



APPLICATION NOTE

New Structure of CB Monitoring in SIPROTEC 5

APN-095, Edition 2

SIEMENS

SIPROTEC 5 Application

New structure of CB monitoring

SIPROTEC 5 Application

New Structure of CB Monitoring in SIPROTEC 5

APN-095, Edition 2

Content

1	New structure of CB monitoring	3
1.1	Introduction	3
1.2	Structure of CB Monitoring from V9.30 on	3
1.3	Handling of the two versions of CB Monitoring	6
1.4	Description of the Primary Monitoring Functionalities	7
1.5	Tips for handling of the functionality	18
1.6	Summary	19

1 New structure of CB monitoring

1.1 Introduction

Starting in SIPROTEC 5 Version V9.30, the circuit breaker monitoring functionality is innovated. Due to adaptations in IEC 61850 standard, the modeling of the circuit breaker monitoring has changed. In the realization in SIPROTEC 5, it means that a new Function (FN) for the CB monitoring was created. This application note explains the new approach and the differences to the old approach. In Edition 2 of this application note, the new functionalities are explained which have been added until V9.80.

1.2 Structure of CB Monitoring from V9.30 on

The structure of the SIPROTEC 5 CB Monitoring is re-organized into the 3 Phases, according to definition in the IEC 61850-7-4 (LN SCBR). This can be seen in the representation if the FN is instantiated:

▼	QA1		201	
▶	Trip logic		201.5341	
▶	Circuit break.		201.4261	
▶	Manual close		201.6541	
▶	Reset LED Group		201.13381	
▶	Control		201.4201	
▶	Interlocking		201.4231	
▶	CB test		201.6151	
▶	Fundamental		201.1501	
▶	25 Synchronization		201.1151	
▼	CB monitoring		201.3431	
▶	General		201.3431.2...	
▶	Phase A		201.3431.2...	
▶	Phase B		201.3431.2...	
▶	Phase C		201.3431.2...	

The functionality of CB Monitoring is now visible and configurable as settings of the Stages of the FB "CB monitoring":

SIPROTEC 5 Application

New structure of CB monitoring

Phase A [FunctionBlockData.Protection] Properties Info Diagnostics

General

Details
Settings
User information

Phase A

Edit mode: secondary Active: settings group 1

General

201.3431.23971.1	Mode: on		★
201.3431.23971.101	Opening time: 65 ms		★
201.3431.23971.102	Break time: 80 ms		★
201.3431.23971.103	Make time: 80 ms		★

2P-method

201.3431.23971.110	Active: <input type="checkbox"/>	AO	★
--------------------	----------------------------------	----	---

ΣIx-method

201.3431.23971.120	Active: <input type="checkbox"/>	AO	★
--------------------	----------------------------------	----	---

I2t-method

201.3431.23971.130	Active: <input type="checkbox"/>	AO	★
--------------------	----------------------------------	----	---

Make time

201.3431.23971.140	Active: <input checked="" type="checkbox"/>	AO	★
201.3431.23971.141	Threshold for warning: 5 %		★
201.3431.23971.142	Threshold for alarm: 10 %		★
201.3431.23971.143	Oper.current threshold: 0.100 A		★
201.3431.23971.144	Delay correction time: 0 ms		★

Break time

201.3431.23971.150	Active: <input checked="" type="checkbox"/>	AO	★
201.3431.23971.151	Threshold for warning: 5 %		★
201.3431.23971.152	Threshold for alarm: 10 %		★
201.3431.23971.153	Delay correction time: 0 ms		★

The individual functionality like 2P method, I2t method etc can be activated, then DIGSI shows all available settings to configure the functionality. For more details on available functions, see chapter 1.4.

Phase A [FunctionBlockData.Protection] Properties Info Diagnostics

General

Details
Settings
User information

Phase A

Edit mode: secondary Active: settings group 1

General

201.3431.23971.1	Mode: on		★
201.3431.23971.101	Opening time: 65 ms		★
201.3431.23971.102	Break time: 80 ms		★
201.3431.23971.103	Make time: 80 ms		★

2P-method

201.3431.23971.110	Active: <input checked="" type="checkbox"/>	AO	★
201.3431.23971.111	Switching cycles at Ir: 10000		★
201.3431.23971.112	Rated short-circ. cur. I _{sc} : 25000 A		★
201.3431.23971.113	Switching cycles at I _{sc} : 50		★
201.3431.23971.114	Abrasion warn. threshold: 100		★
201.3431.23971.115	Abrasion alarm threshold: 50		★

ΣIx-method

201.3431.23971.120	Active: <input checked="" type="checkbox"/>	AO	★
201.3431.23971.121	Exponent: 2.0		★
201.3431.23971.122	Threshold: 10000		★

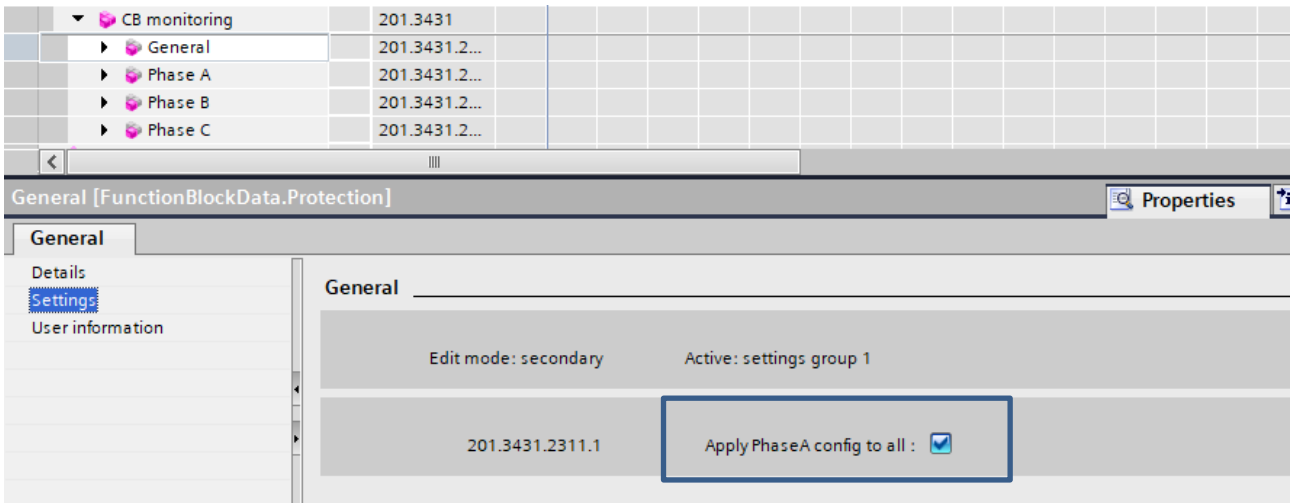
I2t-method

201.3431.23971.130	Active: <input type="checkbox"/>	AO	★
--------------------	----------------------------------	----	---

SIPROTEC 5 Application

New structure of CB monitoring

The settings can be individually set for each phase; if this is not required, then the settings of all three phases can be synchronized by the respective setting in the stage "General":



The new functionality (break time since V9.30) is added only in the new FB "CB monitoring", not in the old "CB wear monitoring". This will be valid also for future extensions of the CB monitoring functionality.

