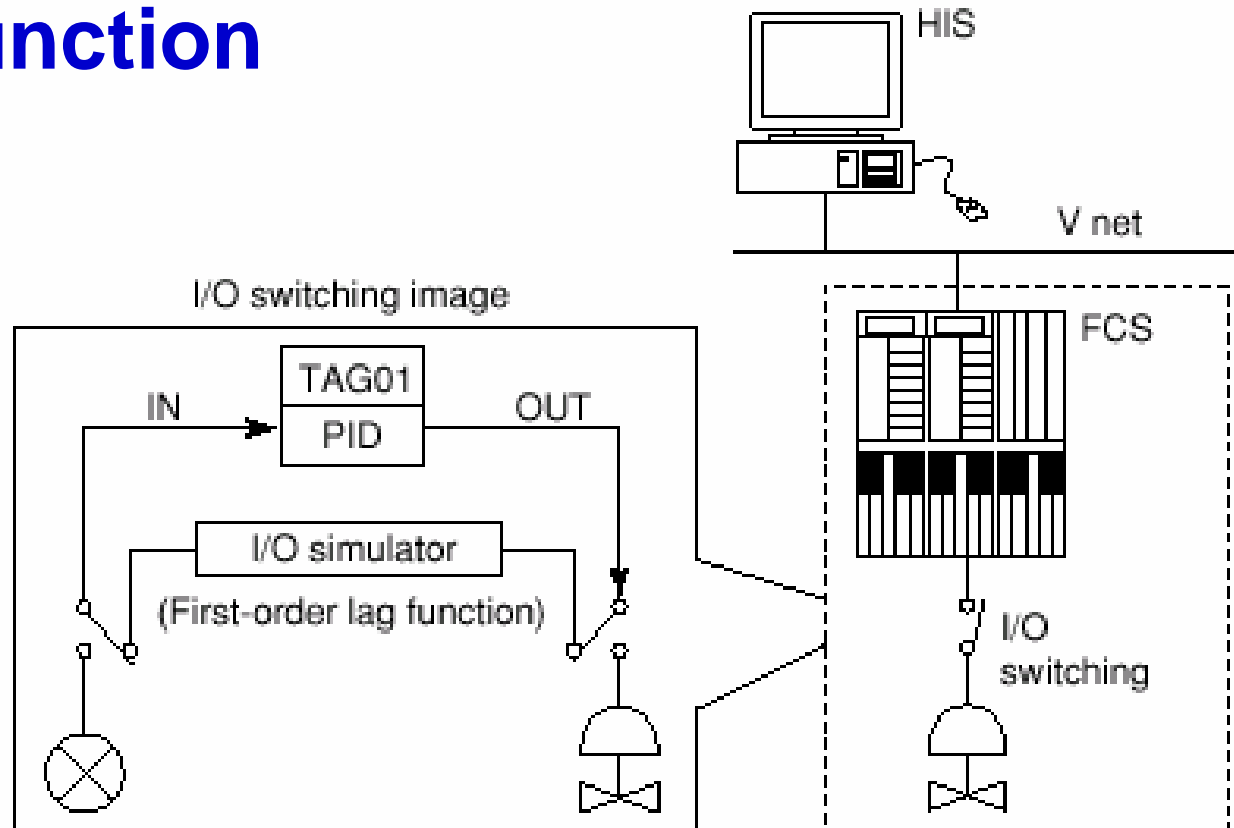
Full-scale system test can be performed without target hardware.



CPU usage and FCS internal status are displayed.

Target Test Function

These use actual HIS and FCS for the test.

