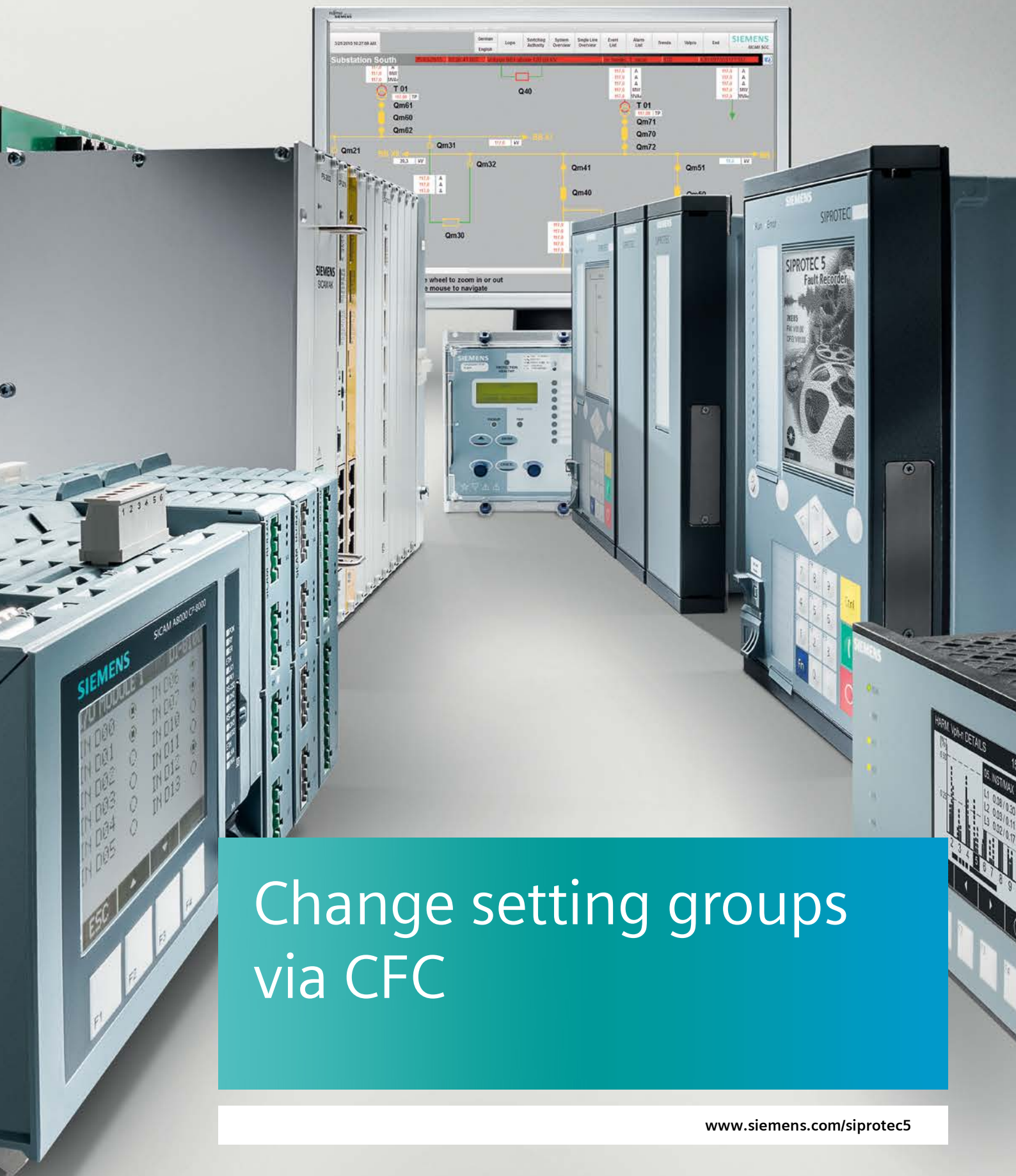


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Change setting groups
via CFC

SIPROTEC 5 Application

Change setting groups via CFC

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APN-023, Edition 3

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1 Change setting groups via CFC

1.1 Introduction

In some applications it is beneficial to have more than one Setting Group in the device. Based on system conditions the appropriate setting group is then selected. The selection of the setting group may be implemented with binary inputs or control inputs via interface. In some cases the selection will be implemented based on conditions derived from a user defined logic implemented with CFC in the device. This application note will show how the CFC logic interfaces with the Setting Group selection.

