Communication-Capable Circuit-Breakers

3

Introduction

Overview

SENTRON VL communication-capable circuit-breakers

Function	Overcurrent release version			COM10 module	SIMOCODE	Breaker Data Adapter	Breaker Data Adapter *Plus*
	TM	ETU	LCD ETU				
Transmission of the operating status (only ON, OFF, tripped) to the PROFIBUS	✓	✓	✓	–	✓	–	–
Transmission of the operating status (ON, OFF, tripped, warnings, causes of tripping, event log) to the PROFIBUS	–	–	✓	✓	–	❑	❑
Display of measured values (current only) and parameters in trip unit, change parameters via display	–	–	✓	❑	❑	❑	❑
Transmission of maximum value of present current in %	✓	✓	✓	–	✓	❑	❑
Transmission of individual present phase currents incl. min./max. and time stamp	–	–	✓	✓	–	❑	❑
Transmission of identification data	–	–	✓	✓	–	❑	❑
Transmission of switch information on HTML basis locally to a PC	–	–	✓	❑	–	✓	✓
Transmission of switch information on HTML basis via Ethernet	–	–	✓	❑	–	–	✓
Read out and adjust protection parameters via PROFIBUS	–	–	✓	✓	–	❑	❑

SENTRON WL communication-capable circuit-breakers

Function	Overcurrent release version			Breaker status sensor	PROFIBUS communication port	Measurement function	Measurement function *Plus*	Analog output module	Digital output module	Digital input module	ZSI module	Breaker Data Adapter	Breaker Data Adapter *Plus*
	ETU 45B	ETU 76B	ETU 55B										
Indication of measured values in trip unit (current only)	✓	✓	–	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Indication of measured values in trip unit (*U*, *I*, *P*, *S*, *Q*, p.f., etc.)	✓	✓	–	❑	❑	✓	✓	❑	❑	❑	❑	❑	❑
Indication of measured values (current only), parameter, diagnostic values etc. on display	–	✓	–	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Indication of measured values (*U*, *I*, *P*, *S*, *Q*, p.f. , etc.), parameters, diagnostic values etc. in trip unit	–	✓	–	❑	❑	✓	✓	❑	❑	❑	❑	❑	❑
Output of measured values (current only) to moving-coil instruments in cabinet door	✓	✓	✓	❑	❑	❑	❑	✓	❑	❑	❑	❑	❑
Output of measured values (*U*, *I*, *P*, *S*, *Q*, p.f. , etc.) to moving-coil instruments in cabinet door	✓	✓	✓	❑	❑	✓	✓	✓	❑	❑	❑	❑	❑
Output of digital signals (e.g. reason for tripping, alarm signals, status) via contacts	✓	✓	✓	❑	❑	❑	❑	❑	✓	❑	❑	❑	❑
Automatic changeover between parameter sets A and B	–	✓	✓	❑	❑	❑	❑	❑	❑	✓	❑	❑	❑
Read in digital signals and forward to PROFIBUS	✓	✓	✓	❑	✓	❑	❑	❑	❑	✓	❑	❑	❑
Transmission of switch information on HTML basis locally to a PC	✓	✓	✓	✓	❑	❑	❑	❑	❑	❑	❑	✓	✓
Transmission of switch information on HTML basis via Ethernet	✓	✓	✓	✓	❑	❑	❑	❑	❑	❑	❑	❑	✓
Short-time grading control for S tripping and G protection	✓	✓	✓	❑	❑	❑	❑	❑	❑	❑	✓	❑	❑
Local display of harmonic analysis and waveform memory	–	✓	–	❑	❑	❑	✓	❑	❑	❑	❑	❑	❑
Local storage of harmonic analysis and waveform memory and transmission via PROFIBUS	✓	✓	✓	✓	✓	❑	✓	❑	❑	❑	❑	❑	❑
Read out protection parameters via PROFIBUS	✓	✓	✓	✓	✓	❑	❑	❑	❑	❑	❑	❑	❑
Read out and adjust protection parameters via PROFIBUS	–	✓	✓	✓	✓	❑	❑	❑	❑	❑	❑	❑	❑

✓ Required

❑ Not necessary for this function, optionally combinable

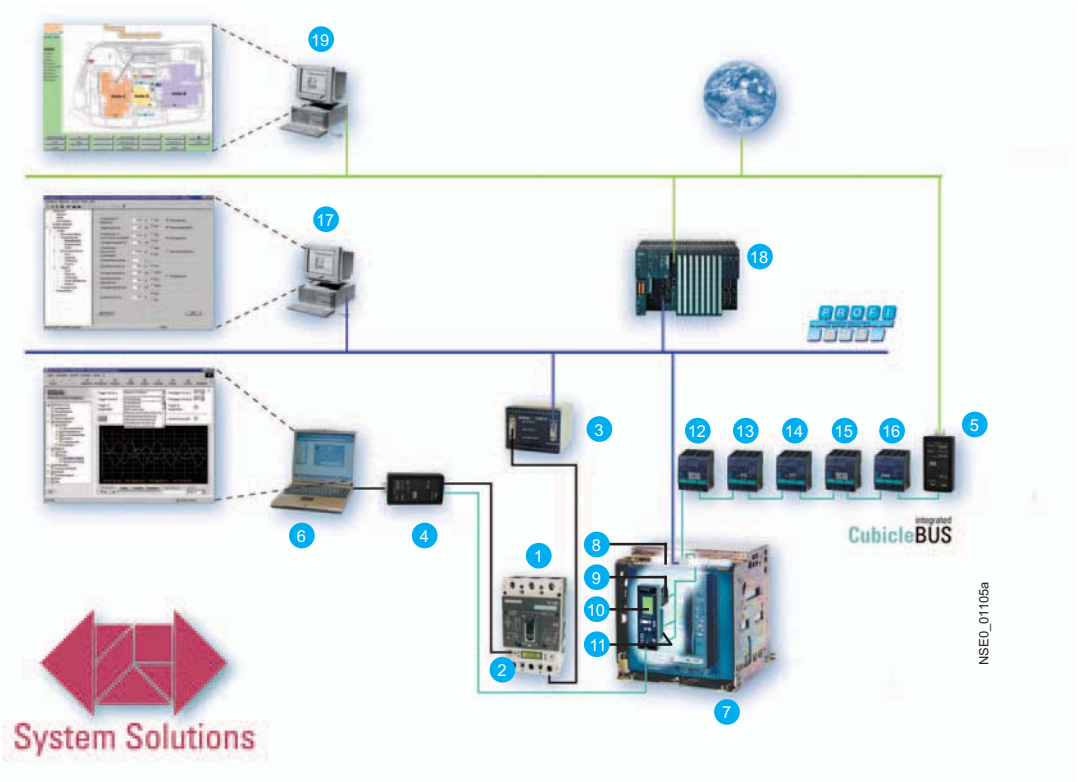
– Function not available

Function can optionally be taken over by more than one trip unit.

Function can optionally be taken over by one of these modules.

Introduction

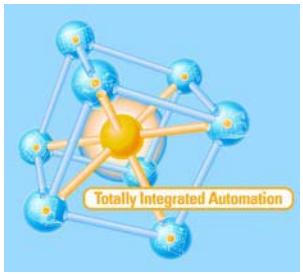
1 SENTRON VL
2 LCD ETU release
3 COM10 PROFIBUS module including short-time grading control (ZSI module)
4 Breaker Data Adapter (BDA)
5 BDA *Plus* with Ethernet interface
6 Browser-capable input and output device (e.g. notebook)
7 SENTRON WL
8 COM15 PROFIBUS module
9 Breaker Status Sensor (BSS)
10 Electronic release ETU
11 Metering function or Metering function *Plus*
12 Short-time grading control (ZSI module)
13 Digital output module as relay or optocoupler
14 Digital output module as relay or optocoupler, configurable
15 Analog output module
16 Digital input module
17 Switch ES Power on PC
18 PLC e.g. SIMATIC S7
19 Power Management software



Features

- Coordinated communication concept using the PROFIBUS DP, ranging from 16 A to 6300 A with SENTRON VL and SENTRON WL
- The high level of modularity of circuit-breakers and accessories allows easy retrofitting of all communication components
- Significant additional benefits for the switchboard due to the possibility of linking up external input and output modules to the circuit-breaker-internal **Cubicle**BUS of the SENTRON WL
- Innovative software products for parameterization, operation, monitoring, and diagnostics of SENTRON circuit-breakers, both locally or via PROFIBUS DP or Ethernet/intranet/Internet
- Complete integration of the SENTRON circuit-breakers into the Totally Integrated Power and Totally Integrated Automation solutions

System Solutions



General data

Benefits

The use of modern circuit-breakers with communication capability opens up completely new possibilities in terms of start-up, parameterization, diagnostics, testing, maintenance and power management.

This allows many different ways of reducing costs and improving productivity in industrial plants, buildings and infrastructure projects to be achieved. Here is a list of the key advantages.

