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SIPROTEC 7SC80

Feeder Automation Controller

Answers for infrastructure.

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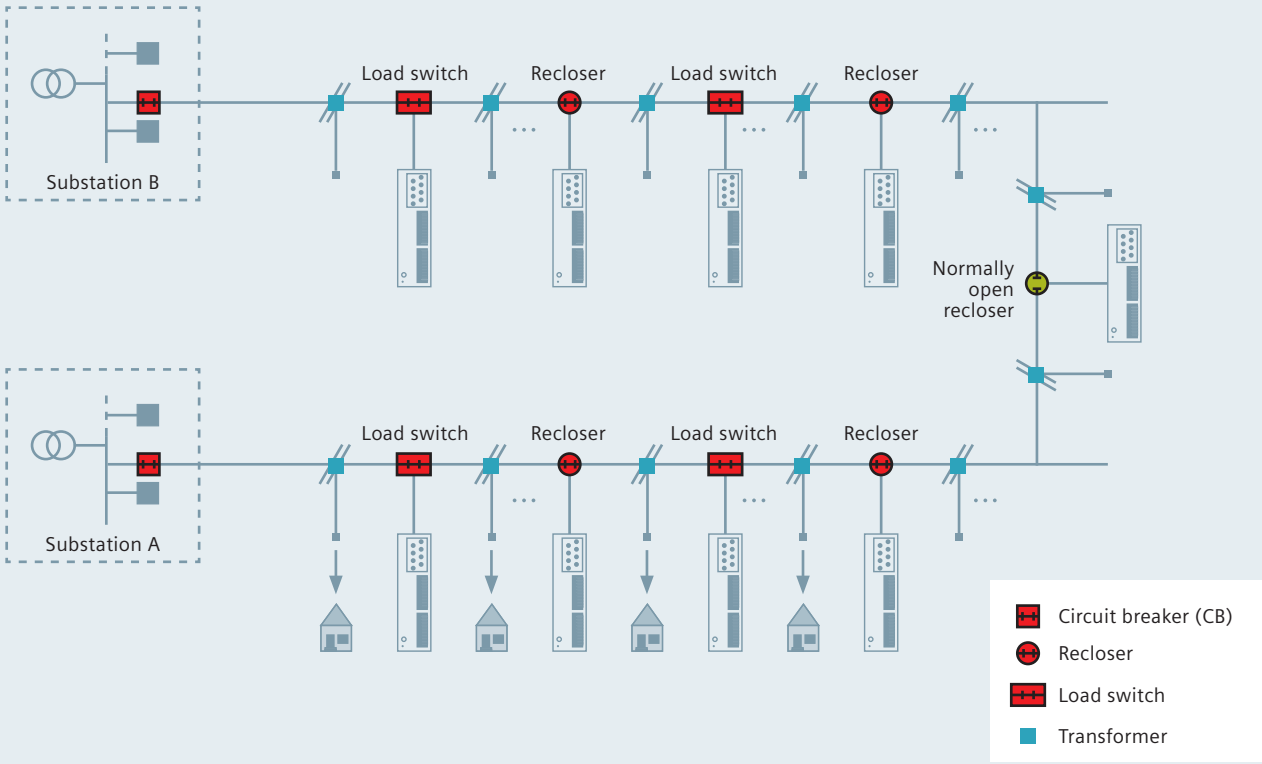
SIPROTEC 7SC80: designed for feeder automation applications