SIPROTEC 5 Application

New structure of CB monitoring

1.3 Handling of the two versions of CB Monitoring

The old and the new Function (FN) Circuit Breaker Monitoring have different names to be able to distinguish:

New FB: CB monitoring

Old FB: CB wear monitoring

Both FBs are available in the DIGSI 5 library if you have installed Device Drivers \leq V9.20 and \geq V9.30. However in new created devices (configuration version \geq V9.30), only the new FB can be instantiated. In legacy devices (configuration version \leq V9.20), only the old FB can be instantiated. In the DIGSI 5 library, both versions are contained (if respective DDDs are installed).

The reason for keeping the old FB is to be able to upgrade devices from \leq V9.20 to \geq V9.30 (this will keep the old FB in the upgraded device).

Note: If you upgrade a device from \leq V9.20 to \geq V9.30, and afterwards create a new Circuit Breaker in the device, you have the choice to either use the old FB or the new FB (recommended is the use of the new FB).

The difference of the two FBs can also be clearly seen in the IEC61850 modeling:

New FB:

CB1_CBMonitoring	<input type="checkbox"/>	QA1:CB monitoring
LLN0	<input checked="" type="checkbox"/>	CB1_CBMonitoring/LLN0
GAPC1	<input type="checkbox"/>	QA1:CB monitoring:General
PhA_SCBR1	<input type="checkbox"/>	QA1:CB monitoring:Phase A
PhB_SCBR1	<input type="checkbox"/>	QA1:CB monitoring:Phase B
PhC_SCBR1	<input type="checkbox"/>	QA1:CB monitoring:Phase C

Old FB:

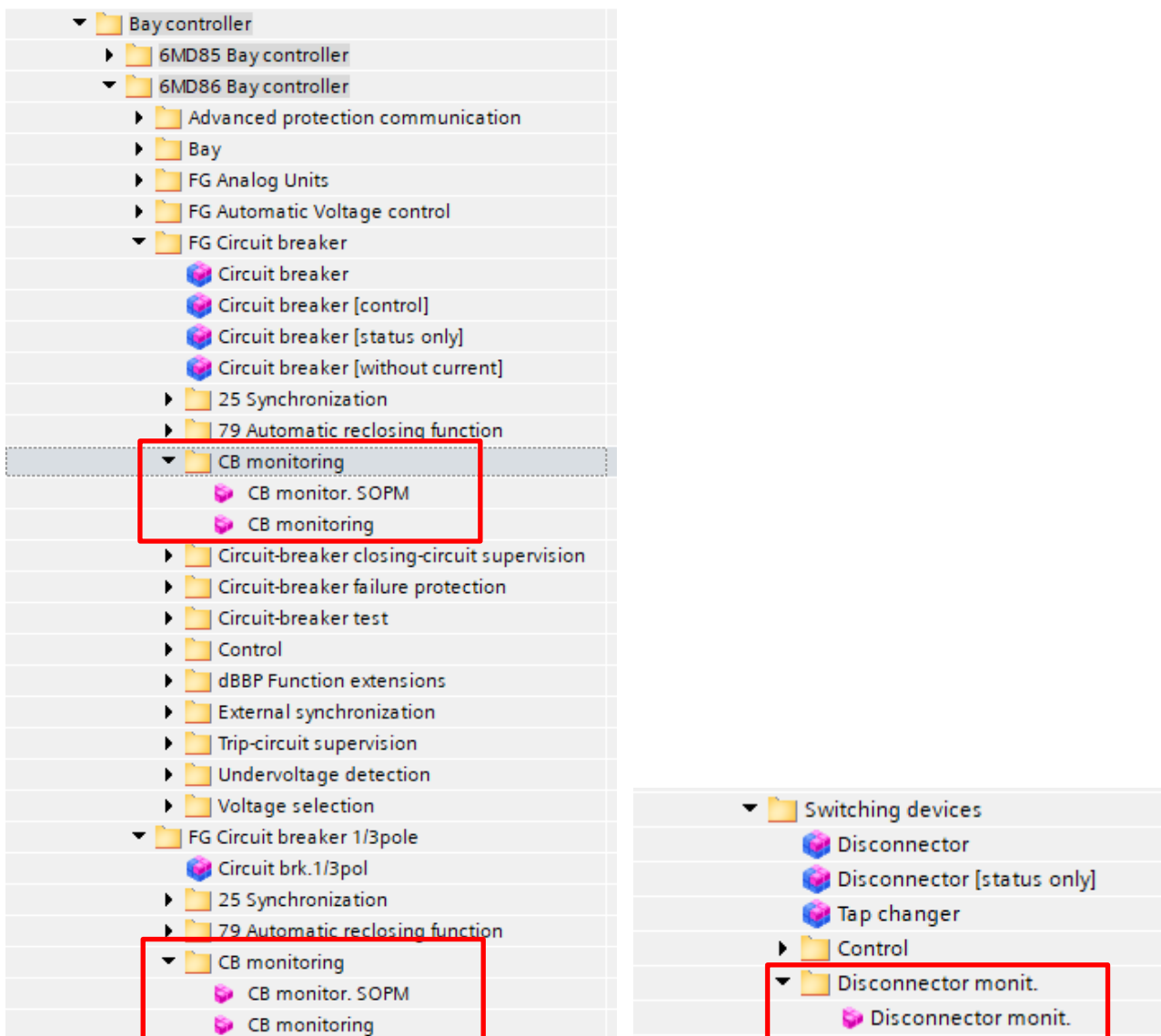
CB1_CBWearMonitoring	<input type="checkbox"/>	QA1:CB wear monitoring
LLN0	<input checked="" type="checkbox"/>	CB1_CBWearMonitoring/LLN0
GAPC1	<input type="checkbox"/>	QA1:CB wear monitoring:General
Plx_SCBR1	<input type="checkbox"/>	QA1:CB wear monitoring:ΣIx-method
I2t_SCBR1	<input type="checkbox"/>	QA1:CB wear monitoring:I2t-method

1.4 Description of the Primary Monitoring Functionalities

In this application note update (Edition 2), the functionality of the Primary Monitoring Functionality is summarized for version SIPROTEC 5 V9.80. Only the new Function Block "CB Monitoring" (>=V9.30) is described.