The example will focus on the method used in CFC to select a setting group. For illustration an application with 3 Setting Groups is used. The table below describes the applied setting groups:

Setting Group	Description	Activation Criteria
Setting Group 1	Active when both lines are in service and connection in parallel at remote bus	Parallel Line in Service AND Parallel connection at remote bus
Setting Group 2	Active when only one line is in service or when remote bus connection is to separate bus-sections	Parallel Line open OR NO parallel connection at remote bus
Setting Group 3	Active when parallel line is out of service and grounded	Parallel Line open AND Grounded at both ends

Table 1: Definition of Setting Groups

1.1.1 Example

SIPROTEC 5 supports up to 8 setting groups. To apply more than one setting group the desired number of setting groups must be entered under Settings/Device settings as shown in the diagram below:

The screenshot shows the 'Device settings' window with the following values:

- Edit mode: Secondary
- Number of settings groups: 3
- Active settings group: over control
- DIGSI 5 uses following IP address: 172.16.60.60 (Integrated Ethernet interfac)

Figure 1: Enter the number of desired Setting groups

The "Active setting group" parameter must be set to "over control" if the selection is done via CFC. If this is not done the CFC described below will not change the setting groups as desired.

Once the application settings have been applied to one of the Setting Groups, this setting group can be copied to the other setting groups. It is therefore only necessary to apply the settings that deviate from the initial set in the other setting groups. In this example only the parameter XE/XL and RE/RL is different in the three setting groups.

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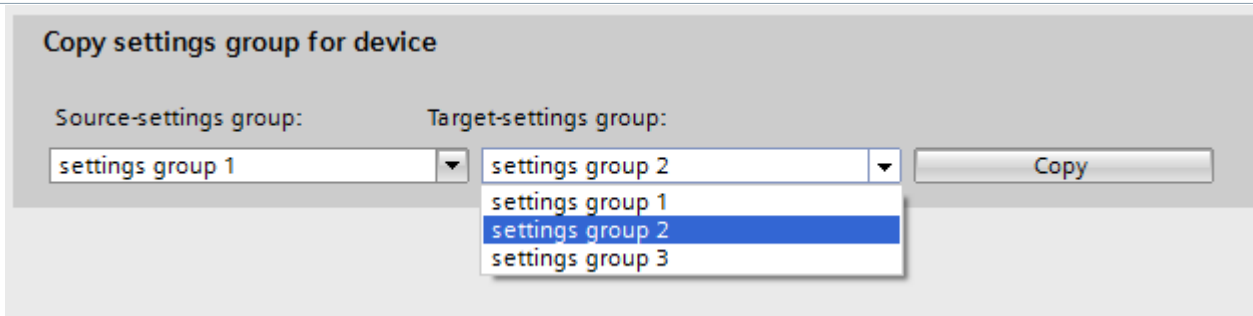


Figure 2: Copy original Setting group into the other setting groups

To change settings in a particular setting group, the setting group must be selected under “Values for change”, see diagram below.