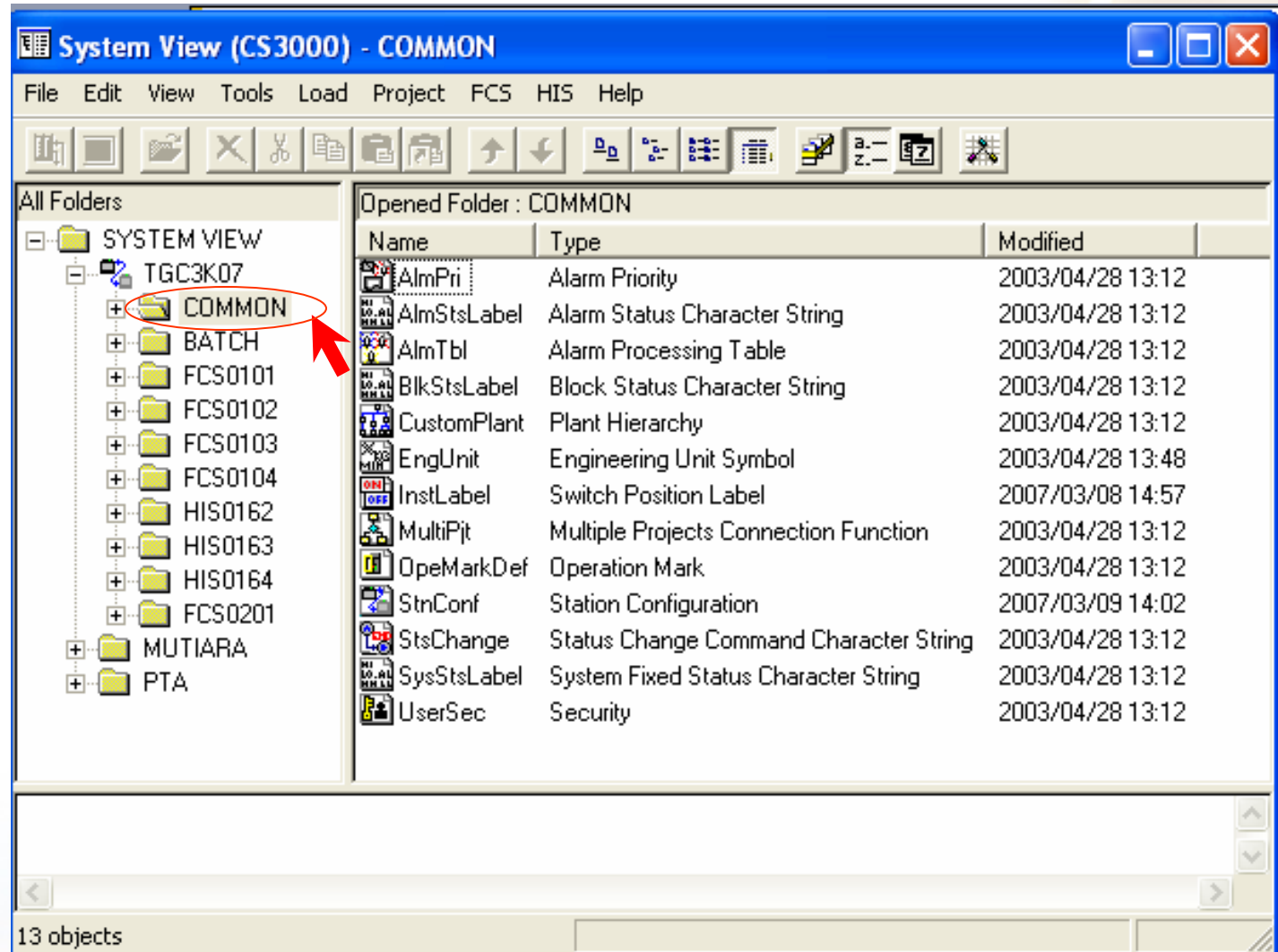


F060502.EPS

Figure Target Test Functions (I/O Switching)

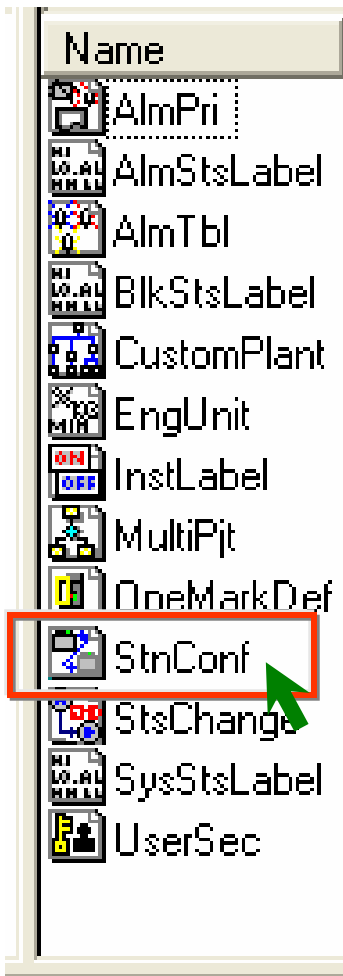
PROJECT COMMON ITEM

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.



Station Configuration Viewer - [Pjt:TGC_YIN File:StnConf.edf]

No.	Domain number	Station number	Station Name	Alias of Station
001	1	1	FCS0101	AFG40D Duplexed Field Contr
002	1	64	HIS0164	PC With Operation and moni
003				
004				

Station Configuration Viewer - [Pjt:TGC_YIN File:StnConf.edf]

No.	Name	Ethernet Address	Subnet mask	Vnet Host Name	Vnet Address	Subnet Mask (Vnet)
001				FCS0101	172.16.1.1	255.255.0.0
002		172.17.1.64	255.255.0.0	MD164	172.16.1.64	255.255.0.0
003						
004						

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.