How to configure Primary Monitoring Functionalities

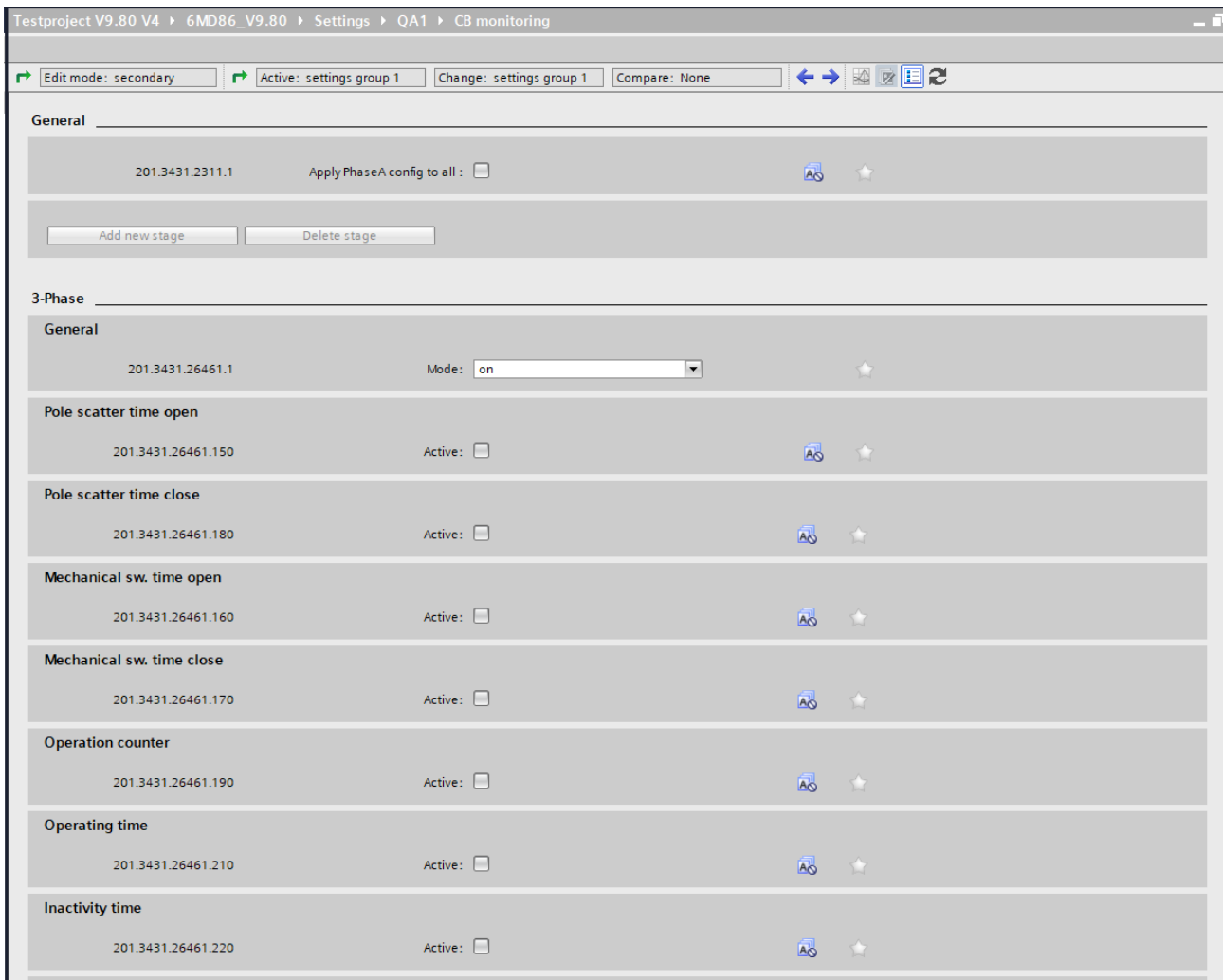
To configure the monitoring, drag and drop the function block "CB monitoring" or "Disconnecter Monitoring" from the DIGSI library into the Function Group "Circuit Breaker" or "Disconnecter" which you would like to monitor. In the FG circuit breaker, additionally the FB "CB monitoring SOPM" is available, where SOPM stands for Supervision of Operating Mechanism. (Logical Node Name from IEC61850). For the Circuit Breaker 1/3pole, additionally the function "Pole discrepancy" is available.



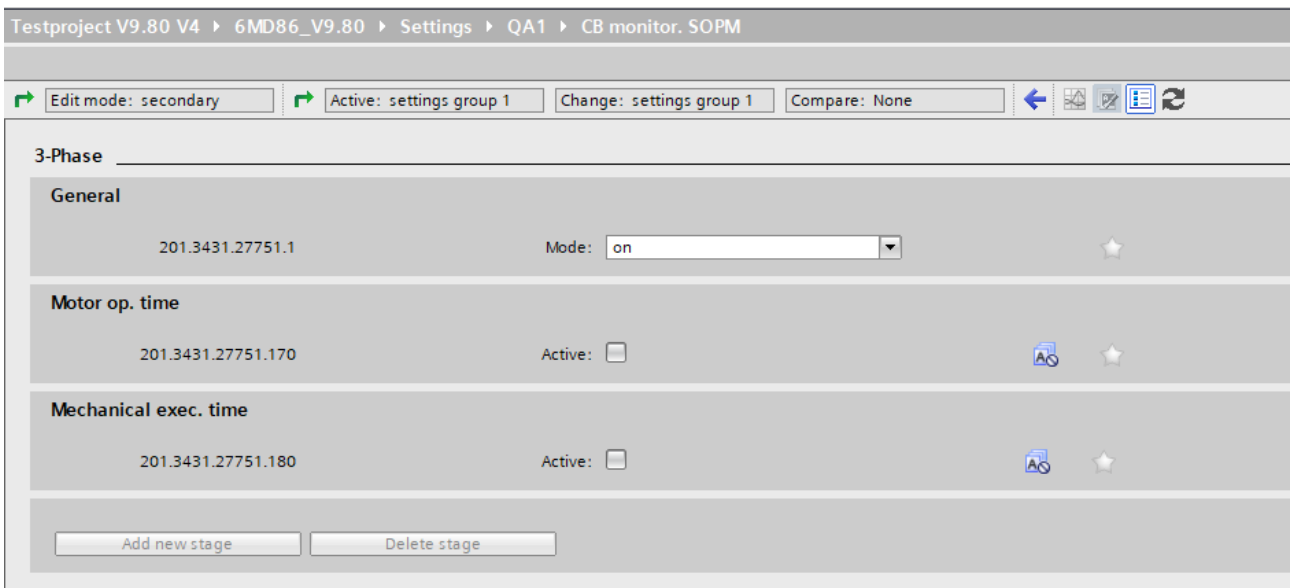
In the device settings, you are then able to select the offered monitoring functions in this function block.

