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SIPROTEC 7SC80 Recloser Control

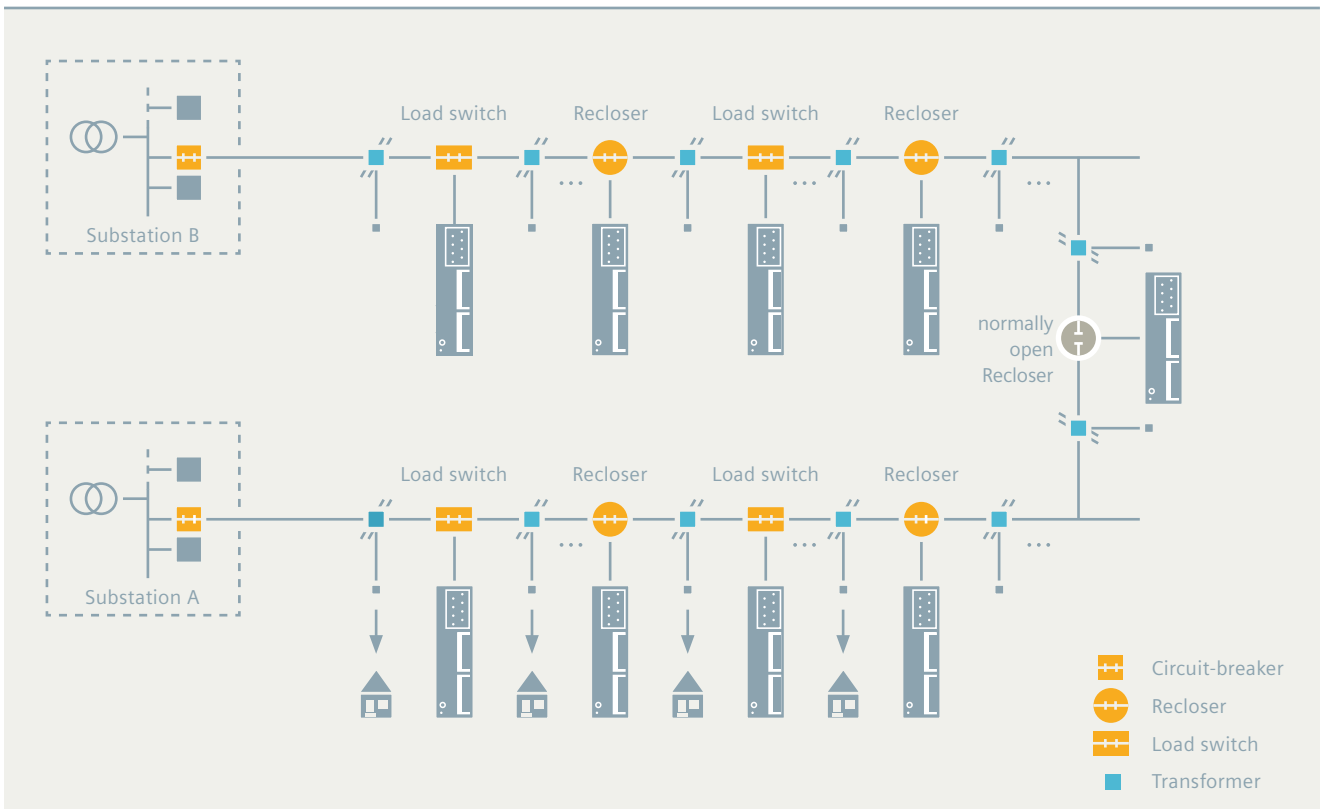
Recloser Controller for
feeder protection and automation

Designed for feeder automation applications

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

- ① FLISR (Fault Location, Isolation, and Service Restoration)
- ② ATS (Automatic Transfer Scheme) for high-speed source transfer
- ③ Load Balancing