Start-up and parameterization

- PROFIBUS DP enables faster and safer connections than conventional point-to-point wiring
- Plant down-times during upgrades/expansions are reduced to a minimum
- Easy start-up test
- Transparent start-up process with good documentation options
- Fast and safe parameter assignment on site via PROFIBUS DP or Ethernet/intranet/Internet with intelligent parameterization software (see figure top right)

Operation and monitoring

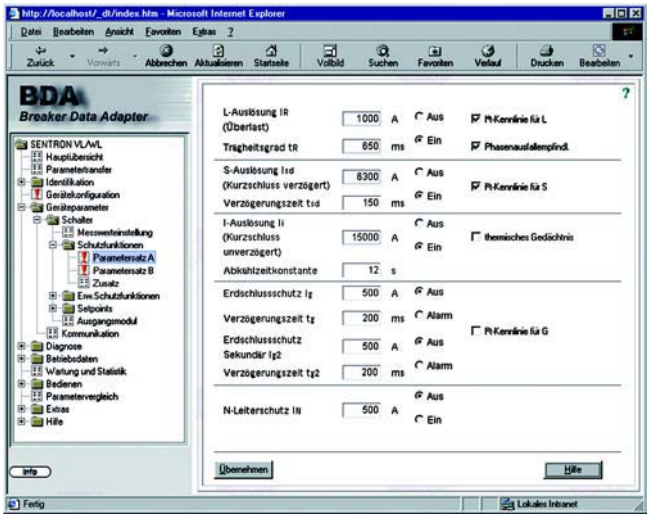
- Increased transparency in power distribution due to the transmission of current status information, alarm signals and threshold value warnings (e.g. overcurrent, overvoltage, asymmetrical phase – see figure right).
- Fault management system enables fast reactions when the system exits normal operating conditions. Important messages (e.g. tripped signals and reasons) can be transmitted via SMS to the mobile phones of plant personnel.
- Option for reading out parameters centrally and transmitting them automatically to replacement circuit-breakers, as a result of which error susceptibility is reduced to a minimum and system down-times are reduced.
- Effective diagnostic management, e.g. by determining exact fault causes and recording the phase currents.
- Remote controlling of circuit-breakers enables plant components to be switched on or off both manually and automatically.

Power management

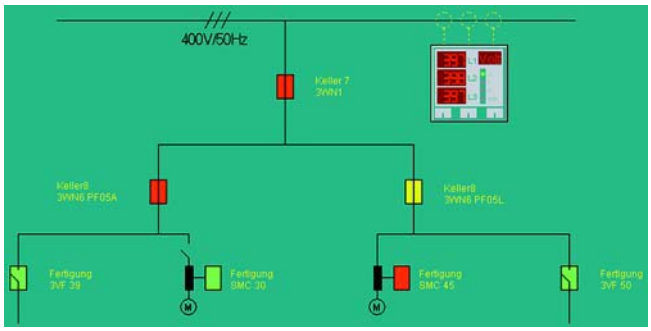
- The cost for energy supplies can be reduced with compensation of load peaks and troughs. Efficient load management allows loads to be switched according to requirements.
- The evaluation of archived energy values (reserve curves) allows an energy consumption profile to be drawn up. This can form the basis for future energy procurement (see figure right).
- The quality of the power supply (power factor, harmonics, flickering) can be recorded and documented. In this way, effective energy management becomes possible.
- Cost-center management makes the consumption of energy more transparent for business evaluation. Costs can be clearly allocated and optimized. Information on plant capacity and network quality serve as the basis for meaningful plant extensions. The energy costs can be divided into cost-centers, allowing the costs to be allocated more accurately to individual production stages.

Maintenance and service

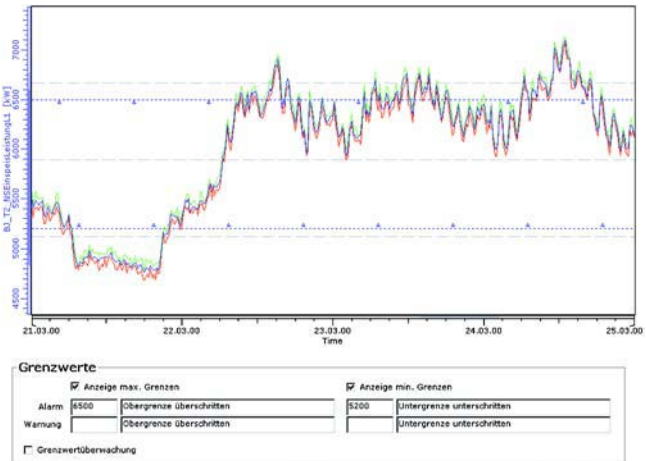
- Information for preventive maintenance (e.g. number of operating cycles, number of operating hours, assessment of contact erosion) allows the necessary maintenance work to be planned precisely at an early stage. This reduces the risk of expensive plant down-time and irreparable damage to sensitive plant components.
- The central control of maintenance work and the option of notifying personnel via text messages saves costs for maintenance and servicing (see figure right).



Extremely easy start-up and parameter assignment of the circuit-breakers with HTML-based parameterization software



The linking of the circuit-breakers to operating and monitoring systems provides transparent power distribution



Communication-capable circuit-breakers supply the data for various power management applications

Important fault and maintenance information can be sent via text message to the mobile phones of the plant personnel

PROFIBUS DP, data transfer via COM10

Overview

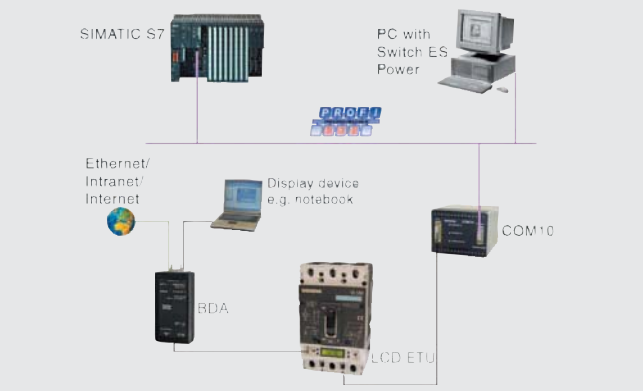
Description and quick selection

Rated ultimate short-circuit breaking capacity I_{cu} at AC 380/415 V: 40/45/50 kA – standard switching capacity N.

The following is required for connection of a SENTRON VL to the PROFIBUS DP:

- Trip unit LCD ETU40 or higher
- PROFIBUS module COM10
- A motorized operating mechanism is required in addition to the COM10 module for bus connections.

For more information on the connection of BDA/BDA *Plus* refer to page 3/18.



Functions

Transmittable data

Commands: • Switch on/off • Delete alarm and tripping memory, min./max. measured values and maintenance information	✔ ✔	
Operating status: • ON or OFF status trip position	✔	
Event signals: • Tripped signals with tripping current and time stamp • Alarm signals with time stamp (e.g. overload, asymmetrical phase current etc.) • Threshold value warning, with time stamp (e.g. phase currents)	✔ ✔ ✔	
Measured values: • Phase currents and neutral conductor current, each with min./max. value and time stamp	✔	
Read and write parameter values	✔	
Maintenance information: (e.g. number of tripping operations, number of switching operations)	✔	
Device identification data	✔	
Time synchronization	✔	✔ available

Selection and ordering data

Examples for quick selection

Type	Rated current I_n	Setting current of the inverse-time delayed overload release "L" I_R	DT	**SENTRON VL circuit-breaker** 3-pole, switching capacity N, for system protection, overcurrent release LCD ETU (LSI)	PS*	Weight per PU approx.	DT	**Required motorized operating mechanism** AC 220–250 V (for switching on/off) 3VL9 3 to 3VL9 6: Motorized operating mechanism with storage spring	PS*	Weight per PU approx.
	A	A		Order No.		kg		Order No.		kg
VL160	63	26– 63	B	**3VL27 06–1CH33–0AA0**	1 unit	2.400	B	**3VL9 300–3MQ00**	1 unit	2.530
	100	40– 100	B	**3VL27 10–1CH33–0AA0**	1 unit	2.400	B	**3VL9 300–3MQ00**	1 unit	2.530
	160	64– 160	B	**3VL27 16–1CH33–0AA0**	1 unit	2.400	B	**3VL9 300–3MQ00**	1 unit	2.530
VL250	200	80– 200	B	**3VL37 20–1CH36–0AA0**	1 unit	2.500	B	**3VL9 300–3MQ00**	1 unit	2.530
	250	100– 250	B	**3VL37 25–1CH36–0AA0**	1 unit	2.500	B	**3VL9 300–3MQ00**	1 unit	2.530
VL400	315	128– 315	B	**3VL47 31–1CH36–0AA0**	1 unit	5.900	B	**3VL9 400–3MQ00**	1 unit	2.510
	400	160– 400	B	**3VL47 40–1CH36–0AA0**	1 unit	5.900	B	**3VL9 400–3MQ00**	1 unit	2.510
VL630	630	252– 630	B	**3VL57 63–1CH36–0AA0**	1 unit	9.300	B	**3VL9 600–3MQ00**	1 unit	5.460
VL800	800	320– 800	B	**3VL67 80–1CH36–0AA0**	1 unit	16.000	B	**3VL9 600–3MQ00**	1 unit	5.460
VL1250	1000	400–1000	B	**3VL77 10–1CH36–0AA0**	1 unit	25.000	B	**3VL9 800–3MQ00**	1 unit	7.580
	1250	500–1250	B	**3VL77 12–1CH36–0AA0**	1 unit	25.000	B	**3VL9 800–3MQ00**	1 unit	7.580
VL1600	1600	640–1600	B	**3VL87 16–1CH30–0AA0**	1 unit	31.300	B	**3VL9 800–3MQ00**	1 unit	7.580

For further circuit-breaker designs and accessories refer to Part 4.