SIPROTEC 5 Application

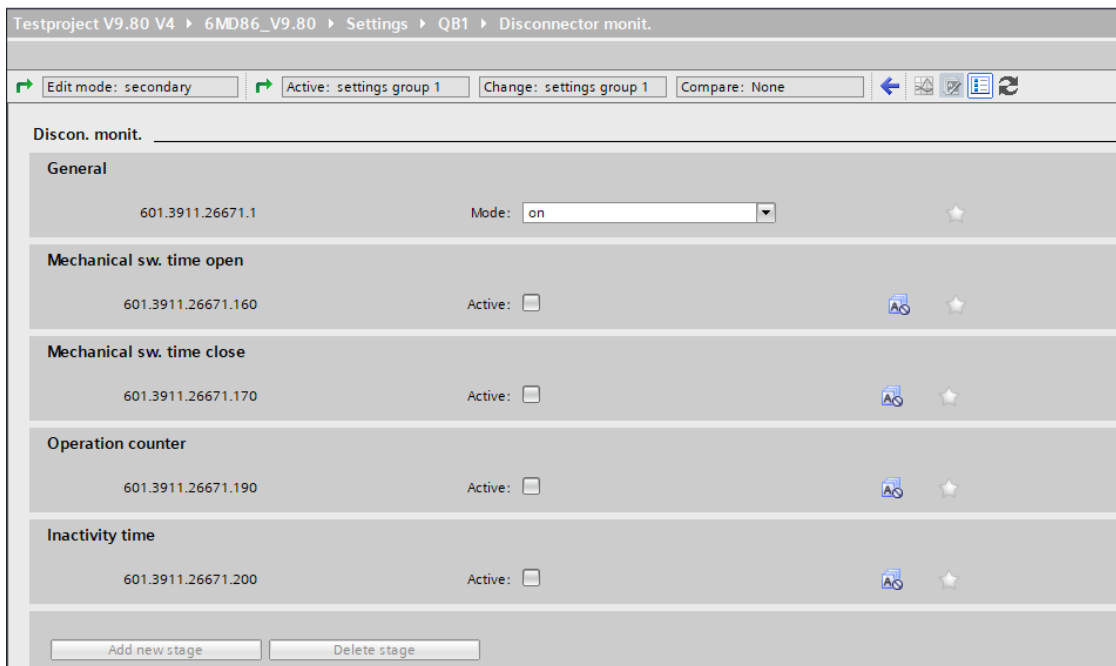
New structure of CB monitoring



Offered functionalities in FB "CB monitoring" (V9.80)



Offered functionalities in FB "CB monitoring SOPM" (V9.80)



Offered functionalities in FB “Disconnector monitoring”

The instantiation of the function blocks costs function points (FP): Per Circuit Breaker 10 FPs (independent if one or both FBs are used), per Disconnector 5 FPs. “Pole Discrepancy” costs another 5 FPs per circuit breaker.

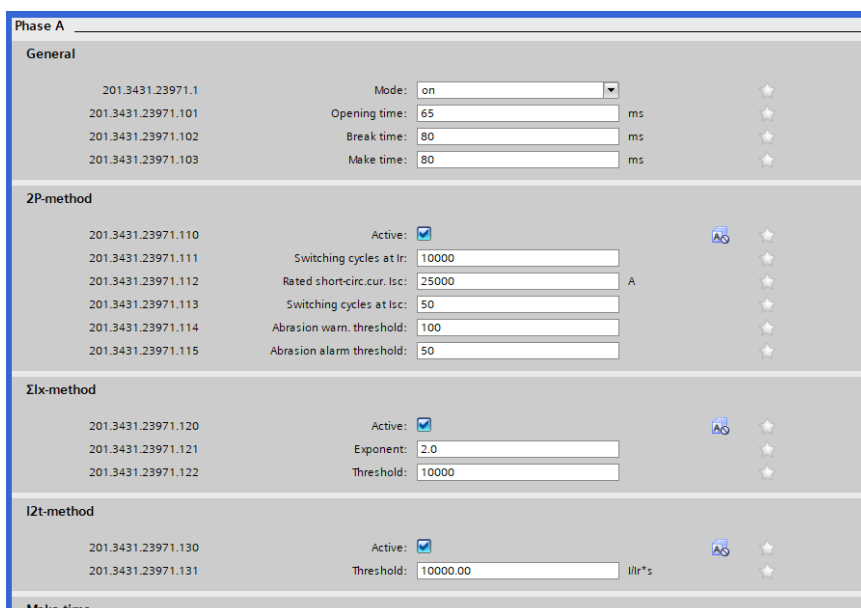
Categories of Monitoring Functions

A. Current flow based monitoring

These functions measure the current through the circuit breaker and derive the monitoring measurements from it. The following current-flow based monitoring functions are available:

A1. Circuit Breaker Wear Monitoring: 2P, $\sum I_x$, and I2t-Method

These functionalities have to be activated per phase in the settings (automatic copy of setting of Phase A to other phases is possible).



SIPROTEC 5 Application

New structure of CB monitoring

2P-Method: Calculation of remaining switching cycles

ΣI_x -Method: Sum of Trip Currents per pole

I^2t -Method: Sum of (Trip Currents)² per pole

The calculated values and the respective warnings and alarms are then available in the information routing matrix.

▼ CB monitoring		201.3431	
▶ General		201.3431.2...	
▶ 3-Phase		201.3431.2...	
▼ Phase A		201.3431.2...	
Mode (controllable)	☆	201.3431.2...	ENC
Inactive	☆	201.3431.2...	SPS
▶ Behavior	☆	201.3431.2...	ENS
▶ Health	☆	201.3431.2...	ENS
2P abrasion remaining	☆	201.3431.2...	INS
2P abrasion cumulated	☆	201.3431.2...	MV
2P abrasion last sw.op.	☆	201.3431.2...	MV
2P abrasion warning	☆	201.3431.2...	SPS
2P abrasion alarm	☆	201.3431.2...	SPS
ΣI_x	☆	201.3431.2...	BCR
Warning ΣI_x	☆	201.3431.2...	SPS
ΣI^2t	☆	201.3431.2...	BCR
Warning ΣI^2t	☆	201.3431.2...	SPS

For detailed description of the calculation methods and principles, please refer to the device manual.

A2. Electrical Make Time / Break Time

These functionalities also have to be activated per phase.