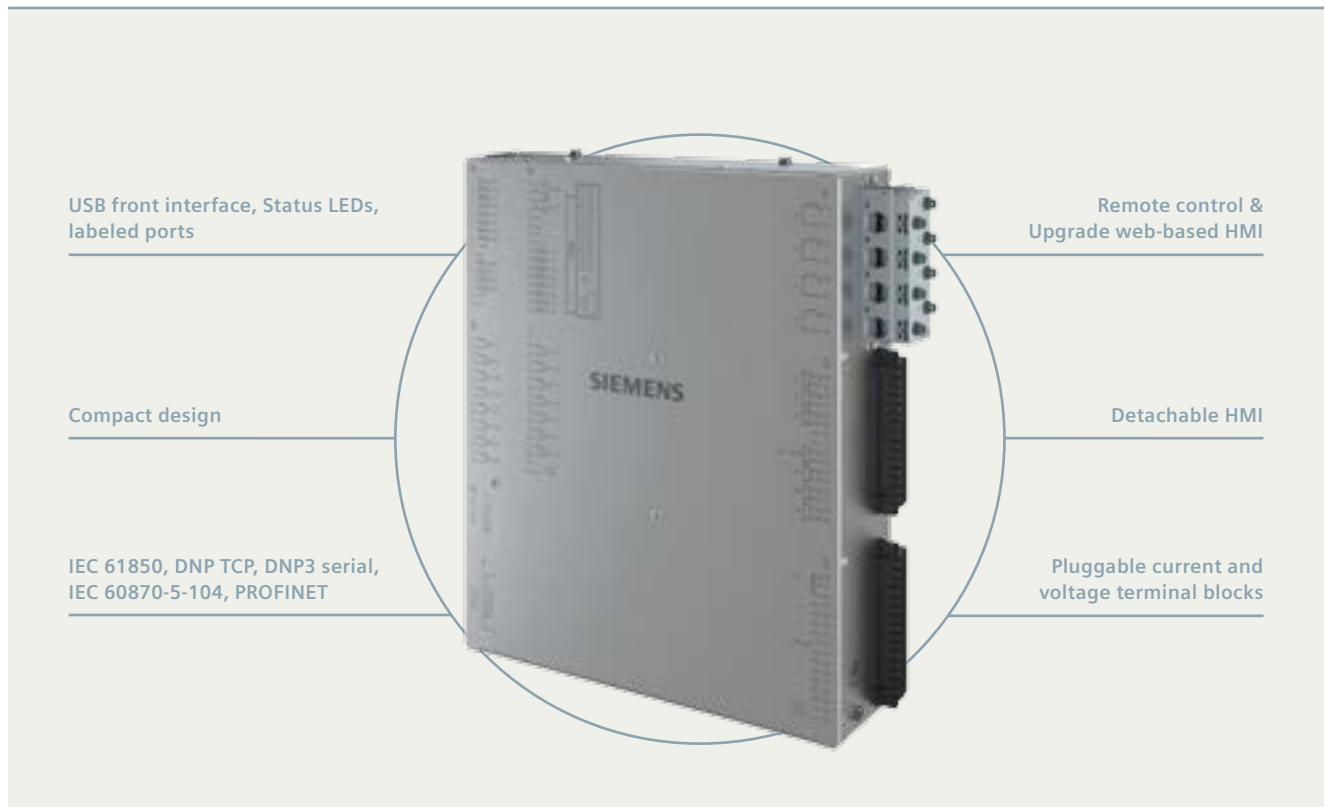
Fields of application with feeder automation controller SIPROTEC 75C80 Basic features



Overview of the benefits

- Selective and fast 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 various feeder automation applications
- Designed for harsh environment
- Extended CFC (PLC – Programmable Logic Controller)
- Extended temperature range -50 °C up to $+85\text{ °C}$
- Single-mode module for distances up to 24 km available, multi-mode for up to 4 km
- Open for all different communication technologies, e.g. radio, which are used for feeder automation
- Integrated GPS module for time synchronization and localization
- Full remote access supported for firmware and parameter updates and upgrades
- A web-based HMI provides complete remote control of the device
- Various analogue input options
- Battery monitoring / management
- Sectionalizer functions

Basic features



Flexible application for medium-voltage power systems

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

Description

The SIPROTEC 7SC80 feeder automation protection Recloser controller can be used for protection and automation of medium-voltage distribution networks with grounded, low-resistance grounded, isolated or a compensated neutral point.