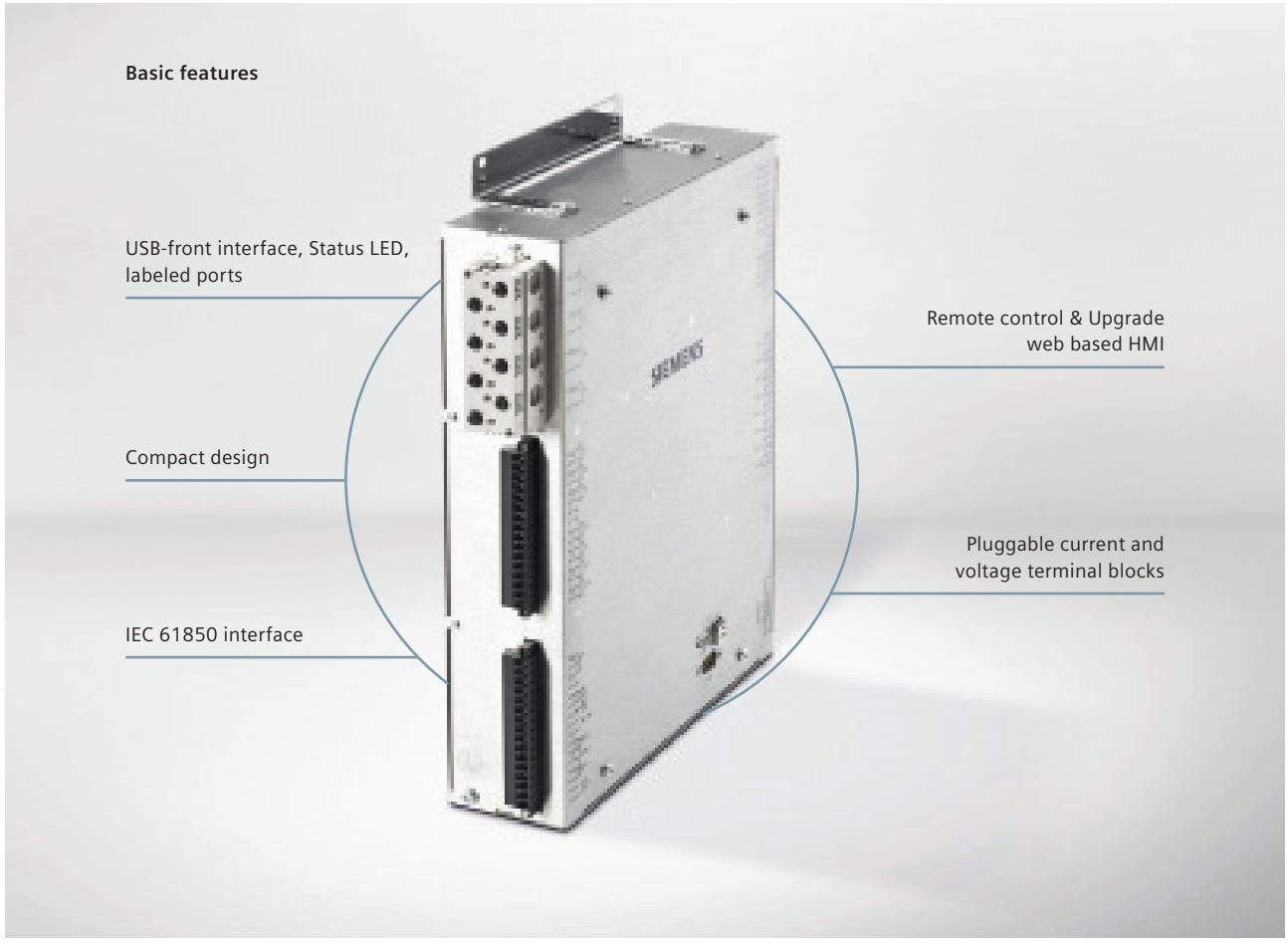
Fields of application with feeder automation controller 7SC80



This solution allows very fast fault detection and isolation in distribution networks:

- **FLISR** (Fault Location, Isolation, and Service Restoration)
- **Source Transfer**
- **Load Balancing**

SIPROTEC 7SC80: overview of the benefits



- Selective fault detection via current jump detector
- Determine the fault location
- Isolate the faulted section of the feeder
- Restore service to “healthy” portions of the feeder
- Support of feeder automation applications
- Designed for harsh environment
- Extended CFC (PLC – Programmable Logic Controller)
- Extended temperature range –50 °C up to 85 °C
- Singlemode module for distances up to 24 km available
- Open for all different communication technologies, e.g. radio, which are used for feeder automation
- Integrated GPS module for time synchronisation
- Full remote access supported for firmware and parameter updates and upgrades
- A web based HMI provides complete remote control of the device
- Low power consumption