The screenshot shows the configuration interface for Phase A. It is divided into several sections:

- General:** Includes a Mode dropdown set to 'on' and input fields for Opening time (65 ms), Break time (80 ms), and Make time (80 ms).
- 2P-method:** An 'Active' checkbox is currently unchecked.
- ΣI_x -method:** An 'Active' checkbox is currently unchecked.
- I^2t -method:** An 'Active' checkbox is currently unchecked.
- Make time:** An 'Active' checkbox is checked. It includes input fields for Threshold for warning (5%), Threshold for alarm (10%), Oper. current threshold (0.100 A), and Delay correction time (0 ms).
- Break time:** An 'Active' checkbox is checked. It includes input fields for Threshold for warning (5%), Threshold for alarm (10%), and Delay correction time (0 ms).

At the bottom, there are buttons for 'Add new stage' and 'Delete stage'.

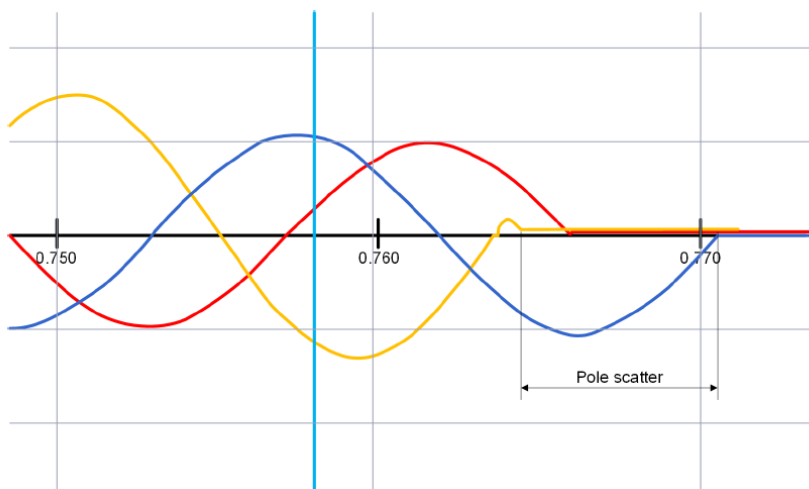
The calculated times for CB close (make time) and CB open (Break time) per phase are then visible in the information routing matrix:

▼ CB monitoring		201.3431		
▶ General		201.3431.2...		
▶ 3-Phase		201.3431.2...		
▼ Phase A		201.3431.2...		
Mode (controllable)	☆	201.3431.2...	ENC	
Inactive	☆	201.3431.2...	SPS	
▶ Behavior	☆	201.3431.2...	ENS	
▶ Health	☆	201.3431.2...	ENS	
Make time	☆	201.3431.2...	MV	
Make-time warning	☆	201.3431.2...	SPS	
Make-time alarm	☆	201.3431.2...	SPS	
Break time	☆	201.3431.2...	MV	
Break-time warning	☆	201.3431.2...	SPS	
Break-time alarm	☆	201.3431.2...	SPS	

For further description of the calculation principle and the inputs of this function, please see the device manual.

A3. Pole Scatter Open / Pole Scatter Close time monitoring

The time between the extinction of the current of the first phase until the extinction of the last phase current when opening the circuit breaker is the pole scatter open time. A greater time difference can lead to conclusions on the circuit-breaker abrasion. See following picture.



The time between reaching the operational threshold of the current of the first phase until reaching the operational threshold of the current of the last phase when closing the circuit breaker is the pole scatter close time. A greater time difference can lead to conclusions on the circuit-breaker abrasion.

The pole scatter monitoring is activated in the "3-Phase" section of the CB monitoring settings.

3-Phase

General

201.3431.26461.1 Mode: ☆

Pole scatter time open

201.3431.26461.150 Active: AO ☆

201.3431.26461.151 Threshold for warning: ms ☆

201.3431.26461.152 Threshold for alarm: ms ☆

Pole scatter time close

201.3431.26461.180 Active: AO ☆

201.3431.26461.181 Threshold for warning: ms ☆

201.3431.26461.182 Threshold for alarm: ms ☆

201.3431.26461.183 Oper.current threshold: A ☆

SIPROTEC 5 Application

New structure of CB monitoring

Also in this case, the resulting calculated values and the alarms appear in the information routing matrix.

▼ CB monitoring		201.3431	
▶ General		201.3431.2...	
▼ 3-Phase		201.3431.2...	
Mode (controllable)	☆	201.3431.2...	ENC
Inactive	☆	201.3431.2...	SPS
▶ Behavior	☆	201.3431.2...	ENS
▶ Health	☆	201.3431.2...	ENS
Pole scatter time open	☆	201.3431.2...	MV
ScatterTm open warn.	☆	201.3431.2...	SPS
ScatterTm open alarm	☆	201.3431.2...	SPS
Pole scatter time close	☆	201.3431.2...	MV
ScatterTm close warn.	☆	201.3431.2...	SPS
ScatterTm close alarm	☆	201.3431.2...	SPS

B. Auxiliary Contact based monitoring

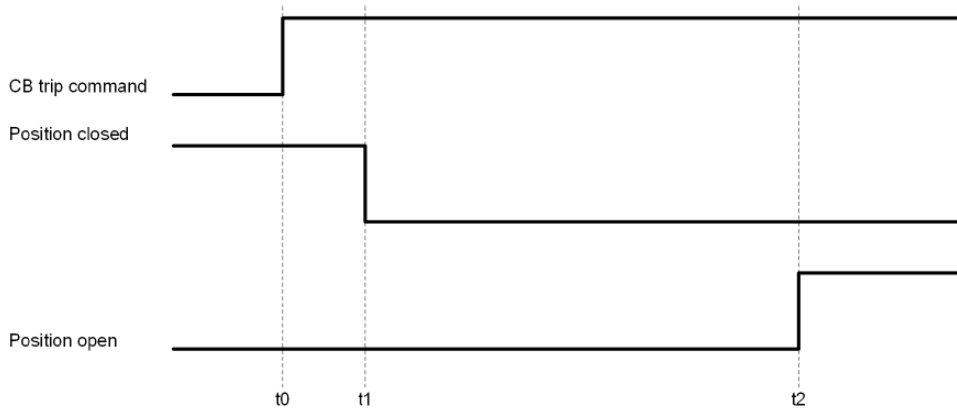
These monitoring functions base on the supervision of the auxiliary contacts of the breaker.

B1. Mechanical Open/Close Time

This functionality calculates the circuit breaker switch time based on changes of the auxiliary contacts. It is activated in the "3-Phase" section of the CB monitoring settings.