The SIPROTEC Compact 7SC80 features “flexible protection functions”. Up to 20 additional protection functions can be created by the user. Please find the available protection functions in configuration table on page 7.

The relay provides auto recloser and circuit-breaker control, further switching devices and automation functions. 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.



Has everything you need for remote operation and control

Comprehensive physical and interactive web-based HMI

The relay has a physical respectively web-based HMI with 32 LEDs and 9 programmable pushbuttons to configure shortcuts for menu or various applications:

- 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
- With DIGSI 4, you read all process data from a device and store it centrally
- With SIGRA 4, you can analyze every network fault
- Recloser Summary menu containing all relevant parameters at a glance



Function overview

Control functions / programmable logic

- Commands for the control of reclosers, CBs, and 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 Wp, Wq
- Minimum and maximum values
- Circuit-breaker wear monitoring
- Fuse failure monitor
- 8 oscillographic fault records
- Load profile (in prep.)
- Trip circuit supervision (74TC)

Communication interfaces

- Ethernet electrical RJ45
- Ethernet optical LC multi-mode up to 4 km
- Ethernet optical LC single-mode up to 24 km
- Serial DNP3 module (RS485)

Integrated switch functionality included with protocol options:

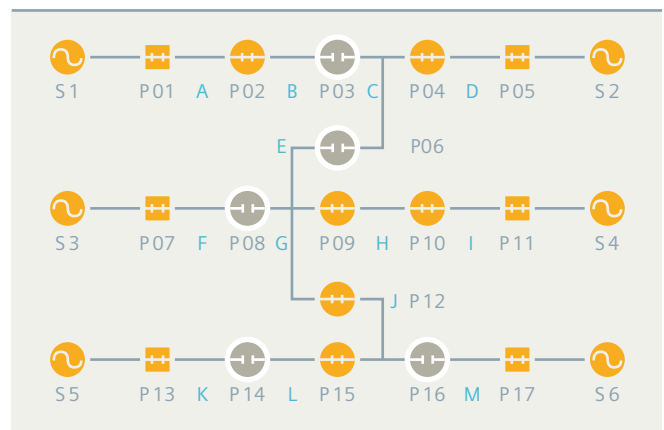
- IEC 61850 Edition 1 and 2
- DNP3 TCP
- IEC 60870-5-104
- PROFINET
- Ethernet redundancy protocols RSTP, PRP and HSR
- USB front interface for DIGSI 4

Hardware

- 4 current transformers
- 1 / 4 / 6 voltage transformers
- 12 / 20 binary inputs
- 8 / 15 binary outputs
- 1 live-status contact
- Pluggable terminals
- Detachable HMI
- Low Power CTs

FASE: Convenient engineering tool for Feeder Automation Applications

- 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
- Automatic and detailed creation of documentation as PDF



Product and Order No.

FASE Scientific	7XS5500-1AB00
FASE Package 1	7XS5500-0AA01
FASE Package 5	7XS5500-0AA05
FASE Package 10	7XS5500-0AA10
FASE Package 50	7XS5500-0AA50
FASE Recorder multi-user license keys	7XS5500-0AA00