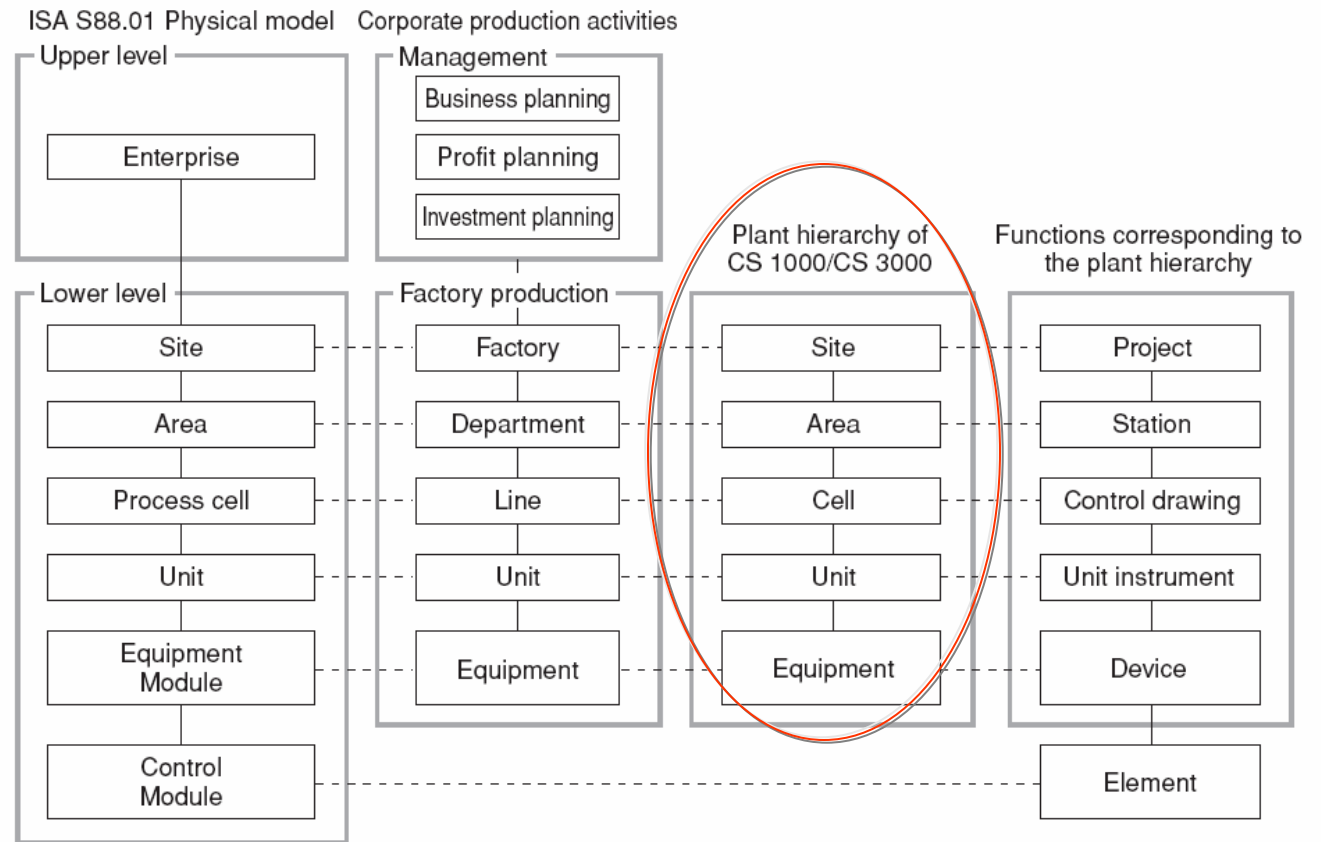
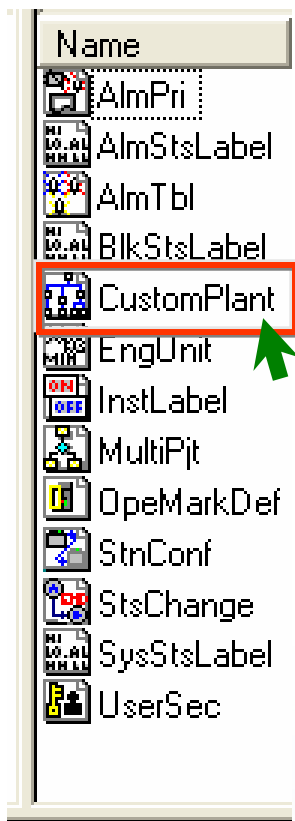