Accessories

Version	DT	Order No.	PS*	Weight per PU approx.
				kg
COM10 (PROFIBUS module for SENTRON VL) Module for connecting the SENTRON VL to the PROFIBUS DP, incl. switching function and ZSI functionality, incl. connecting cable to LCD ETU.	B	**3VL9 000-8AR00**	1 unit	1.030

*** This quantity or a multiple thereof can be ordered.**

PROFIBUS DP, data transfer via SIMOCODE-DP

Overview

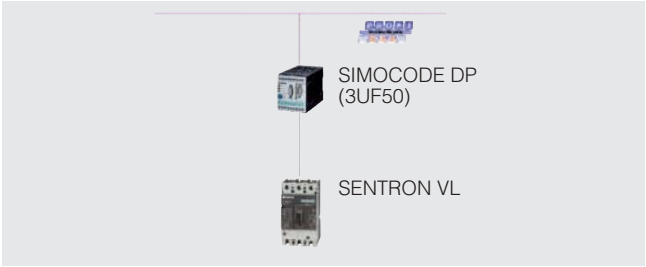
Description and quick selection

Rated operating voltage U_e up to AC 690 V
- With 2 auxiliary switches (1 NO/1 NC)
- and 1 alarm switch (1 NC)

A motorized operating mechanism is required in addition to the SIMOCODE DP module for bus connections.

For communication, the SIMOCODE DP interface is required.

Direct connection of the SENTRON VL circuit-breaker to the SIMOCODE DP is only permitted up to 800 A.



Functions

Transmittable data

Commands: • Switch on/off	✔	
Operating status: • ON or OFF status	✔	
Event signals: • Trip position • Alarm signals (e.g. overload)	✔ ✔	
Measured values: • Maximum phase current in %	✔	
Parameters: • Setting values for SIMOCODE DP	✔	✔ available

Selection and ordering data

Examples for quick selection

Type	Setting current of the inverse-time delayed overload release L I_r	Operating current of instantaneous short-circuit release I I_i	DT	**Circuit-breaker** SENTRON VL 3-pole, switching capacity N for plant protection, TM overcurrent releases up to VL630, ETU20 (LSI) for VL800, with 2 aux. switches (1 NO/1 NC) and 1 alarm switch (1 NC)	Weight per PU approx.	DT	**Required motorized operating mechanism** AC 220 to 240 V (for switching on/off)	Weight per PU approx.	DT	**Interface:** SIMOCODE DP motor protection and control device (see also Catalog LV 10, Section 3)	Weight per PU approx.
	A	A		Order No.	kg		Order No.	kg		Order No.	kg
VL160	63– 80	400– 800	B	**3VL27 08–1DC33–0AD1**	2.200	B	**3VL9 300–3MQ00**	2.530	A	**3UF50 21–3BN00–1**	0.809
VL250	160–200	1000–2000	B	**3VL37 20–1DC36–0AD1**	2.300	B	**3VL9 300–3MQ00**	2.530	C	**3UF50 31–3BN00–1**	1.640
VL250	200–250	1250–2500	B	**3VL37 25–1DC36–0AD1**	2.300	B	**3VL9 300–3MQ00**	2.530	C	**3UF50 41–3BN00–1**	2.440
VL400	315–400	2000–4000	B	**3VL47 40–1DC36–0AD1**	5.700	B	**3VL9 400–3MQ00**	2.510	C	**3UF50 41–3BN00–1**	2.440
VL630	400–500	2500–5000	B	**3VL57 50–1DC36–0AE1**	9.000	B	**3VL9 600–3MQ00**	5.460	C	**3UF50 51–3BN00–1**	4.350
VL630	500–630	3150–6500	B	**3VL57 63–1DC36–0AE1**	9.000	B	**3VL9 600–3MQ00**	5.460	C	**3UF50 51–3BN00–1**	4.350
VL800	320–800	8800	B	**3VL67 80–1AE36–0AE1**	16.000	B	**3VL9 600–3MQ00**	5.460	C	**3UF50 51–3BN00–1**	4.350

Pack size for SENTRON VL circuit-breakers, 3VL9 motorized operating mechanisms and 3UF50 interface is 1 unit, i.e. 1 unit or a multiple thereof can be ordered.

For further circuit-breakers and accessories refer to Section 4.

Accessories

Essential accessories

Version	DT	Order No.	PS*	Weight per PU approx.
				kg
System manual				
Communication interface of the 3VF, 3WN6, 3WN1/3WS1 circuit-breakers to PROFIBUS DP	X	**E20001–P285–A644–V1**	1 unit	on req.
System manual for SIMOCODE DP with description of the communication via PROFIBUS DP				
German, including system files	A	**3UF57 00–0AA00–0**	1 unit	0.841
English, including system files	D	**3UF57 00–0AA00–1**	1 unit	0.842
PROFIBUS connector for connecting the interface to PROFIBUS DP; PROFIBUS bus cables: see Catalog IK PI "PROFIBUS & AS-Interface Fieldbus Components"	X	**6ES7 972–0BB41–0XA0**	1 unit	0.051
Connecting cable for communication with a PC via the SIMOCODE DP system interface, length 5 m	►	**3RW29 20–1DA00**	1 unit	0.176
Win-SIMOCODE DP parameterization software Software based on Windows 95/98 or Windows NT for parameter assignment, control, diagnostics and testing of SIMOCODE DP via the SIMOCODE DP system interface, German/English selectable (without connecting cable)	A	**3UF57 11–0AA00–0**	1 unit	0.231

*** This quantity or a multiple thereof can be ordered.**

General data

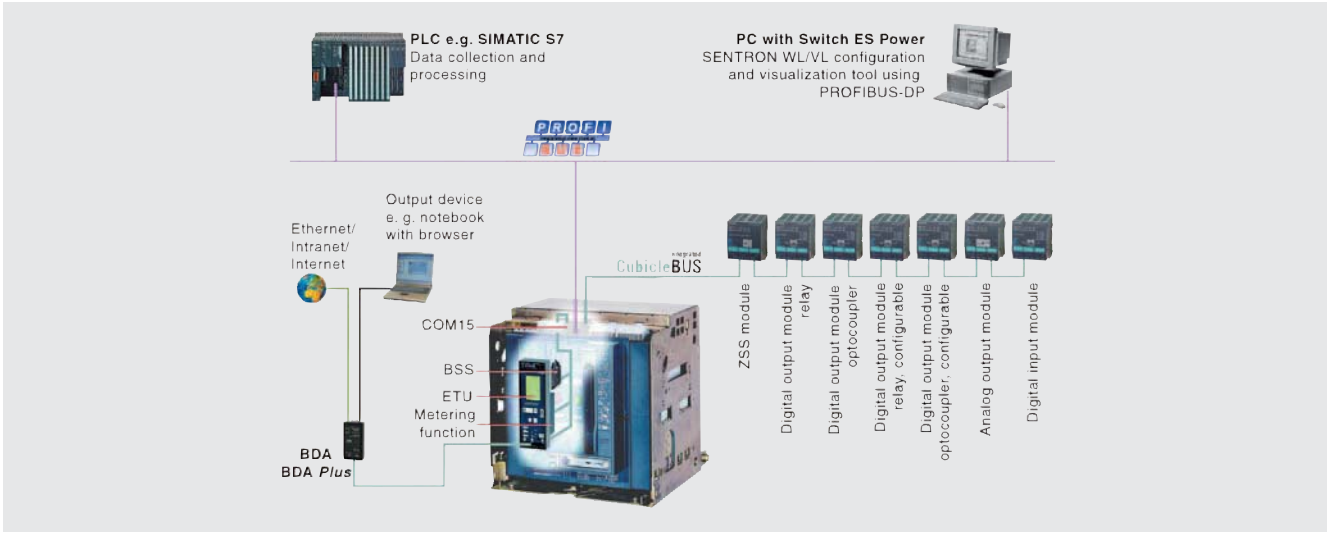
12

Overview

General

The requirements for power distribution in terms of communication capability, data transparency, flexibility and integration are constantly increasing. An integrated and modular communication architecture was designed for the SENTRON WL to ensure that it can satisfy these requirements.