SIPROTEC 7SC80: flexible application for medium voltage power system

We offer you considerably more than just a simple time-over current protection

Description

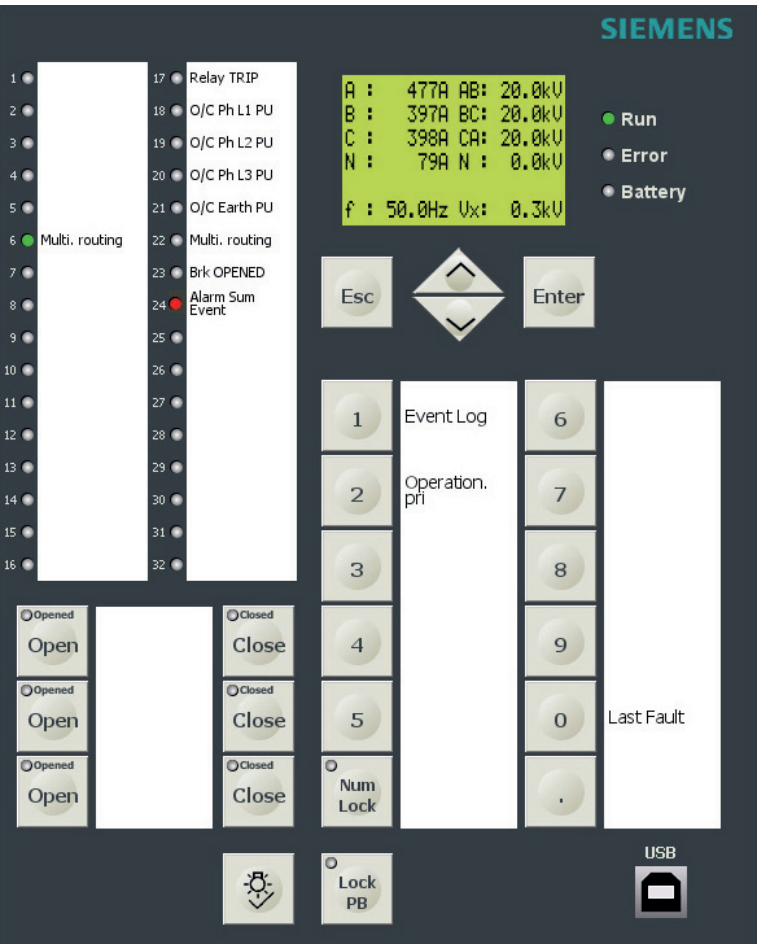
The SIPROTEC 7SC80 feeder automation controller can be used for protection and automation of medium-voltage distribution feeders with grounded or low-resistance grounded neutral point.

The 7SC80 features “flexible protection functions”.

20 additional protection functions can be created by the user. For example, a rate of change of frequency function or a reverse power function can be created. The relay provides circuit-breaker control.

Additional primary switching devices (grounding switches, transfer switches and isolating switches) can also be controlled from the relay. Automation or PLC logic functionality is also implemented in the relay. The integrated programmable logic (CFC) allows the user to add own functions, e.g. for the automation of switch-gear (including: interlocking, transfer and load shedding schemes). The user is also allowed to generate user-defined messages. The communication module is independent from the protection. It can easily be exchanged or upgraded to future communication protocols.

SIPROTEC 7SC80: has everything you need for remote operation and control



Comprehensive interactive web based HMI

The relay has a web-based HMI which provides 32 virtual LEDs and 9 programmable pushbuttons to configure short-cuts for menu or various applications:

- Large and well organized display
- 14 push buttons plus arrow keys
- 32 configurable LEDs plus operating LEDs
- Automatic LED and push button labeling
- Button for LED acknowledgement
- "Open" and "Close" buttons for direct control of equipment
- Lock push buttons preventing accidental actions

With DIGSI 4 and SIGRA 4 you have everything under control

- Easy configuration of flexible protection functions
- A matrix instead of nested dialogs means less time-consumption and errors
- You don't need any programming knowledge to create logic functions
- With DIGSI 4, you read all process data from a device and store it centrally
- With SIGRA 4 you can analyze every network fault

SIPROTEC 7SC80: Function overview

Protection functions	IEC	ANSI No.
Base Package A		
Overcurrent protection (phase/ground)	$I>$, $I>>$, $I>>>$, I_P, $I_E>$, $I_E>>$, $I_E>>>$, I_{Ep}	50/51, 50N/51N
Breaker failure protection		50BF
Phase-balance current protection (negative sequence protection)	$I_2>$	46
Thermal overload protection		49
Cold load pickup		51c
Lockout		86
Parameter changeover, monitoring functions, control of circuit-breaker		
Flexible protection functions (current parameters), under-/overfrequency		
Inrush restraint, fault recording, average values, min/max values		
Base Package B (containing A)		
Directional overcurrent protection, sensitive ground-fault protection	$I>$, $I_P<$ (V,I), $I_N>$, < (V,I)	67, 67N
Undervoltage/overvoltage protection	$V<$, $V>$	27/59
Under-/overfrequency	f<, f>	81U/O
Protective funktion for voltage, power, power factor, frequency change	$P<>$, $Q<>$, cosphi, df/dt	32, 55, 81R
Addidional functions		
Fault locator, autoreclose		21FL, 79

Control functions/programmable logic

- Commands for the control of CB, disconnect switches (isolators/isolating switches)
- Control through keyboard, binary inputs, DIGSI 4 or SCADA system
- User-defined PLC logic with CFC (e.g. interlocking)