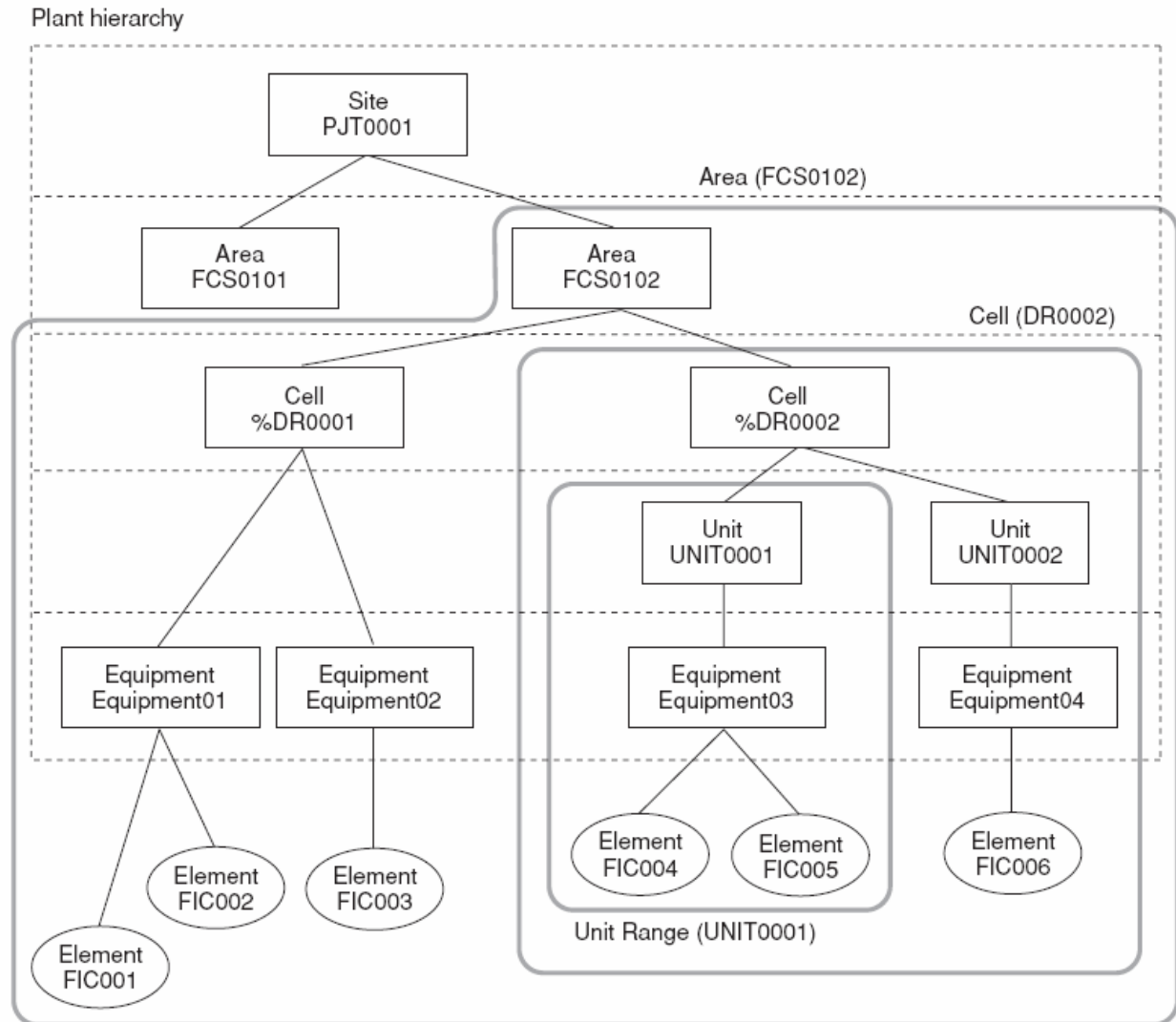