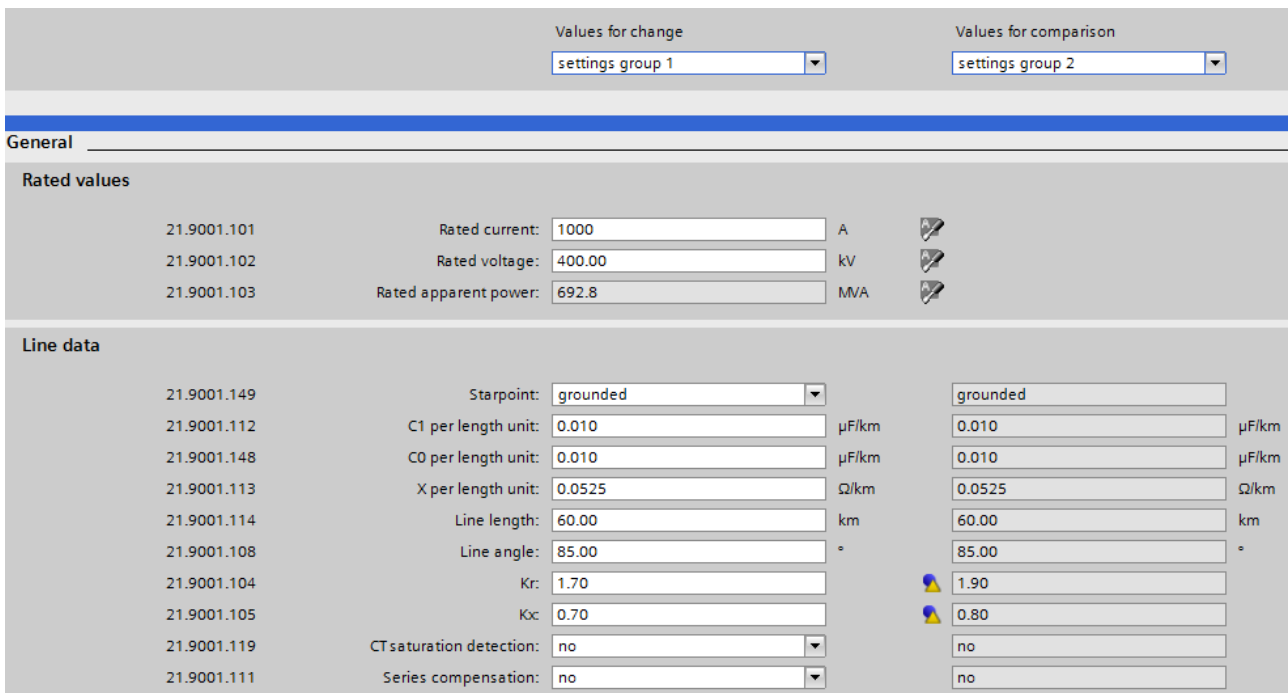


Figure 3: Changing and comparing settings of the setting groups

It is possible to compare the settings with one of the other setting groups. Deviations are highlighted.

1.1.2 Signals from parallel line

For the example the following status signals are obtained from the parallel line:

- Parallel Line in service
- Parallel Line out of service
- Remote connection parallel
- Parallel Line grounded at both ends

For purpose of the example, the information from the parallel line is derived via binary inputs. The signals could also be derived from other sources, e.g. GOOSE, Protection Interface or System Interface.

Signals	Number	Type	4	3.5	3.6	3.7	3.8
(All)	(All)
▶ Res. LED not in Grp.	7411						
▼ Parallel Line	6361		*	*	*	*	*
Mode (controllable)	6361.51	ENC					
▶ Behavior	6361.52	ENS					
▶ Health	6361.53	ENS					
In Service		SPS	H				
Out of Service		SPS		H			
Remote Parallel		SPS			H		
Grounded		SPS					H

Figure 4: Routing of information from parallel line

1.1.3 CFC logic for Setting Group Selection

The logic diagram (CFC) shown on the next page is used to select the Setting Groups as defined in Table 1. Care should be taken to prevent the selection of two setting groups at the same time (the result will then depend on the run sequence of the logic).

The SPC_OUT modules must be applied as shown. Note the applied inputs at the "VAL" inputs of the SPC_OUT modules.

The corresponding SPC, e.g. Act. Settings group 2, must be routed to the "ID" input of the SPC_OUT module.

Because the SPC_OUT Block only reacts to a change of the TRIG input signal, it is necessary to block the TRIG input for the initial execution of the CFC plan - during a device startup. This can be achieved by using, e.g., a Timer building block that has been coupled with the trigger signal.

The status outputs of the SPC_OUT modules may be used to indicate the "Health" of the Setting Group selection (this is optional).