Monitoring functions

- Operational measured values *V, I, f*
- Energy metering values W_p, W_q
- Minimum and maximum values
- Fuse failure monitor
- 8 oscillographic fault records

Communication interfaces

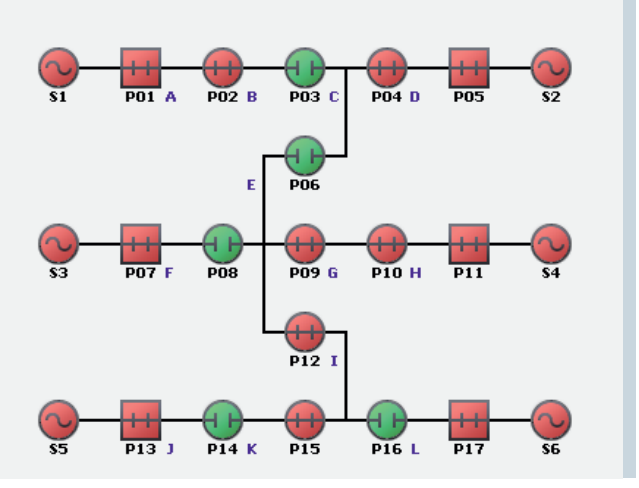
- IEC 61850 electrical and optical (single-mode distance up to 24 km)
- USB front interface for DIGSI 4

Hardware

- 4 current transformers
- 1/4 voltage transformers
- 12 binary inputs
- 8 binary outputs
- 1 live-status contact
- Pluggable terminals

Convenient engineering and test tool for Feeder Automation Apps

- Simplified workflow based on device templates
- Easy & time saving creation and testing of FA apps
- Automatic configuration of all Feeder Automation related settings
- No deep CFC and IEC 61850 knowledge necessary



Feeder Automation Controller 7SC80	5	6	7	–	8	9	10	11	12	–	13	14	15	16	–	L		
Order No.	7	S	C	8	0													
Basic functions		6																
Housing, 12 BI, 8 BO, 1 live status contact		2																
Specification of CT and VT measuring inputs			7															
4 x CT 1 A/5 A, 1 x PT 120V			2															
4 x CT 1 A/5 A, 4 x PT 120 V			4															
Rated auxiliary voltage					8													
DC 60 V to DC 250 V; AC 115 V; AC 230 V					1													
DC 24/48 V					2													
Unit version						9												
Surface mounting housing						A												
Region-specific default- and language settings							10											
Region DE, IEC, language German							A											
Region World, IEC/ANSI, language English							B											
Region US, ANSI, language US-English							C											
System interface								11										
100 Mbit Ethernet, electrical, 2 x RJ45 connector								9								L		R
100 Mbit Ethernet, with integrated switch, optical, 2 x LC connector single-mode 24 km								9								L		T
Protocol for system interface																		
IEC 61850																		0
IEC 61850 / DNP3 IP																		2
Additional interfaces									12									
No module									0									
GPS module									7									

Protection function packages

Software packages	7	S	C	8	0						3	F						
ANSI No.	**Base Package A**												15					
50/51	Time-overcurrent protection phase I>, I>>, I>>>, I_P											1)	A					
50N/51N	Time overcurrent protection ground I_E>, I_E>>, I_E>>>,I_{Ep}																	
50BF	Circuit breaker failure protection																	
46	Negative sequence/unbalanced load protection																	
49	Thermal overload protection																	
51c	Cold load protection																	
86	Lockout																	
	Parameter changeover																	
	Monitoring functions																	
	Control of circuit-breaker																	
	Flexible protection functions (current parameters)																	
	Under-/overfrequency, f<, f>																	
	Inrush restraint																	
	Fault recording, average values, min/max values																	
	Base Package B (containing A)												15					
67	Directional overcurrent protection phase, I>, I>>, I_{Ep}											2)	B					
67N	Directional overcurrent protection ground, I_E>, I_E>>, I_{Ep}																	
27/59	Under-/overvoltage																	
81U/O	Under-/overfrequency, f<, f>																	
32/55/81R	Flexible protection functions (current and voltage pameters)																	
	Protective function for voltage, power, power factor, frequency change																	
	Base Package R												15					
	No protection, pure RTU functionality															3)	R	
	Additional functions																	16
	Without fault locator																	0
79	With autoreclose																	1
21FL	With fault locator															2)		2
79/21FL	With autoreclose and fault locator															2)		3

1) Only with position 7=2 2) Only with position 7=4 3) Only with position 16=0

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