Figure Positioning of CS 1000/CS 3000 Plant Hierarchy

E100101E.EPS

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.

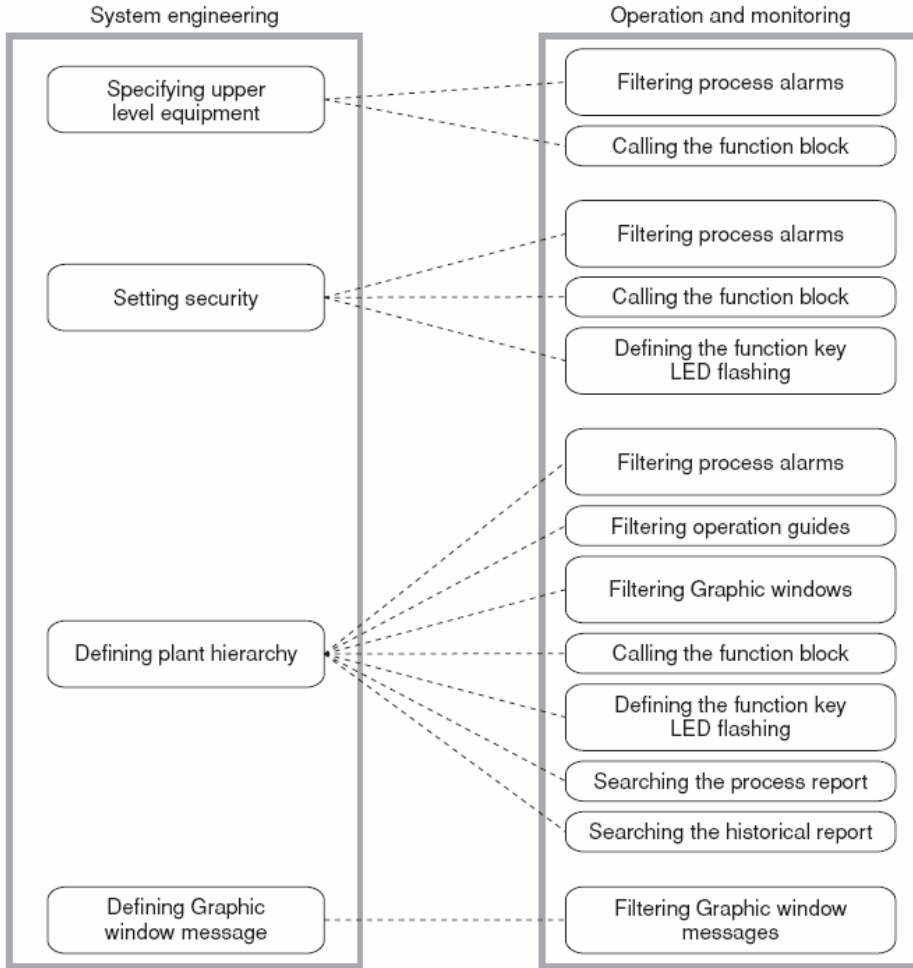


E100102E.EPS

Figure Example of CS 1000/CS 3000 Plant Hierarchy

Custom Plant (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.



E100103E.EPS

Figure Typical Usage of the Plant Hierarchy



SECURITY BUILDER



Name

- AlmPri
- AlmStsLabel
- AlmTbl
- BkStsLabel
- CustomPlant
- EngUnit
- InstLabel
- MultiPjt
- OpemMarkDef
- StnConf
- StsChange
- SysStsLabel
- UserSec**

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

File Edit View Tools Window Help

User Group: DEFGRP, NONEGRP

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	

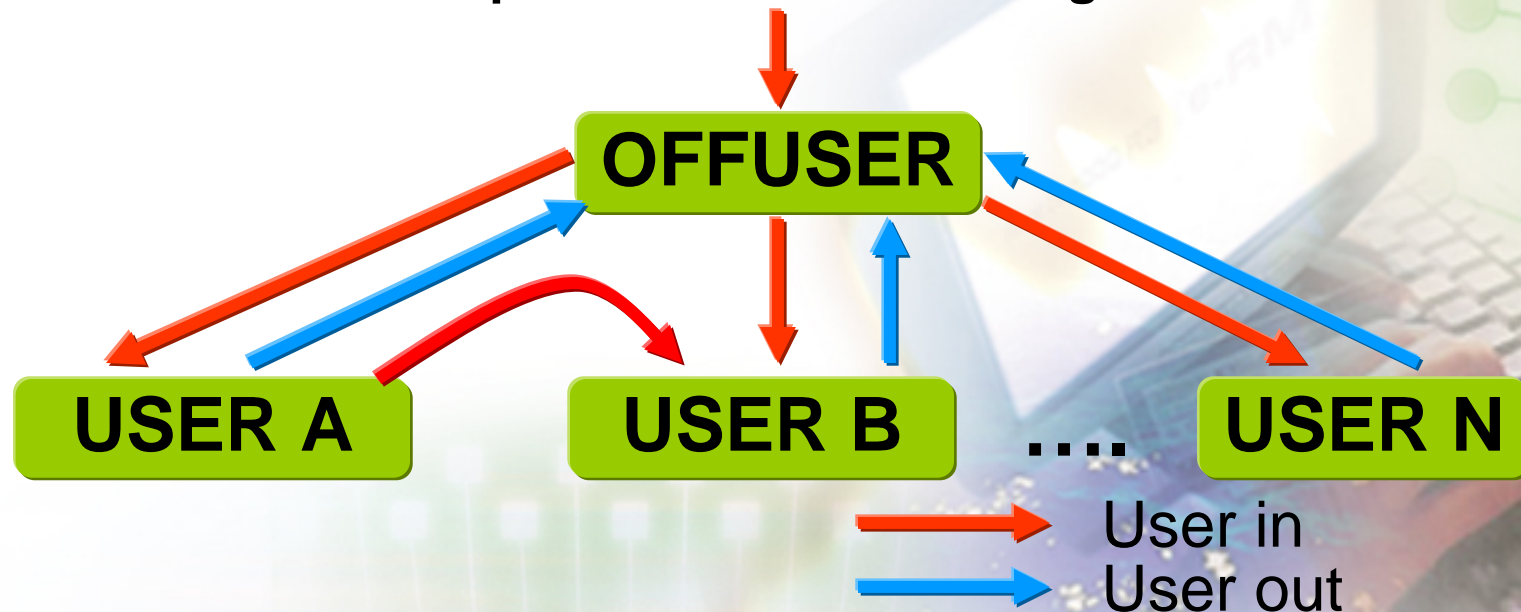
Ready

Position: Line 1 Column 3

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

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.

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.