The core component of this architecture is the **Cubicle**BUS, which links together all of the intelligent components within the SENTRON WL and enables the easy and safe connection of other additional external components to the circuit-breaker. The **Cubicle**BUS is already incorporated and pre-connected in all complete circuit-breakers with ETU45B, ETU55B and ETU76B trip units.



Benefits

The high level of modularity of the system allows communication functions to be retrofitted at any time (e.g. the measurement function). Similarly, the upgrade of a non-communication-capable SENTRON WL (e.g. changeover from ETU25B to ETU45B with **Cubicle**BUS) can be carried out easily on site in the plant. All modules connected to the **Cubicle**BUS can directly access the existing source data of the circuit-breaker, which guarantees the quickest possible access to information and response to events.

Furthermore, additional external modules (including digital inputs/outputs, analog outputs) can be connected to the **Cubicle**BUS to provide cost-effective solutions for the automation of further devices in the switchboard.

Functions

Breaker status sensor (BSS)

All micro-switches which receive data on the status of the circuit-breakers are located on the breaker status sensor module or are linked to this module. The BSS makes the following data available on the **Cubicle**BUS:
- On/off switch
- Tripped (mechanical)
- Storage spring charged
- Ready-to-close
- Voltage is applied to undervoltage release

In addition, the BSS incorporates a temperature sensor which, due to its installation location, can determine and communicate the temperature in the circuit-breaker.

If the options F01 or F02 are specified during ordering then the BSS is already integrated in the switch and is connected ready for operation. As a retrofit component, the BSS is easily installed with the "click & place" method and can be connected up with the factory-fitted cable.

Breaker status sensor

Measurement function/measurement function Plus

This integrated function can be operated together with all trip units with a **Cubicle**BUS connection and represents a good alternative to external multifunction measuring devices.

It measures:
- currents
- voltages
- power
- energy values
- power factor
- frequency

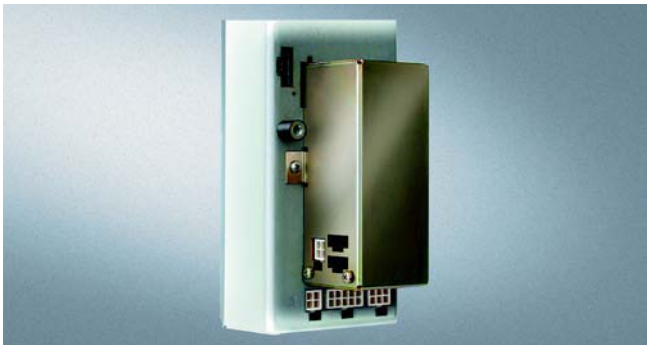
both as a current value and as a min./max. value.

The measurement function can be used to realize additional protection functions (e.g. tripping operations resulting from overfrequency, generation of alarm signals if values exceed certain thresholds).

The measurement function *Plus* also incorporates two curve form memories and permits harmonic analyses.

The two independent curve form memories are used for event-driven recording of current and voltage curves, allowing detailed diagnostics of events.

If the measurement function/measurement function *Plus* with the order code F04 or F05 is ordered together with the circuit-breaker, then it is already installed and ready for operation. As a retrofit component, the measurement function is simply screwed onto the trip unit and connected to the **Cubicle**BUS.



Measurement function/ measurement function *Plus*

PROFIBUS module COM15

The PROFIBUS module COM15 enables direct connection of the circuit-breaker to the PROFIBUS DP. It supports the innovative DPV1 functionalities, which provide the easiest start-up and diagnostics together with optimized visualization.

Thanks to the COM15, the SENTRON WL can also be switched on or off remotely (within the restrictions of several safety mechanisms), and it is also possible to change parameter settings remotely.

The position of the circuit-breaker (connected, test position, disconnected position, not present) is sensed with micro-switches on the COM15 and communicated.

A temperature sensor integrated in the COM15 detects and reports the temperature outside the circuit-breaker.

An integrated clock tags a time stamp onto all events and min./max. values, and can also be synchronized via the PROFIBUS. If order code F02 is selected when ordering the SENTRON WL, then the fully functional COM15 module (and the breaker status sensor) are already installed and connected. As a retrofit component, the COM15 merely needs to be snapped onto the auxiliary conductor plug-in system and connected up.

PROFIBUS module COM15

General data

CubicleBUS modules

Digital output module with rotary coding switch

6 pieces of binary-encoded information about the status of the switch (reasons for tripping and alarm messages) can be sent via this module to external signaling devices (e.g. light, horn), or alternatively they can be utilized for selected deactivation of other plant components (e.g. frequency converters).

Digital output modules are available in versions with and without rotary coding switch. On modules with a rotary coding switch a selection can be made between two message blocks, each with 6 defined assignments, or an additional response delay.

All digital output modules are available as versions with either optical coupler outputs (NO contact, each 100 mA) or with relay outputs (changeover contact, summation current 10 A). A maximum of two modules of this type can be connected to a SENTRON WL.

Digital output module with rotary coding switch

Digital output module, configurable

The configurable output module is available for high-performance application solutions. With this module, any occurring events on the **Cubicle**BUS can be switched directly to one of the six available outputs, or up to six events can be assigned to three of these outputs. This means that up to six events can be connected to a physical output via an OR operation. Configuration takes place either with the BDA/BDA *Plus* or with Switch ES Power.

Similarly to the output modules with rotary coding switch, one variant is also available here with optical coupler outputs and one with relay outputs. Only one of this type of module can be fitted to each SENTRON WL.

Digital output module, configurable

Analog output module

The analog output module can be used to output the following measured values from the circuit-breaker to analog display devices in the switchgear cabinet door:

- I_{L1}, I_{L2}, I_{L3}, I_N or
- U_{L12}, U_{L23}, U_{L31}, U_{L1N} or
- P_{L1}, P_{L2}, P_{L3}, S_{ges} or
- p.f.$_1$, p.f.$_2$, p.f.$_3$, $\Delta I_{\%}$ or
- f_{avg}, U_{LLavg}, P_{tot}, p.f.$_{avg}$

Four 4-to-20 mA/0-to-10 V interfaces are available for this purpose. The measured values to be output are selected with the rotary coding switch. Use of the analog output module makes it possible to omit additional converters, therefore also making their installation/wiring in the main circuit with conventional installation technology unnecessary. A maximum of two modules of this type can be connected to a SENTRON WL.

Analog output module

Digital input module

The digital input module can be used to connect 6 additional binary signals (DC 24 V) from the environment of the circuit-breaker to the system. This allows for example the transmission of messages/signals about the status of a switch-disconnector or a switchgear cabinet door to the PROFIBUS.

With the digital input module on the **Cubicle**BUS, it is also possible to automatically switch over the two different protection parameter sets stored in the ETU55B and ETU76B trip units within a few milliseconds. This enables for instance automatic changing of the parameters of a bus coupler on cessation of the transformer feed-in.

One module of this type can be used to accept the six digital information signals and to automatically switch over parameters.

Digital input module

ZSI module (Zone Selective Interlocking)

If Siemens circuit-breakers are to be arranged in several staggered levels, but full selectivity is still required with minimum delay-times, then the use of the ZSI module is recommended.

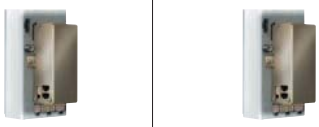
These modules provide a data link between the circuit-breakers. In the event of a short circuit, every circuit-breaker through which the short-circuit flows interrogates the next circuit-breaker immediately downstream for presence of the short-circuit current. In this way it is possible to locate the short-circuit, so that only the next circuit-breaker upstream (viewed in the direction of energy flow) is switched off.