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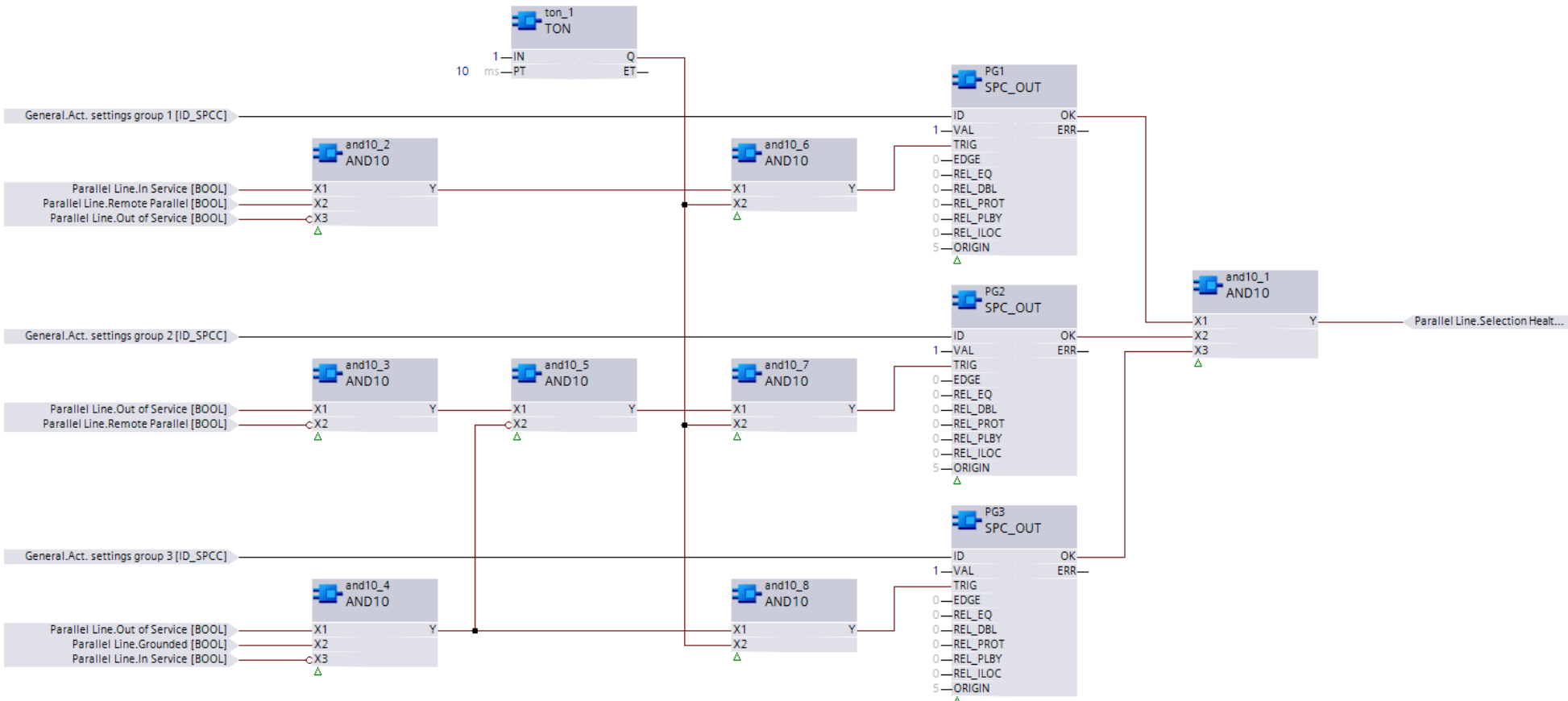


Figure 5: CFC chart for selection of Setting Group

Arc Flash Protection for Medium Voltage Switchgears

Partners Application Note

1.2 Conclusion

By means of the SPC control for selection of the Setting Group, it is ensured that the selected setting group only changes when a new valid selection is established. The new selection resets the old selection. Care should be taken that the CFC does not select multiple Setting Groups at the same time.

Following a restart the device will initially use the last active setting group.

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