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

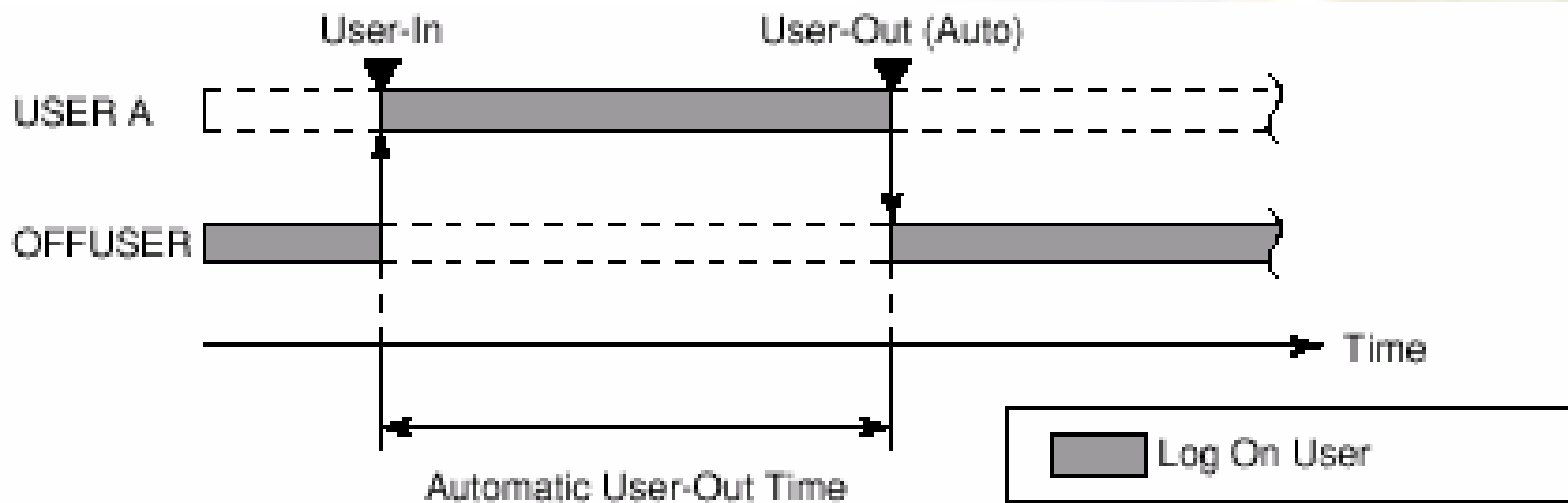
Privilege level	Monitoring	Operation	Maintenance (*1)
S1	Y	N	N
S2	Y	Y	N
S3	Y	Y	Y

F000901E.EP8

- 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

The screenshot shows the 'Security Builder' application window. The title bar reads 'Security Builder - [Pjt:ENGPJT File:UserSec.edf]'. The menu bar includes 'File', 'Edit', 'View', 'Tools', 'Window', and 'Help'. The toolbar contains various icons for file operations. The main window is divided into a 'Comment' pane on the left and a table on the right. The table has two tabs: 'Valid User' and 'User Group'. The 'User Group' tab is active, displaying a table with the following data:

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.

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

File Edit View Tools Window Help

User Group: DEFGRP, NONEGRP

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

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

File Edit View Tools Window Help

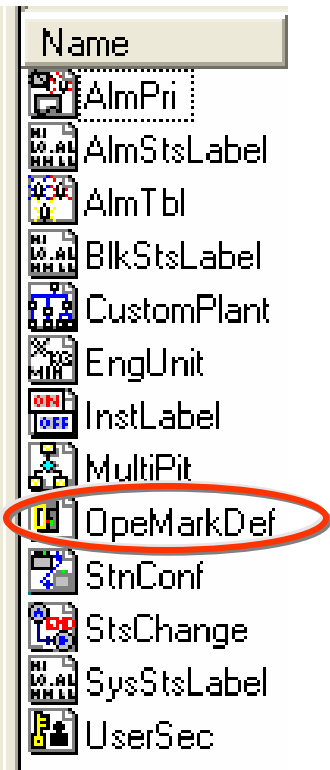
User Group

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

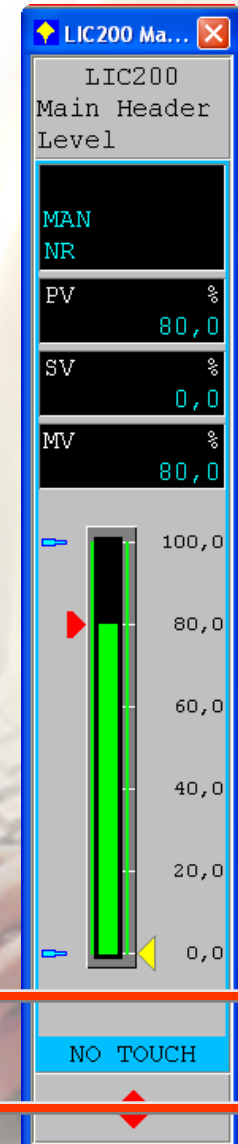


Operation Mark Builder - [Pjt:TGC_YIN File:OpeMarkDef.edf]