Short-time grading control module

Data that can be transmitted via the PROFIBUS DP or the Breaker Data Adapter

All SENTRON WL with ETU45B, ETU55B, ETU76B (**Cubicle**BUS integrated)

Transmittable circuit-breaker data	BSS	BDA	BSS	COM15
Order code (Order No. of circuit-breaker + "–Z")	F01		F02	
Order No.	+BDA/BDA*PLUS* Order No.			
Potential applications				
Transmission of circuit-breaker data to PROFIBUS DP and integration into higher-level visualization systems are possible e.g. in PCS7, Power Management Systems, WinCC (including add-ons like the text message radio server)	–		✔	
Transmission of circuit-breaker data and software (i.e. HTML pages with data) to a local output device, or remotely via Ethernet/intranet/Internet (without the possibility of integration into higher-level visualization systems) e.g. for monitoring, diagnostics, maintenance and parameterization of individual circuit-breakers	✔		–	
Utilization of the functionality of all CubicleBUS modules e.g. configuration of the configurable digital output module, status check of the digital input modules, diagnostics	✔		✔	
Transmittable circuit-breaker data without integrated measurement function				
Device identification				
Communication address, Order No., circuit-breaker in delivery status, circuit-breaker parameters (size, number of poles, rated current module etc.), identification numbers, trip unit type,	✔		✔	
free text for plant identifiers and comments	–[1]		✔	
Operating statuses				
On/off status message, storage spring, tripped, readiness	✔		✔	
Switching position (connected, test and disconnected position, not present) for withdrawable circuit-breakers,	–[1]		✔	
PROFIBUS write protection on/off, free user input	–[1]		✔	
Control commands				
Switch circuit-breaker on/off, switch free user output on/off	–[1]		✔	
Reset tripped signal	✔		✔	
Delete event and history memory	–[1]		✔	
Reset the min./max. measured values, reset the maintenance information	✔		✔	
History				
Read out the event protocol, read out the release protocol	–[1]		✔	
Maintenance information				
Number of tripping operations L, S/I and in total, contact wear	✔		✔	
Number of operating cycles under load and in total, number of operating hours	–[1]		✔	
Event signals				
Tripped signals with details of the tripping current	✔		✔	
Alarm signals (e.g. overload) with incoming/outgoing information	–[1]		✔	
All of the named event signals with time stamp	–[1]		✔	
Configuration of the protection functions				
Reading out of the protection function parameters	✔		✔	
Settings for the protection function parameters can be changed via communication	✔[2]		✔[2]	
Parameter set switchover possible (set A to set B and back)	✔[2]		✔[2]	
Measured values				
Phase currents, each with min./max. value	✔		✔	
Temperature in the circuit-breaker with min./max. value	–[1]		✔	
Temperature in the switchgear cabinet with min./max. value	–[1]		✔	
All of the named measured values with time stamp	–[1]		✔	



Additional transmittable circuit-breaker data with integrated measurement function	Measurement function	Measurement function *Plus*
Order code F01+ ... or F02+ ...	F04	F05
Additional event messages		
Threshold value alarms (e.g. over/underfrequency, over/undervoltage)	✔	✔
Configuration of the extended protection functions and setpoints (threshold values)		
Reading out the parameters of the extended protection functions	✔	✔
Settings for the extended protection function parameters can be changed	✔	✔
Reading out and adjusting threshold values	✔	✔
Additional measured values		
Voltages, power, energy, power factor, frequency, each with min./max. value	✔	✔
Harmonic analysis	–	✔
Recording of currents and voltages for configurable events in the curve form memory	–	✔

1) Data only available in conjunction with the COM15 module (PROFIBUS link not required).

2) Only possible with ETU55B, ETU76B.

✔ available

– not available

PROFIBUS DP, data transfer via COM15

Selection and ordering data

Examples for quick selection
For selection of further SENTRON WL communication-capable circuit-breakers see Section 5.

Size	Max. rated circuit-breaker-current $I_{n\,max.}$	Rated current[1] I_n	Standard switching capacity S, I_{cu} / 440 V			PS*	Weight per PU approx.	High switching capacity H, I_{cu} / 440 V			PS*	Weight per PU approx.
			DT	Order No.				DT	Order No.			
	A	A	kA				kg	kA				kg
3-pole fixed-mounted circuit-breaker with rear horizontal main connections												
I	630	630	65	B	**3WL11 06-3□□32-....**	1 unit	43.000			**–**		
I	800	800	65	B	**3WL11 08-3□□32-....**	1 unit	43.000			**–**		
I	1000	1000	65	B	**3WL11 10-3□□32-....**	1 unit	43.000			**–**		
I	1250	1250	65	B	**3WL11 12-3□□32-....**	1 unit	43.000			**–**		
I	1600	1600	65	B	**3WL11 16-3□□32-....**	1 unit	43.000			**–**		
II	800	800	80	B	**3WL12 08-3□□32-....**	1 unit	56.000	100	B	**3WL12 08-4□□32-....**	1 unit	56.000
II	1000	1000	80	B	**3WL12 10-3□□32-....**	1 unit	56.000	100	B	**3WL12 10-4□□32-....**	1 unit	56.000
II	1250	1250	80	B	**3WL12 12-3□□32-....**	1 unit	56.000	100	B	**3WL12 12-4□□32-....**	1 unit	56.000
II	1600	1600	80	B	**3WL12 16-3□□32-....**	1 unit	56.000	100	B	**3WL12 16-4□□32-....**	1 unit	56.000
II	2000	2000	80	B	**3WL12 20-3□□32-....**	1 unit	56.000	100	B	**3WL12 20-4□□32-....**	1 unit	56.000
II	2500	2500	80	B	**3WL12 25-3□□32-....**	1 unit	59.000	100	B	**3WL12 25-4□□32-....**	1 unit	59.000
II	3200	3200	80	B	**3WL12 32-3□□32-....**	1 unit	64.000	100	B	**3WL12 32-4□□32-....**	1 unit	64.000
III	4000	4000	–		**–**			100	C	**3WL13 40-4□□32-....**	1 unit	82.000
III	5000	5000	–		**–**			100	C	**3WL13 50-4□□32-....**	1 unit	82.000
3-pole withdrawable circuit-breaker with guide frame with rear horizontal main connections												
I	630	630	65	B	**3WL11 06-3□□36-....**	1 unit	70.000			**–**		
I	800	800	65	B	**3WL11 08-3□□36-....**	1 unit	70.000			**–**		
I	1000	1000	65	B	**3WL11 10-3□□36-....**	1 unit	70.000			**–**		
I	1250	1250	65	B	**3WL11 12-3□□36-....**	1 unit	70.000			**–**		
I	1600	1600	65	B	**3WL11 16-3□□36-....**	1 unit	70.000			**–**		
II	800	800	80	B	**3WL12 08-3□□36-....**	1 unit	91.000	100	B	**3WL12 08-4□□36-....**	1 unit	91.000
II	1000	1000	80	B	**3WL12 10-3□□36-....**	1 unit	91.000	100	B	**3WL12 10-4□□36-....**	1 unit	91.000
II	1250	1250	80	B	**3WL12 12-3□□36-....**	1 unit	91.000	100	B	**3WL12 12-4□□36-....**	1 unit	91.000
II	1600	1600	80	B	**3WL12 16-3□□36-....**	1 unit	91.000	100	B	**3WL12 16-4□□36-....**	1 unit	91.000
II	2000	2000	80	B	**3WL12 20-3□□36-....**	1 unit	91.000	100	B	**3WL12 20-4□□36-....**	1 unit	91.000
II	2500	2500	80	B	**3WL12 25-3□□36-....**	1 unit	102.000	100	B	**3WL12 25-4□□36-....**	1 unit	102.000
II	3200	3200	80	B	**3WL12 32-3□□36-....**	1 unit	113.000	100	B	**3WL12 32-4□□36-....**	1 unit	113.000
III	4000	4000	–		**–**			100	C	**3WL13 40-4□□36-....**	1 unit	148.000
III	5000	5000	–		**–**			100	C	**3WL13 50-4□□36-....**	1 unit	148.000

Overcurrent releases	Order No. supplements	Order No. supplements
Design without earth-fault protection		
ETU45B: Protection functions LSIN[2])	**EB**	**EB**
ETU45B: Protection functions LSIN[2]) with 4-line display[4])	**FB**	**FB**
ETU55B: Protection functions LSIN[2])	**JB**	**JB**
ETU76B: Protection functions LSIN[2]) with pixel graphics display[4])	**NB**	**NB**
Design with earth-fault protection		
ETU45B: Protection functions LSING[2])[3])	**EG**	**EG**
ETU45B: Protection functions LSING[2]) with 4-line display[3])[4])	**FG**	**FG**
ETU55B: Protection functions LSING[2])[3])	**JG**	**JG**
ETU76B: Protection functions LSING[2]) with pixel graphics display[3])[4])	**NG**	**NG**
Standard Order No. supplements (for further Order No. supplements for circuit-breakers and guide frames, see Section 5)		
Manual/motorized operating mechanism with mechanical and electrical request; closing solenoid; shunt release (DC 24 V)	**6BA2**	**6BA2**

1) Rated current determined by rated current module. For the standard design, the supplied module is equal to the max. rated type current. If a lower rated current is required, adaptation by order code in Section 5.

2) Current transformers for vectorial summation current formation or for protection of the neutral conductor and current transformers for detection of the earth-fault current in the grounded neutral point of the transformer should be ordered separately, see Section 5.

3) ETU45B to ETU76B with earth-fault protection module GFM AT (alarm and tripping).

4) An external DC 24 V power supply is required for the background lighting in the display of the ETU45B and for the display and background lighting of the ETU76B.
If a voltage of DC 24 V is fed to the **Cubicle**BUS, this is also supplied to the displays.