The screenshot shows the configuration interface for 3-Phase monitoring. It is divided into several sections:

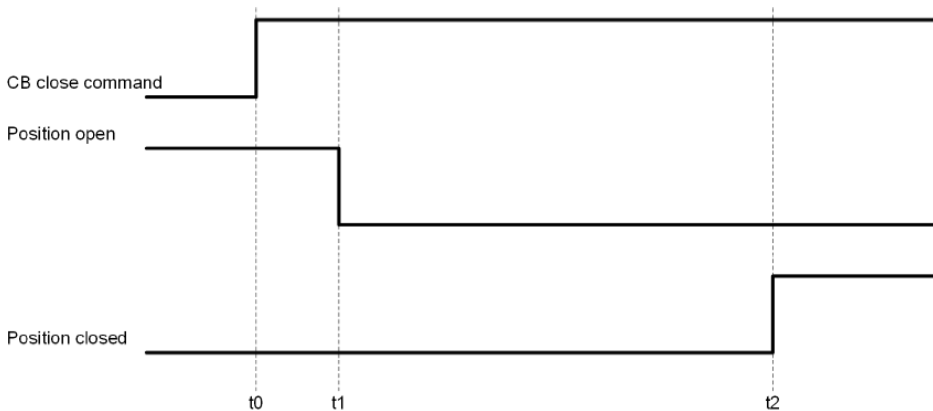
- General:** Shows the mode set to "on".
- Pole scatter time open:** Shows the active status as "Active: ".
- Pole scatter time close:** Shows the active status as "Active: ".
- Mechanical sw. time open:** Shows the active status as "Active: ". It includes several time settings:
 - Auxiliary-contact time: 35 ms
 - Thres. aux.c. time warn: 5 ms
 - Thres. aux.c. time alarm: 10 ms
 - Reaction time: 15 ms
 - Thres. react. time warn: 3 ms
 - Thres. react. time alarm: 5 ms
- Mechanical sw. time close:** Shows the active status as "Active: ". It includes several time settings:
 - Auxiliary-contact time: 35 ms
 - Thres. aux.c. time warn: 5 ms
 - Thres. aux.c. time alarm: 10 ms
 - Reaction time: 15 ms
 - Thres. react. time warn: 3 ms
 - Thres. react. time alarm: 5 ms



[dw_charact_cb-breaktime, 1, en_US]

- t2 - t0: Auxiliary-contact time opening
- t1 - t0: Response time opening
- t2 - t1: Auxiliary-contact moving time opening

Principle of mechanical open time calculation



[dw_charact_cb-makeime, 1, en_US]

- t2 - t0: Auxiliary-contact time closing
- t1 - t0: Response time closing
- t2 - t1: Auxiliary-contact moving time closing

Principle of mechanical closed time calculation

You will find the values and alarms in the information routing matrix if the functions are activated in the settings.

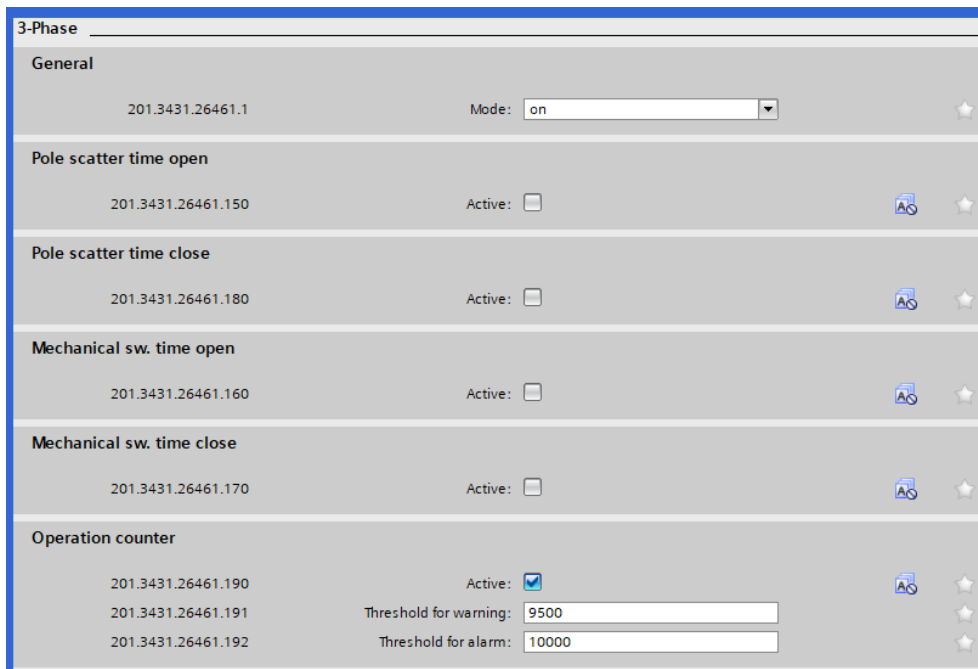
CB monitoring	201.3431		
General	201.3431.2...		
3-Phase	201.3431.2...		
Mode (controllable)	☆ 201.3431.2...	ENC	
Inactive	☆ 201.3431.2...	SPS	
Behavior	☆ 201.3431.2...	ENS	
Health	☆ 201.3431.2...	ENS	
Aux.-contact time open	☆ 201.3431.2...	MV	
Aux.c. time open warn.	☆ 201.3431.2...	SPS	
Aux.c. time open alarm	☆ 201.3431.2...	SPS	
Reaction time open	☆ 201.3431.2...	MV	
React. time open warn.	☆ 201.3431.2...	SPS	
React. time open alarm	☆ 201.3431.2...	SPS	
Aux.c. travel time open	☆ 201.3431.2...	MV	
Aux.-cont. time close	☆ 201.3431.2...	MV	
Aux.c. time close warn.	☆ 201.3431.2...	SPS	
Aux.c. time close alarm	☆ 201.3431.2...	SPS	
Reaction time close	☆ 201.3431.2...	MV	
React. time close warn.	☆ 201.3431.2...	SPS	
React. time close alarm	☆ 201.3431.2...	SPS	
Aux.c. travel time close	☆ 201.3431.2...	MV	

SIPROTEC 5 Application

New structure of CB monitoring

B2. Number of open/close operations

This monitoring feature counts the number of operations of the circuit breaker. It is activated in the "3-Phase" section of the CB monitoring settings.



The following results and alarms appear in the information routing matrix:

▼ CB monitoring		201.3431		
▶ General		201.3431.2...		
▼ 3-Phase		201.3431.2...		
Mode (controllable)	☆	201.3431.2...	ENC	
Inactive	☆	201.3431.2...	SPS	
▶ Behavior	☆	201.3431.2...	ENS	
▶ Health	☆	201.3431.2...	ENS	
Operation counter	☆	201.3431.2...	INS	
Oper.-counter warning	☆	201.3431.2...	SPS	
Oper.-counter alarm	☆	201.3431.2...	SPS	

C. Current flow and auxiliary contact based monitoring

These monitoring function works with both the current measurement and the feedback of the CB position.