File Edit View Tools Window Help

Tag Label	No.	Tag Label	Color	Tag Level	Install/Remove
	1	OPMARK01	White	Comment Type	All Privileges
	2	OPMARK02	White	Comment Type	All Privileges
	3	OPMARK03	White	Comment Type	All Privileges
	4	OPMARK04	White	Comment Type	All Privileges
	5	OPMARK05	White	Comment Type	All Privileges
	6	OPMARK06	White	Comment Type	All Privileges
	7	OPMARK07	White	Comment Type	All Privileges
	8	OPMARK08	White	Comment Type	All Privileges
	9	OPMARK09	White	Comment Type	All Privileges
	10	OPMARK10	White	Comment Type	All Privileges
	11	OPMARK11	White	Comment Type	All Privileges

Ready Position: Line 2 Column 2



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

NO TOUCH

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

F00502E.EPS

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.

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

F00505E.EPS

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

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	No.1 - No.64	No.65 - No.128	No.129 - No.192	No.193 - No.256
Specify	1 (None)		17	KM
Engineering Unit Symbol.	2 %		18	RPM
	3 S		19	M/S
	4 MIN		20	M/M
	5 HR		21	M/H
	6 D		22	HZ
	7 DEGC		23	KHZ
	8		24	
	9 <input type="text" value="RAD"/>		25	G/CM3
	10 DEG		26	G/NM3
	11 GAL		27	KG/CM3

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

Uncheck the option button to manually register the engineering unit symbol

Properties

Name and Position | Outline | Constant | Detailed Setting

Manually Register Engineering Unit Symbol

Manually Register Switch Position Label

Plant Hierarchy

Start Number

Maximum Number of use

Number of in use (Number of Custom facilities) 1202(1000)

Display FF-PID in same style as PID.(Use P.I.D instead of GAIN.RESET.RATE)

OK Cancel

Engineering Unit Symbol Builder - [Pjt:ENGPJT File:EngUn...

File Edit View Tools Window Help

Engineering Unit Symbol

Specify Engineering Unit Symbol.

No.	Engineering Unit Symbol	No.
1	(None)	17
2	%	18
3	S	19
4	MIN	20
5	HR	21
6	D	22
7	DEGC	23
8		24
9	<input type="text" value="RAD"/>	25
10	DEG	26
11	GAL	27
12		28
13	UM	29
14	MM	30
15	CM	31

Ready

AUTOMATIC REGISTER ENGINEERING UNIT

Check the option button to automatic register the engineering unit symbol

Properties

Name and Position | Outline | Constant | Detailed Setting

Manually Register Engineering Unit Symbol

Manually Register Switch Position Label

Plant Hierarchy

Start Number: 1

Maximum Number of use: 32767

Number of in use (Number of Custom facilities): 1202(1000)

Display FF-PID in same style as PID.(Use P.I.D instead of GAIN.RESET.RATE)

OK Cancel

Engineering Unit Symbol Builder - [Pjt:ENGPJT File:EngUnit.edf]

File Edit View Tools Window Help

Engineering Unit Symbol

No.1 - No.64 | No.65 - No.128 | No.129 - No.192 | N < >

No.	Engineering Unit Symbol	No.	Engine
1	(None)	17	KM
2	%	18	RPM
3	S	19	M/S
4	MIN	20	M/M
5	HR	21	M/H
6	D	22	HZ
7	DEGC	23	KHZ
8		24	
9	RAD	25	G/CM3
10	DEG	26	G/MM3
11	GAL	27	KG/CM3
12		28	KG/MM3
13	UM	29	KG/M3
14	MM	30	
15	CM	31	PA

SWITCH POSITION LABEL BUILDER

- Name
- AlmPri
- AlmStsLabel
- AlmTbl
- BlkStsLabel
- CustomPlant
- Encl Init
- InstLabel**
- MultiPjt
- OpemkDef
- StnConf
- StsChange
- SysStsLabel
- UserSec

Switch Position Label Builder - [Pjt:TGC_YIN File:InstLabel....]

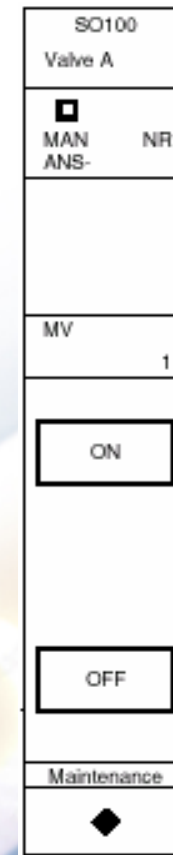
File Edit View Tools Window Help

Label 1

No.	Label 1	Label 2	Label 3	Label 4
1				
2	ON		OFF	ON
3	RUN		STOP	RUN
4	OPEN		CLOSE	OPEN
5	HIGH	MIDDLE	LOW	HIGH
6	RIGHT	MIDDLE	LEFT	RIGHT
7	DIRECT	STOP	REVERS	DIRECT
8	START	HOLD	STOP	START
9	3	2	1	0
10	STOP	PAUSE	START	STOP
11	UP		DOWN	UP
12	RUN	PAUSE	STOP	RUN2
13	START	PAUSE	RESTART	START2

Specify Switch Position Label of Label 1.