*** This quantity or a multiple thereof can be ordered**

PROFIBUS DP, data transfer via COM15

Options

For selection of the SENTRON WL circuit-breakers see page 3/12 and Section 5.

Add **"-Z"** to the complete Order No. and indicate the appropriate order code(s).

Order code

Order No. with "–Z"

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

3WL . . . . – . . . . . – . . . . **– Z**

and additional order code(s)

□□□ + . . . + . . .

Identification code for "further versions" **–Z**

Communication components	Order code
Breaker status sensor (BSS) connection	F01
PROFIBUS communication connection[1] including PROFIBUS module COM15 and breaker status sensor (BSS)	F02
Measurement function[2] (without PROFIBUS communication connection)	F04
Measurement function *Plus*[2][3] (without PROFIBUS communication connection)	F05
Automatic reset of the lockout device	K01
Remote reset solenoid for display and reset button including automatic reset of the lockout device	
DC 24 V	K10
DC 48 V	K11
AC 50/60 Hz 120 V, DC 125 V	K12
AC 50/60 Hz 220 ... 240 V, DC 250 V	K13

1) If ordering withdrawable circuit-breaker and guide frame separately, specify order code "F02" for withdrawable circuit-breaker only.

2) Additional voltage transformers are required for connection of the measurement function.

3) Start of delivery beginning of 2004.

CubicleBUS modules

Selection and ordering data

Designation		DT	Order No.	PS*	Weight per PU approx. kg
Digital output module with rotary coding switch, optical coupler outputs[1])		B	**3WL9 111-0AT25-0AA0**	1 unit	on req.
Digital output module with rotary coding switch, relay outputs[1])		B	**3WL9 111-0AT26-0AA0**	1 unit	on req.
Digital output module, configurable, optical coupler outputs[1])		B	**3WL9 111-0AT30-0AA0**	1 unit	on req.
Digital output module, configurable, relay outputs[1])		B	**3WL9 111-0AT20-0AA0**	1 unit	0.400
Digital input module[1])		B	**3WL9 111-0AT27-0AA0**	1 unit	on req.
Analog output module[1])		B	**3WL9 111-0AT23-0AA0**	1 unit	on req.
ZSI module[1])		B	**3WL9 111-0AT21-0AA0**	1 unit	on req.
Accessories					
Factory-connected cables for CubicleBUS modules	0.2 m long, for connection to SENTRON WL with COM15	B	**3WL9 111-0BC04-0AA0**	1 unit	on req.
	1 m long, for connection to SENTRON WL with COM15	B	**3WL9 111-0BC02-0AA0**	1 unit	on req.
	2 m long, for connection to SENTRON WL with COM15	B	**3WL9 111-0BC03-0AA0**	1 unit	on req.
	2 m long, for connection to SENTRON WL without COM15	B	**3WL9 111-0BC05-0AA0**	1 unit	on req.

1) Each **Cubicle**BUS module is supplied with a 0.2 m factory-fitted cable to connect the modules with each other. A longer factory-fitted cable is required in addition for connection to the circuit-breaker.

All communication components, **Cubicle**BUS modules and measurement functions are available for the ETU45B, ETU55B and ETU76B trip units of the SENTRON WL circuit-breakers.

Accessories for communication

Selection and ordering data

Designation		DT	Order No.	PS*	Weight per PU approx. kg
SENTRON manual for communication solutions	Detailed description of the communication functions for SENTRON circuit-breakers. Installation, connection, commissioning and description of Switch ES Power and BDA.				
	German	X	**E20001-A210-P307**	1 unit	on req.
	English	X	**E20001-A210-P307-X-7600**	1 unit	on req.
	Free download from www.siemens.de/energieverteilung				
Voltage transformer, 3-pole	Voltage transformer 230 V/100 V class 0.5	B	**3WL9 111-0BB70-0AA0**	1 unit	on req.
	Voltage transformer 380 V–440 V/100 V class 0.5	B	**3WL9 111-0BB63-0AA0**	1 unit	on req.
	Voltage transformer 500 V–690 V/100 V class 0.5	B	**3WL9 111-0BB64-0AA0**	1 unit	on req.
Retrofitting and spare parts					
PROFIBUS retrofit kit	Retrofit kit for PROFIBUS communication including COM15, BSS and set of cables for all SENTRON WL circuit-breakers with the ETU45B, ETU55B and ETU76B trip units	B	**3WL9 111-0AT12-0AA0**	1 unit	on req.
	COM15 PROFIBUS module	B	**3WL9 111-0AT15-0AA0**	1 unit	on req.
	Breaker status sensor (BSS)	B	**3WL9 111-0AT16-0AA0**	1 unit	on req.
	Measurement function[2])	B	**3WL9 111-0AT02-0AA0**	1 unit	on req.
	Measurement function *Plus*[1])[2])	B	**3WL9 111-0AT03-0AA0**	1 unit	on req.

1) Start of delivery beginning of 2004.

2) Additional voltage transformers are required for connection of the measurement function.

All communication components, **Cubicle**BUS modules and measurement functions are available for the ETU45B, ETU55B and ETU76B trip units of the SENTRON WL circuit-breakers.

*** This quantity or a multiple thereof can be ordered.**

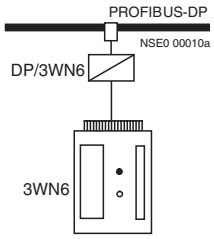
Overview

Rated operating voltage U_e up to AC 690 V

Rated ultimate short-circuit breaking capacity I_{cu} up to AC 500/690 V:
- Size I up to 65/50 kA
- Size II up to 80/50 kA

With motorized operating mechanism DC 24 V
With shunt release DC 24 V
With auxiliary switches (2 NO + 2 NC)

For full functionality refer to system manual "Communication integration of 3VF, 3WN6, 3WN1/3WS1 circuit-breakers into PROFIBUS DP", see Accessories.



Functions

Transmittable data

	Overcurrent releases D, E/F, H, J/K, N, P with Order Code F01	Overcurrent releases N,P with Order Code F05
Commands: – Switch on/off – Delete trip memory	✔ ✔	✔ ✔
Operating status: – Switch position, storage spring, ready-to-close – ON or OFF status	✔ ✔	✔ ✔
Event signals: – Tripped signals – Alarm signals (e.g. overload)	✔ ✔	✔ ✔
Measured values: – Phase currents – Voltage, power, energy, p.f., frequency	✔	✔ ✔
Parameters: – Read and write protection parameters – Optional parameters (e.g. overfrequency)	✔	✔ ✔

✔ This version possible

Selection and ordering data

Size	Rated current I_n= rated transformer current I_n	Adjustment range of setting current I_r	DT	**Circuit-breaker for fixed mounting** with main connection horizontal, rear Order No.	Order with order code only	PS*	Weight per PU approx.	DT	**Withdrawable circuit-breaker** with guide frame with main connection horizontal, rear Order No.	Order with order code only	PS*	Weight per PU approx.
	A	A					kg					kg
Circuit-breakers with overcurrent release for overload and short-circuit protection												
I	630	252– 630	A	**3WN6 061–7D□ 51–1BA1–Z □□□**		1 unit	47.440	A	**3WN6 081–7D□ 51–1BA1–Z □□□**		1 unit	76.440
I	800	320– 800	A	**3WN6 161–7E□ 51–1BA1–Z □□□**		1 unit	34.440	A	**3WN6 181–7E□ 51–1BA1–Z □□□**		1 unit	58.440
I	1000	400–1000	A	**3WN6 261–7F□ 51–1BA1–Z □□□**		1 unit	34.440	A	**3WN6 281–7F□ 51–1BA1–Z □□□**		1 unit	58.440
I	1250	500–1250	A	**3WN6 361–7G□ 51–1BA1–Z □□□**		1 unit	36.440	A	**3WN6 381–7G□ 51–1BA1–Z □□□**		1 unit	61.440
I	1600	640–1600	A	**3WN6 461–7H□ 51–1BA1–Z □□□**		1 unit	36.440	A	**3WN6 481–7H□ 51–1BA1–Z □□□**		1 unit	61.440
II	2000	800–2000	A	**3WN6 561–7J □ 51–1BA1–Z □□□**		1 unit	57.440	A	**3WN6 581–7J □ 51–1BA1–Z □□□**		1 unit	94.440
II	2500	1000–2500	A	**3WN6 661–7K□ 51–1BA1–Z □□□**		1 unit	59.440	A	**3WN6 681–7K□ 51–1BA1–Z □□□**		1 unit	98.440
II	3200	1280–3200	A	**3WN6 761–7M□ 51–1BA1–Z □□□**		1 unit	61.440	A	**3WN6 781–7M□ 51–1BA1–Z □□□**		1 unit	100.440

Overcurrent release (see Part 5)	Order No. supplement		Order No. supplement	
"aznN" "aznNg"	**D** **E**	**F 0 1** **F 0 1**	**D** **E**	**F 0 1** **F 0 1**
"aznN" "aznNg"	**H** **J**	**F 0 1** **F 0 1**	**H** **J**	**F 0 1** **F 0 1**
"aznN" "aznNg"	**N** **P**	**F 0 5**[1]) **F 0 5**[1])	**N** **P**	**F 0 5**[1]) **F 0 5**[1])

1) External voltage transformers are supplied with the unit.