Product description		Order No.															
Feeder Protection Recloser Controller		75C80	6	7	8	9	10	11	12	13	14	15	16	Short code			
			□	□	-	□	□	□	□	□	-3	□	□	□	□		
Housing binary inputs and outputs	12 BI, 8 BO, 1 Life contact 20 BI, 15 BO, 1 Life contact 2 x V ⁴⁾	2 3															
Specification of CT and VT measuring inputs	3 x I LPS/LoPo, 1 x V 4 x I 1 A/5 A, 1 x V 3 x I LPS/LoPo, 4 x V 4 x I 1 A/5 A, 4 x V 3 x I 1 A/5 A, 1 x I _{ee} (sensitive) = 0.001 to 1.6 A/0.005 to 8 A, 1 x V 3 x I 1 A/5 A, 1 x I _{ee} (sensitive) = 0.001 to 1.6 A/0.005 to 8 A, 4 x V	1 2 3 4 5 6															
Rated auxiliary voltage	DC 60 V to 250 V; AC 115 V; AC 230 V DC 24 V/48 V DC 24 V/48 V, Battery Monitoring				1 2 3												
Unit version	Surface mounting housing ³⁾ Surface/Flush mounting housing with HMI Surface mounting housing with detached HMI						A B C										
Region-specific default- and language settings	Region DE, IEC, language German ¹⁾ Region World, IEC/ANSI, language English ¹⁾ Region US, ANSI, language US-English ¹⁾ Region World, IEC/ANSI, language French ¹⁾ Region World, IEC/ANSI, language Spanish ¹⁾ Region World, IEC/ANSI, language Russian ¹⁾						A B C D E G										
System interface	No port 100 Mbit Ethernet, electrical, 2 x RJ45 connector 100 Mbit Ethernet, with integrated switch, optical, 2 x LC connector multi-mode 100 Mbit Ethernet, with integrated switch, optical, 2 x LC connector single-mode 24 km								0 9 9 9					L	R S T		
Protocol for System interface	IEC 61850 IEC 61850 + DNP3 TCP IEC 61850 + PROFINET 10 ²⁾ IEC 61850 + IEC60870-5-104 DNP3, electrical RS485														0 2 3 4 6 G		
Additional interfaces	No module IRIG-B optical module GPS module									0 6 7							
Feeder Protection																	
Software packages	ANSI No.																
Base Package A	50/51 Overcurrent protection phase I>, I>>, I>>>, IP 50N/51N Overcurrent protection ground I _c >, I _c >>, I _c >>>, I _{EP} 50N(s)/51N(s) Sensitive ground fault protection I _{EE} >, I _{EE} >>, I _{EEP} ⁷⁾ 50BF Circuit breaker failure protection 46 Negative sequence/unbalanced load protection 49 Thermal Overload protection 87N High impedance REF ⁶⁾ 74TC Trip circuit supervision 37 Undercurrent 51c Cold load pickup 81HBL2 Inrush restraint 86 Lockout 60CTS CT supervision, Parameter changeover, Monitoring functions, Control of circuit-breaker, Flexible protection functions (current parameters), Under-/overfrequency, Fault recording, average values, min/max values, Sectionalizer function													F A			
Base Package B (containing A)	67 Directional overcurrent protection phase, I>, I>>, I _{EP} 67N Directional overcurrent protection ground, I _c >, I _c >>, I _{EP} 67N(s) Directional sensitive ground fault protection, I _{EE} >, I _{EE} >>, I _{EEP} ⁷⁾ 27/59 Under-/overvoltage 81 U/O Under-/overfrequency, f<, f> 25 Sync check 47 Phase rotation 64/59N Displacement voltage 60VTS VT supervision 32/55/81R Flexible protection functions (current and voltage parameters) Protective function for voltage, power, power factor, frequency change													F B	⁵⁾		
Base Package N (contains R)	SNTp server/master functionality, no protection F N 5)													F N	⁵⁾ ⁸⁾		
Base Package R	Pure RTU functionality, Sectionalizer functionality, no protection													F R	⁵⁾		
Additional functions																	
Automatic reclosing (AR), Fault locator, 3-/1-pole operation	79 Without With autoreclose 21FL With fault locator ¹⁾ 79/21FL With autoreclose and fault locator ¹⁾ 79 With automatic reclosing function (AR) and 3-/1-pole operation 79/21FL With automatic reclosing function (AR), fault locator, and 3-/1-pole operation													0 1 2 3 4 5	⁴⁾ ⁴⁾ ⁴⁾		

¹⁾ Language selectable.

²⁾ Only with 100 Mbit Ethernet electrical and multimode.

³⁾ HMI can be ordered separately: without cable C53207-A406-D242-A, with cable C53207-A406-D243-1.

⁴⁾ Only with position 7 = 3, 4 or 6.

⁵⁾ Only with position 16 = 0.

⁶⁾ 87N (REF) only with sensitive ground current input (position 7 = 5 or 6).

⁷⁾ Depending on the ground current input, the function will be either sensitive (I_{EE}) or non-sensitive (I_c).

⁸⁾ Only with position 12 = 7.

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This product includes cryptographic software written by Eric Young. (ey@cryptsoft.com)