Ready Position: Line 3 Column 2



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

Switch Position Label Builder - [Pjt:ENGPJT File:InstLabel...

File Edit View Tools Window Help

Label 1

Specify Switch Position Label of Label 1.

No.	Label 1	Label 2	Label 3	Label 4
1				
2	ON		OFF	ON
3	RUN		STOP	RUN
4	OPEN		CLOSE	OPEN
5	HIGH	MIDDLE	LOW	HIGH
6	RIGHT	MIDDLE	LEFT	RIGHT
7	DIRECT	STOP	REVERS	DIRECT
8	START	HOLD	STOP	START
9	3	2	1	0
10	STOP	PAUSE	START	STOP
11	UP		DOWN	UP
12	RUN	PAUSE	STOP	RUN2
13	START	PAUSE	RESTART	START2
14				
15				
16				
17				
18				
19				

Ready Position: Line 3 Column 2

Switch Position Label Builder - [Pjt:ENGPJT File:InstLabel...

File Edit View Tools Window Help

Label 1

Specify Switch Position Label of Label 1.

No.	Label 1	Label 2	Label 3	Label 4
1				
2	ON		OFF	ON
3	RUN		STOP	RUN
4	OPEN		CLOSE	OPEN
5	HIGH	MIDDLE	LOW	HIGH
6	RIGHT	MIDDLE	LEFT	RIGHT
7	DIRECT	STOP	REVERS	DIRECT
8	START	HOLD	STOP	START
9	3	2	1	0
10	STOP	PAUSE	START	STOP
11	UP		DOWN	UP
12	RUN	PAUSE	STOP	RUN2
13	START	PAUSE	RESTART	START2
14				
15				
16				
17				
18				
19				

Ready Position: Line 3 Column 2

ALARM BUILDER

- AlmPri
- AlmStsLabel
- AlmTbl
- BlkStsLabel
- CustomPlant
- EngUnit
- InstLabel
- MultiPjt
- OpemkDef
- StnConf
- StsChange
- SysStsLabel
- UserSec

System-fixed Status Character String Viewer - [Pjt:TGC_YIN File:...

Selection Item Name	Alarm Status	Alarm Flashing Status	Alarm Out		
Bit	PID	PI-BLEND	ABSETU	FSBSET	M
7					
8	CAL	CAL	CAL	CAL	CAL
9	NR	NR	NR	NR	NR
10	OOP	OOP	OOP	OOP	OOP
11	IOP	IOP	IOP	IOP	IOP
12	IOP-	IOP-	IOP-	IOP-	IOP-
13	HH	HH	NPLS	NPLS	TRIP
14	LL	LL		DV2	
15					
16				OUTS	
17	HI	HI	HI	EMST	HI
18	LO	LO			LO
19			LEAK	LEAK	
20					
21	DV+	DV+	BDV+	DV1	PERR
22	DV-	DV-	RDV-		

Alarm Processing Table Builder - [Pjt:TGC_YIN File:AlmTbl.edf]

Color[5]	Bit	Color[1]	Priority[1]	Color[2]
N:Black	7	Blue	High-priority Alarm	Blue
R:Red	8	Cyan	High-priority Alarm	Cyan
G:Green	9	Green	High-priority Alarm	Green
Y:Yellow	10	Red	High-priority Alarm	Red
M:Magenta	11	Red	High-priority Alarm	Red
C:Cyan	12	Red	High-priority Alarm	Red
W:White	13	Red	High-priority Alarm	Red
SB:Steel Blu	14	Red	High-priority Alarm	Red
PK:Pink	15	Red	High-priority Alarm	Red
SG:Spring Gr	16	Red	High-priority Alarm	Red
OR:Orange	17	Red	High-priority Alarm	Red
YG:Yellow Gr	18	Red	High-priority Alarm	Red
VO:Violet	19	Red	High-priority Alarm	Red
DB:Deep Sky	20	Red	High-priority Alarm	Red
GR:Gray	21	Yellow	High-priority Alarm	Yellow
	22	Yellow	High-priority Alarm	Yellow

Alarm Priority Builder - [Pjt:TGC_YIN File:AlmPri.edf]

Historical File	Function	CRT	PRT	Historical File
0:No	► Occurrence	Yes	Yes	1
1:Yes	Recovery	Yes	Yes	Yes

Alarm status bit position

To be continued.....