*** This quantity or a multiple thereof can be ordered.**

PROFIBUS DP

Accessories

	DT	Order No.	PS*	Weight per PU approx. kg
System manual Communication interface of the 3VF, 3WN6, 3WN1/3WS1 circuit-breakers with PROFIBUS DP	X	**E20001–P285–A644–V1**	1 unit	on req.
Interface DP/3WN6 One required for each communication-capable circuit-breaker (incl. $3^1/_2$″ floppy disk with type or GSD file and connecting cable)	A	**3RK1 000–0JC80–0BA2**	1 unit	0,563
PROFIBUS connector PROFIBUS bus lines: see Catalog ST PI "PROFIBUS & AS-Interface Fieldbus Components"	X	**6ES7 972–0BB41–0XA0**	1 unit	0,051
Software module for SIMATIC S5 and S7; Programming aid for handling communication, $3^1/_2$″ floppy disks	A	**3RK1 800–0AA00–0AA0**	1 unit	0,106

Options

Additional version (recommended)

When circuit-breakers are ordered in the above designs, the full Order No. must be supplemented by the order code **"K01"**.

	Order No. **3WN6 ..1–7..51–1BA1–Z F0.** and additional order code □□□
With automatic mechanical reset after tripping	**K 0 1**

(Without additional function K01, after tripping the circuit-breaker must be manually reset with the red RESET button on the circuit-breaker)

*** This quantity or a multiple thereof can be ordered.**

Breaker Data Adapter (BDA and BDA Plus) for SENTRON circuit-breakers

Overview

Breaker Data Adapter (BDA)

Breaker Data Adapter *Plus* (BDA *Plus*)

Breaker Data Adapter (BDA) and Breaker Data Adapter Plus (BDA Plus)

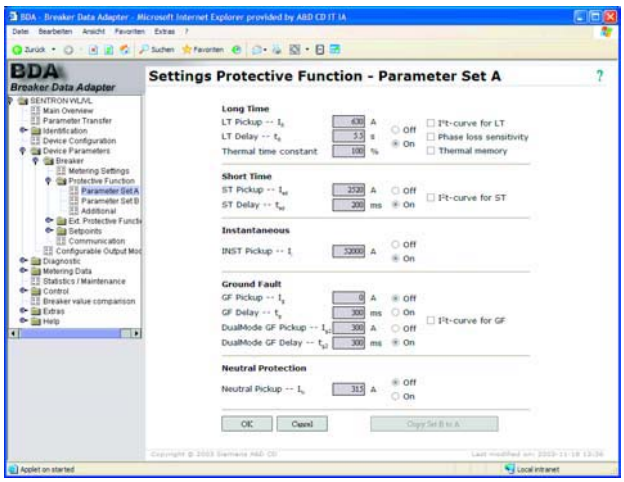
The BDA is the first circuit-breaker configuration device with integrated web server for parameterization, operation, monitoring and diagnostics of the SENTRON WL (ETU45B and higher) and SENTRON VL (with LCD ETU) circuit-breakers.

As the software and the web pages are already included in the BDA, the full functionality of the circuit-breaker communication can be utilized with any browser-capable input/output device (e.g. notebook, SIEMENS MOBIC), without installation of additional software. The only system requirement for the input/output device is a standard browser with JAVA2 Virtual Machine. After connecting the BDA to the circuit-breaker, the browser is loaded with the web pages from the BDA and the circuit-breaker data. Which data are displayed depends on the connected circuit-breaker type and degree of expansion.

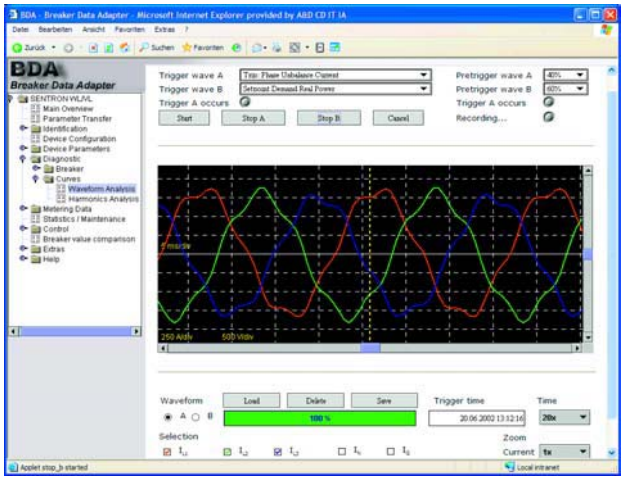
The BDA is equipped with a magnet on the rear which makes it ideal for use as a portable "online" parameterization and diagnostics tool. Alternatively, the BDA can also be used for "offline" generation or alteration of parameter sets with a notebook. Furthermore, a print function allows easy documentation of all events and adjustment settings. The individual application capabilities of the BDA are explained below.

The BDA *Plus* features all of the functions of the BDA, with an additional Ethernet interface for direct connection to the Ethernet. Depending on the network configuration, this also allows access via the Intranet and, upon opening of the firewall, also via the Internet. This opens up unlimited possibilities for remote parameterization, diagnostics and maintenance of the SENTRON circuit-breakers, regardless of region.
For use as a fixed-installation Ethernet gateway, the BDA *Plus* is also equipped with an additional standard mounting rail connection.

The application capabilities of the BDA *Plus* are explained in more detail below.



Breaker Data Adapter – device parameters



Breaker Data Adapter – diagnostics

Area of application

BDA in offline mode (or BDA Plus)

In offline mode the BDA or BDA *Plus* is only connected to a notebook (as an example of all the other input/output devices). In this operating mode, all of the required parameters can be adjusted and saved for later use (i.e. for download to the circuit-breakers). The memory format is identical to the memory format of the PROFIBUS software Switch ES Power. There is no power supply via the COM interface of the notebook, so an additional power supply (DC 24 V) must be connected to the BDA.

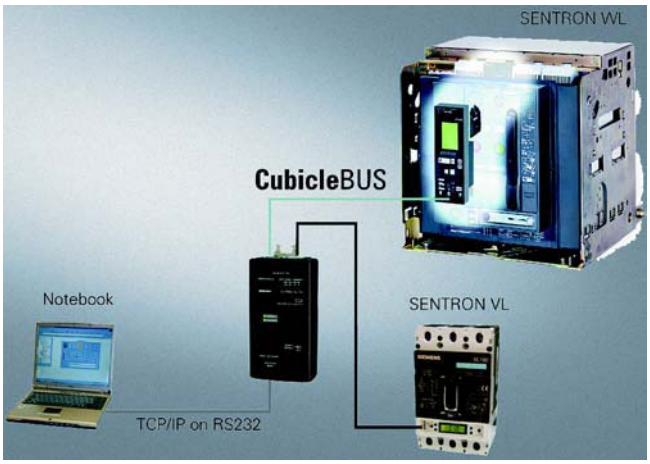
Breaker Data Adapter (BDA and BDA Plus) for SENTRON circuit-breakers

The BDA as a manual control device (alternatively: BDA Plus)

The BDA can be used as a manual control device by temporarily connecting it to the relevant trip unit interface of the SENTRON VL/WL.

With just one BDA it is possible to calibrate all of the SENTRON circuit-breakers in a plant in turn and to store the parameter data in a notebook for further processing. In addition, the BDA can also be used to read out all of the diagnostic data from the circuit-breaker. It is also possible to exchange data using the PROFIBUS parameterization software Switch ES Power.

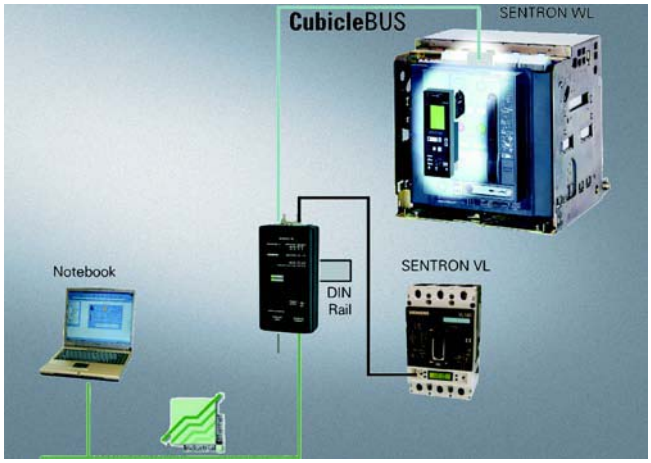
An additional DC 24 V power supply is required if the circuit-breaker is not already supplied with power (for SENTRON WL by means of external DC 24 V on the **Cubicle**BUS; for SENTRON VL by inserting the COM10 module).