C1. Pole Discrepancy

This function is a special case, as it is not part of the function block "CB monitoring": It has its own function block. Additionally, it is only available in the CB 1/3pole. Therefore, it checks the auxiliary contacts for single open poles. Additionally, the current can be supervised for that purpose. As the function can also trip the CB, it is both a monitoring and a protection function. Its instantiation in a Function Group Circuit Breaker costs 5 function points, independent of the usage of a FB "Circuit breaker monitoring".



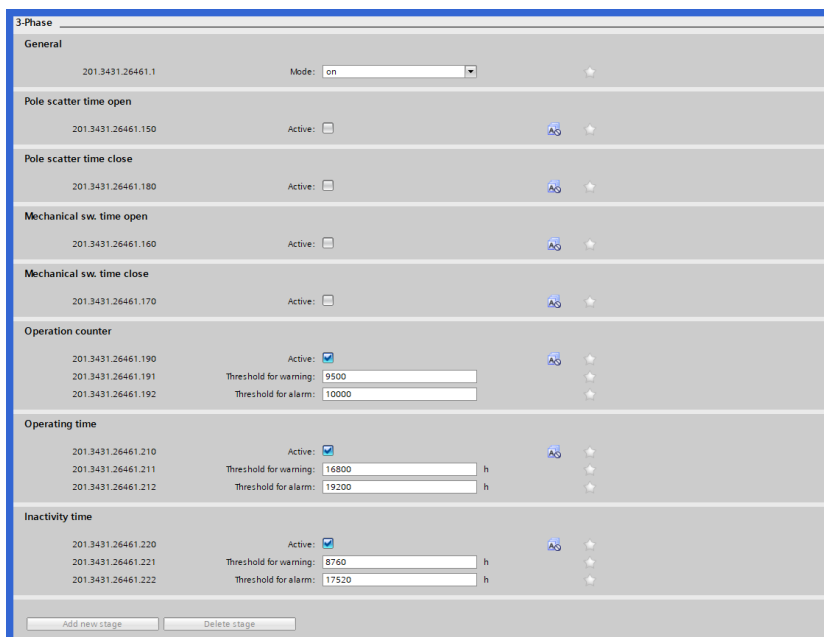
It detects whether the position of one pole is different than the position of the other poles. As it does not generate measurements, the signal view in the information routing matrix is as follows:

Function	Address	Signal	Priority
Circuit brk.1/3pol 1	301		
Trip logic	301.5341		
Circuit break.	301.4261		
Manual close	301.6541		
Control	301.4201		
Interlocking	301.4231		
CB test	301.6151		
Reset LED Group	301.13381		
Pole discrep.	301.26761		
>Block function	301.26761.82	SPS	
Mode (controllable)	301.26761.51	ENC	
Inactive	301.26761.54	SPS	
Behavior	301.26761.52	ENS	
Health	301.26761.53	ENS	
Pickup	301.26761.55	ACD	
Alarm	301.26761....	SPS	
Operate	301.26761.57	ACT	
general		SPS	
Fundamental	301.1501		
CB monitoring	301.3431		
CB monitor. SOPM	301.3431		

D. Time Based Monitoring

D1. CB Inactivity Time, D2. CB Operating Time

Both Supervision Times can be activated in the "3Phase" section of the monitoring settings. In the 1/3phase circuit breaker, these functions work per phase.



SIPROTEC 5 Application

New structure of CB monitoring

The calculated time values and alarms appear as follows in the information routing matrix:

▼ CB monitoring		201.3431		
▶ General		201.3431.2...		
▼ 3-Phase		201.3431.2...		
▶ Mode (controllable)	☆	201.3431.2...	ENC	
▶ Inactive	☆	201.3431.2...	SPS	
▶ Behavior	☆	201.3431.2...	ENS	
▶ Health	☆	201.3431.2...	ENS	
▶ Operation counter	☆	201.3431.2...	INS	
▶ Oper.-counter warning	☆	201.3431.2...	SPS	
▶ Oper.-counter alarm	☆	201.3431.2...	SPS	
▶ Operating time	☆	201.3431.2...	INS	
▶ Operating-time warn.	☆	201.3431.2...	SPS	
▶ Operating-time alarm	☆	201.3431.2...	SPS	
▶ Inactivity time	☆	201.3431.2...	INS	
▶ Inactivity-time warning	☆	201.3431.2...	SPS	
▶ Inactivity-time alarm	☆	201.3431.2...	SPS	
▶ Phase A		201.3431.2...		

E. Supervision of the Operating Mechanism (LN SOPM)

This functionality monitors the mechanical equipment which moves the circuit breaker, especially the energy storage for the CB movement. The function is modeled by an own function block “CB monitoring SOPM”, which has its own IEC61850 LN representation SOPM. It measures the motor operation time and the mechanical execution time until the energy storage of the motor is empty.

3-Phase

General

201.3431.27751.1 Mode: on

Motor op. time

201.3431.27751.170 Active: ☆

201.3431.27751.171 Motor op. time: 10.00 s ☆

201.3431.27751.172 Threshold value warning: 10 % ☆

201.3431.27751.173 Threshold value alarm: 30 % ☆

Mechanical exec. time

201.3431.27751.180 Active: ☆

201.3431.27751.181 Mechanical exec. time: 30 ms ☆

201.3431.27751.182 Threshold value warning: 5 ms ☆

201.3431.27751.183 Threshold value alarm: 10 ms ☆

Add new stage Delete stage

This function needs information about the status of the energy storage of the CB motor, so it has to be connected to the appropriate contact “Operation mechanism ready” (see below information list). The calculated times and respective alarms also appear here when the function is activated in the settings.

For more details, please refer to the device manual.

▶	CB monitoring		201.3431	
▼	CB monitor. SOPM		201.3431	
▶	General		201.3431.2...	
▼	3-Phase		201.3431.2...	
	Operat. mechan. ready	☆	201.3431.2...	SPS
	Mode (controllable)	☆	201.3431.2...	ENC
	Inactive	☆	201.3431.2...	SPS
▶	Behavior	☆	201.3431.2...	ENS
▶	Health	☆	201.3431.2...	ENS
	Motor operating time	☆	201.3431.2...	MW
	Motor op. time warning	☆	201.3431.2...	SPS
	Motor op. time alarm	☆	201.3431.2...	SPS
	Mechanical exec. time	☆	201.3431.2...	MW
	Mech. exec. time warn.	☆	201.3431.2...	SPS
	Mech. exec. time alarm	☆	201.3431.2...	SPS

F. Disconnecter Monitoring


The following subset of the circuit breaker monitoring functionality is available for the disconnectors:

Discon. monit. _____


General

601.3911.26671.1 Mode: ☆


Mechanical sw. time open

601.3911.26671.160 Active:  ☆


Mechanical sw. time close

601.3911.26671.170 Active:  ☆

Operation counter

601.3911.26671.190 Active:  ☆

Inactivity time

601.3911.26671.200 Active:  ☆

SIPROTEC 5 Application

New structure of CB monitoring

1.5 Tips for handling of the functionality

If you need to reset or set the calculated values of the monitoring functions, for example because of exchange of the circuit breaker, you can access and set these values by three methods:

1) By Device HMI

You can access the measurements on the device display via Measurements -> Circuit Breaker -> Function Values -> CB monitoring. Example:



As you can see here in the example, the values can be changed.