BDA Plus as interface to the Ethernet

If the BDA *Plus* is utilized then, in addition to the BDA functions described above, it is also possible to access circuit-breaker data via the Ethernet. The circuit-breaker data are not transmitted as pure data in this case, but instead are represented in the application-specific format on HTML pages. It is not possible to integrate the circuit-breaker data into higher-level visualization systems (e.g. WinCC) via BDA/BDA *Plus*. If several SENTRON VL/WL circuit-breakers are to be displayed 24 h online via communication on a switchboard without utilization of the PROFIBUS DP, then one BDA *Plus* is required per circuit-breaker. In this case the circuit-breaker is selected by entering the BDA-specific IP address in the browser. Password protection in the BDA and the BDA *Plus* prevents unauthorized access.

The firewall settings can be adjusted accordingly to also allow access to the SENTRON VL/WL circuit-breakers via the Intranet and Internet.



Selection and ordering data

Designation		DT	Order No.	PS*	Weight per PU approx.
					kg
Breaker Data Adapter (BDA)	Parameterization, operation, monitoring, and diagnostics of SENTRON circuit-breakers via local interface; Breaker Data Adapter, connecting cable to SENTRON circuit-breaker and to programming device (e.g. notebook); can be run with Internet Explorer with JAVA2 VM 1.4.0_01	B	**3WL9 111-0AT28-0AA0**	1 unit	on req.
BDA *Plus*	Same as BDA, but with additional Ethernet interface for connection to Ethernet/Intranet/Internet	B	**3WL9 111-0AT33-0AA0**	1 unit	on req.
Accessories					
Connecting cable for BDA and BDA *Plus*	Connecting cable for connection of BDA and BDA *Plus* to LCD ETU trip unit of SENTRON VL circuit-breaker; length 1 m	C	**3WL9 111-0BC20-0AA0**	1 unit	on req.
Connecting cable for BDA *Plus*	Connecting cable for BDA *Plus* to terminal X8 of the SENTRON WL circuit-breaker; this is required if neither COM15 nor other external **Cubicle**BUS modules are available. Length 2 m	B	**3WL9 111-0BC21-0AA0**	1 unit	on req.

All communication components, **Cubicle**BUS modules and measurement functions are available for the ETU45B, ETU55B and ETU76B trip units of the SENTRON WL circuit-breakers.

*** This quantity or a multiple thereof can be ordered.**

Switch ES Power for SENTRON circuit-breakers

Overview

General

Switch ES serves as a shared software platform for the device-specific program versions of the communication-capable switchgear. Among other things, this has the advantage that all device-specific program variants are identical in terms of appearance and handling.

Switch ES Power

Switch ES Power can be used to configure, operate and monitor the SENTRON WL and SENTRON VL circuit-breakers via the PROFIBUS DP .

Benefits

Switch ES Power

- Clear representation of all available parameters
- All the available status information and measured values are displayed in dialog boxes
- Software for SENTRON WL and SENTRON VL
- Easy connection build-up through acyclic PROFIBUS DP-V1 data traffic
- No programming is required for operation
- Identical storage format for BDA parameters

Object manager for Switch ES Power

- Uniform data management for circuit-breaker parameters
- Automatic parameterization if components are replaced

Design

Switch ES Power

The design of both the data tree and the individual data windows has been cross-referenced and harmonized with the structure of the Breaker Data Adapter. As a result, the same functions and information are available. Due to its support of the innovative PROFIBUS DPV1 function, it is particularly easy to link up a computer to the PROFIBUS using Switch ES Power. Simply connect, select the PROFIBUS address and start communication, even if the SENTRON circuit-breakers are simultaneously exchanging data with another station (e.g. S7) via the PROFIBUS.

With Switch ES Power, it is also possible to create parameter sets offline without a direct connection to the circuit-breaker. These parameter sets can then be transmitted to the SENTRON circuit-breakers in the plant at a later stage.

Functions

Switch ES Power

The Switch ES Power is used to load and display the switching device identification data. Depending on the circuit-breaker configuration, the parameters for the protection function (LSING), the extended protection function, the configurable threshold values, the communication, and the configurable output module are displayed. These can be modified accordingly and loaded and stored on the switching device. The following online dialog boxes are available (depending on the type of circuit-breaker): main view, diagnostics window, measured values window, a window for displaying the harmonic analysis and one for displaying the curve form memory as well as one dialog box for maintenance and statistics.

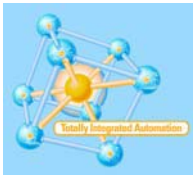
The memory formats of the BDA and Switch ES Power are identical, which means that it is for example possible to generate central parameter files with Switch ES Power and then copy them to a notebook with the BDA for use by service personnel.

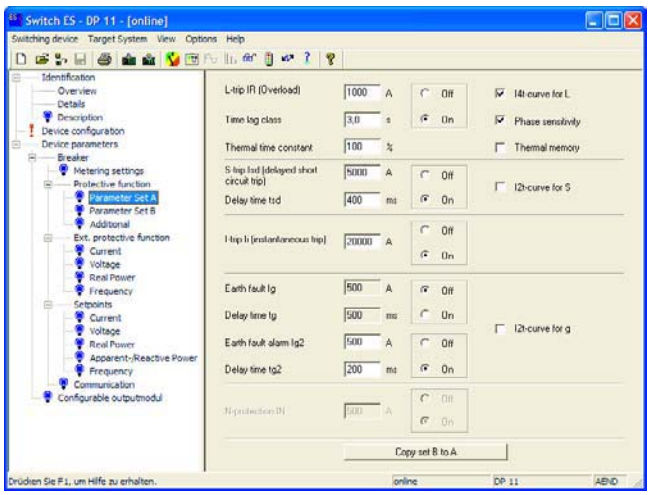
Switch ES Power supports all PROFIBUS cards for the Siemens PC/notebook. Some cards require an additional software package (driver); for more details refer to the interactive Catalog CA 01.

Integration

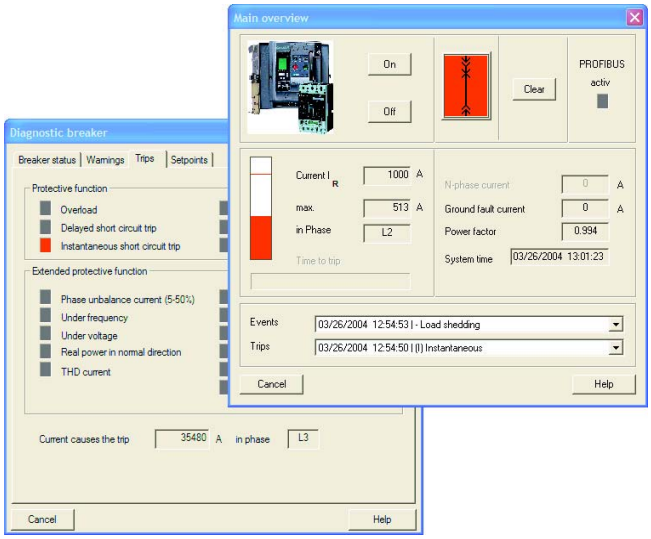
Object manager of Switch ES Power

The Object Manager (OM) of Switch ES Power is used to integrate Switch ES Power into the STEP 7 environment, and therefore also into the Totally Integrated Automation (TIA) concept. This allows Switch ES Power to be called from the HWConfig Tool from STEP 7, and the SENTRON WL/VL circuit-breakers to be parameterized. This data is then stored in the STEP 7 database and automatically transferred to the circuit-breaker via the PROFIBUS DP during every start-up (PLC, slave).





Adjustment of parameter set A with Switch ES Power



Online functions with Switch ES Power

Switch ES Power for SENTRON circuit-breakers

Selection and ordering data

Version	DT	Order No.	PS*	Weight per PU approx.
				kg
Switch ES Power Parameterization, operation, monitoring, and diagnostics of SENTRON WL/VL circuit-breakers via PROFIBUS DP; can run under Windows 95/98/NT/2000/XP Professional, including online help, the language can be switched between German and English; including Object Manager (OM) for Switch ES Power for integration in STEP7 System requirements: PROFIBUS card: CP5511 (PCMCIA) CP5611 (PCI), CP5613 and CP5614 (new PCI card) and MPI interface on PG7xx and its driver software, see interactive catalog CA01, CD-ROM drive System requirements for OM Switch ES Power: SIMATIC: S7, M7, C7, PCS7 STEP 7: Version 5.2 or higher CD-ROM drive	A	**3ZS2 311-0CC10-0YA0**	1 unit	on req.

*** This quantity or a multiple thereof can be ordered.**