2) Via DIGSI online

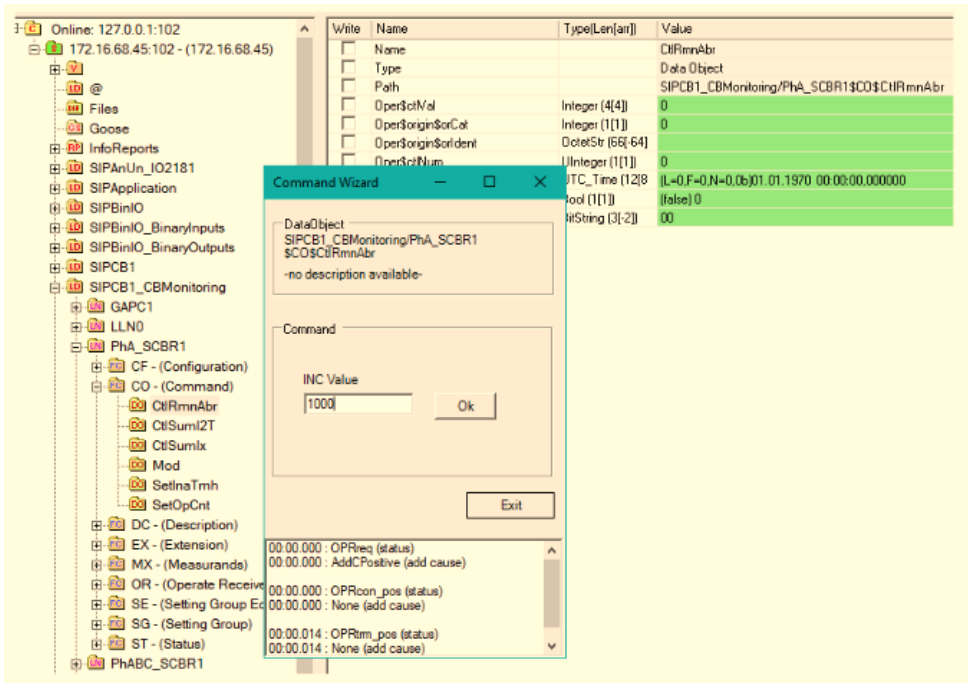
The function values are also accessible and can be changed via DIGSI 5 if connected to the device:

The screenshot shows the DIGSI 5 online interface. The breadcrumb path is 'Online access > TP-Link Gigabit PCI Express Adapter > Device 2.1 (Assigned) > Measurements > Circuit breaker 1 (Process)'. Below the path, there are buttons for 'Snapshot', 'Reset', and a dropdown menu for 'Show values as: primary'. A green checkmark icon and a message state: 'The values are displayed from normal operation. Set/reset of statistics, functional and user-defined values is allowed.' Below this, there is a table with columns for 'Fundamental', 'Function values', 'Statistics', 'User-def. values', and 'Simulated value'. The table is expanded to show 'CB monitoring' data for three phases: Phase A, Phase B, and Phase C. Each phase has three rows of data: '2P abrasion remaining', 'ΣIx', and 'ΣPt'. The 'Set/reset value' column contains 'Reset' or 'Set' buttons for each row.

Fundamental	Function values	Statistics	User-def. values	Simulated value	
Measurements				▶ Simulated value	
Measurements		Current value	Number	Set value	Set/reset value
▼ CB monitoring					
▼ Phase A					Reset
	2P abrasion remaining	9996	201.3431.23971.300		Set
	ΣIx	7.97	201.3431.23971.310		Set
	ΣPt	0.34 I/r*s	201.3431.23971.320		Set
▼ Phase B					Reset
	2P abrasion remaining	9999	201.3431.24002.300		Set
	ΣIx	0.99	201.3431.24002.310		Set
	ΣPt	0.08 I/r*s	201.3431.24002.320		Set
▼ Phase C					Reset
	2P abrasion remaining	9999	201.3431.24033.300		Set
	ΣIx	1.00	201.3431.24033.310		Set
	ΣPt	0.09 I/r*s	201.3431.24033.320		Set

3) Via IEC Browser

It is also possible to read and change the values of the monitoring functions with the IEC-Browser. The values are available in the Logical Nodes SCBR (Function Block Circuit Breaker Monitoring), SOPM (Function Block CB Monitoring SOPM), SSWI (Disconnector Monitoring) and PDSC (Pole Discrepancy).



1.6 Summary

The CB monitoring functionality in SIPROTEC 5 has been innovated in platform version 9.30, with the first new functionality "break time" added. As the IEC61850 modeling has changed in the standard Edition 2, a new FB was created in the SIPROTEC 5 platform. For using legacy devices, the existing FB is still available. New future functionality for CB monitoring have been added in the new FB only. This application note Edition 2 describes what has been implemented until SIPROTEC 5 V9.80.

Published by Siemens

Smart Infrastructure
Electrification & Automation
Mozartstraße 31c
91052 Erlangen, Germany

For the U.S. published by
Siemens Industry Inc.
100 Technology Drive
Alpharetta, GA 30005
United States

www.siemens.com/siprotec

For more information, please contact our
Customer Support Center.
Tel.: +49 911 2155 4466

Customer Support: www.siemens.com/csc

For the U.S. published by
Siemens Industry Inc.

100 Technology Drive
Alpharetta, GA 30005
United States

© 2022 Siemens. Subject to changes and errors.
The information given in this document only contains
general descriptions and/or performance features which
may not always specifically reflect those described, or
which may undergo modification in the course of further
development of the products. The requested performance
features are binding only when they are expressly agreed
upon in the concluded contract.

For all products using security features of OpenSSL, the
following shall apply:
This product includes software developed by the OpenSSL
Project for use in the OpenSSL Toolkit.
(<http://www.openssl.org/>)
This product includes cryptographic software written by
Eric Young (eay@cryptsoft.com)
This product includes software developed by Bodo Moeller.