

Description

The Reyrolle 5 is designed for the electricity networks of the future with enhanced communications and cyber security while maintaining a user-friendly interface and easy product management.

The Reyrolle 7SR57 motor protection devices include a wide range of protection functions and IEC 61850 Ethernet communications as standard. To further minimize the product variants the power supply and the binary inputs cover the full operating range with configurable binary input thresholds.

The large LCD, tactile pushbuttons and programmable LEDs provide a user-friendly product interface and the relay element is withdrawable for easy replacement.

Input and outputs	Current inputs – 4 or 8 Voltage inputs – 0 or 4 Binary inputs (max) – 29 Binary outputs (max) incl. healthy contact – 16 Arc flash detector inputs (AFD) – 0 or 3 High speed binary outputs (HSBO) – 0 or 3 Temperature sensor inputs (TSI) – 0, 8, or 16
Communication	Standard front USB port (for configuration using Reydisp Manager 2, a PC based software tool) rear RS485, 2 x RJ45 electrical ports or optional optical Ethernet connections
Housing	Size 6, 8, or 12 with withdrawable design
Display	Backlit 128 x 128 LCD with text and graphical display capabilities suitable for single line mimic diagrams

Benefits

- Compact design and low product life-cycle cost
- Reliable operation due to powerful, proven protection algorithms
- IEC 61850 Edition 1 & 2 with HSR, PRP and RSTP operation for increased availability
- Simple product ordering
- Combined 1 A and 5 A current transformer inputs
- 28 programmable tri-color LEDs for clear indications.
- User selectable languages: English, French, German, Portuguese, Spanish, Turkish
- Conformal coating ordering option

Functions

Standard Functionality

- 14 Locked rotor protection
- 37/37G Undercurrent protection – phase/earth
- 46BC Broken conductor detection
- 46PR Phase-rotation reversal
- 46UB Phase unbalance



[3C_7SR5_7SR57; 2, ...]

- 48 Starting-time supervision
- 49M Motor thermal overload protection
- 49TS Temperature sensor supervision ¹¹
- 50/50G/50N Instantaneous overcurrent/earth fault
- 50AFD Arc flash detection ¹²
- 50BCL Break capacity limit
- 50BF Circuit-breaker failure protection – 3-pole
- 51/51G/51N Time delayed overcurrent/earth fault
- 52 Circuit-breaker control
- 60CTS CT supervision
- 66 Number of starts
- 74CC/74TC Close-circuit and trip-circuit supervision
- 81B Backspin monitor
- 81HB2 Inrush current detection
- 86 Lockout
- 87GH Restricted earth fault protection – high-impedance

Additional Functionality – Devices with VT Inputs

- 27/27Vx Undervoltage protection
- 32 Power protection
- 47 Sequence overvoltage protection
- 55 Power factor
- 59/59Vx Overvoltage protection
- 59N Neutral voltage displacement
- 60VTS VT supervision
- 67/67G/67N Directional – phase/earth fault
- 81 Frequency protection – "f>" or "f<"
- 81B-V Backspin monitor – voltage reference
- 87M Motor differential protection

Monitoring Functions

- Primary, secondary, phase sequence, current and voltage
- Frequency, power, and energy

¹¹ An external interface unit is required where optional TSI module not fitted.

¹² Requires external components

Devices and Application

Motor Protection – Reyrolle 7SR57

- Fault data, event and waveform records
- Motor start data log

Applications

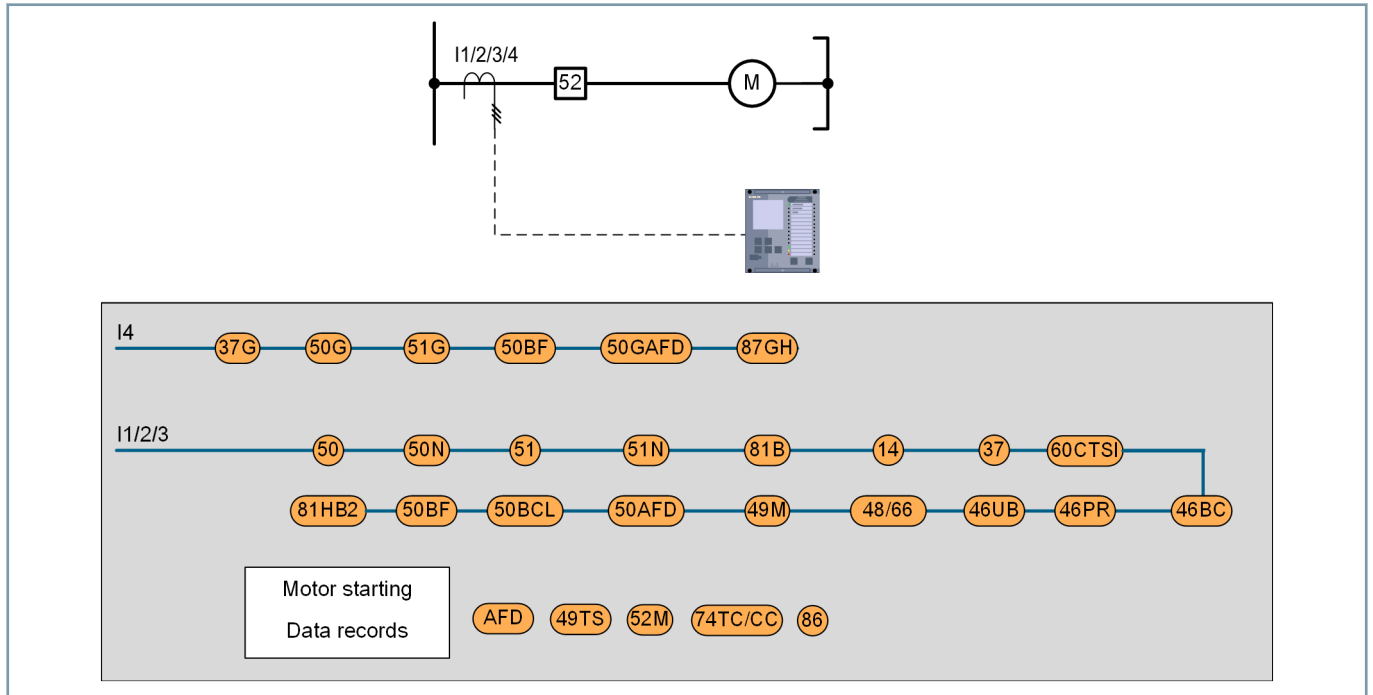
- Motor protection functions designed to protect during all motor starting and running sequences
- Thermal algorithm optimized to closely match the thermal characteristics of motors
- Thermal monitoring via plant temperature sensors supported

Communication

- IEC 60870-5-103, Modbus TCP, DNP3 TCP
Modbus RTU, DNP3, IEC 61850, Modbus Client for connection to external RTD box

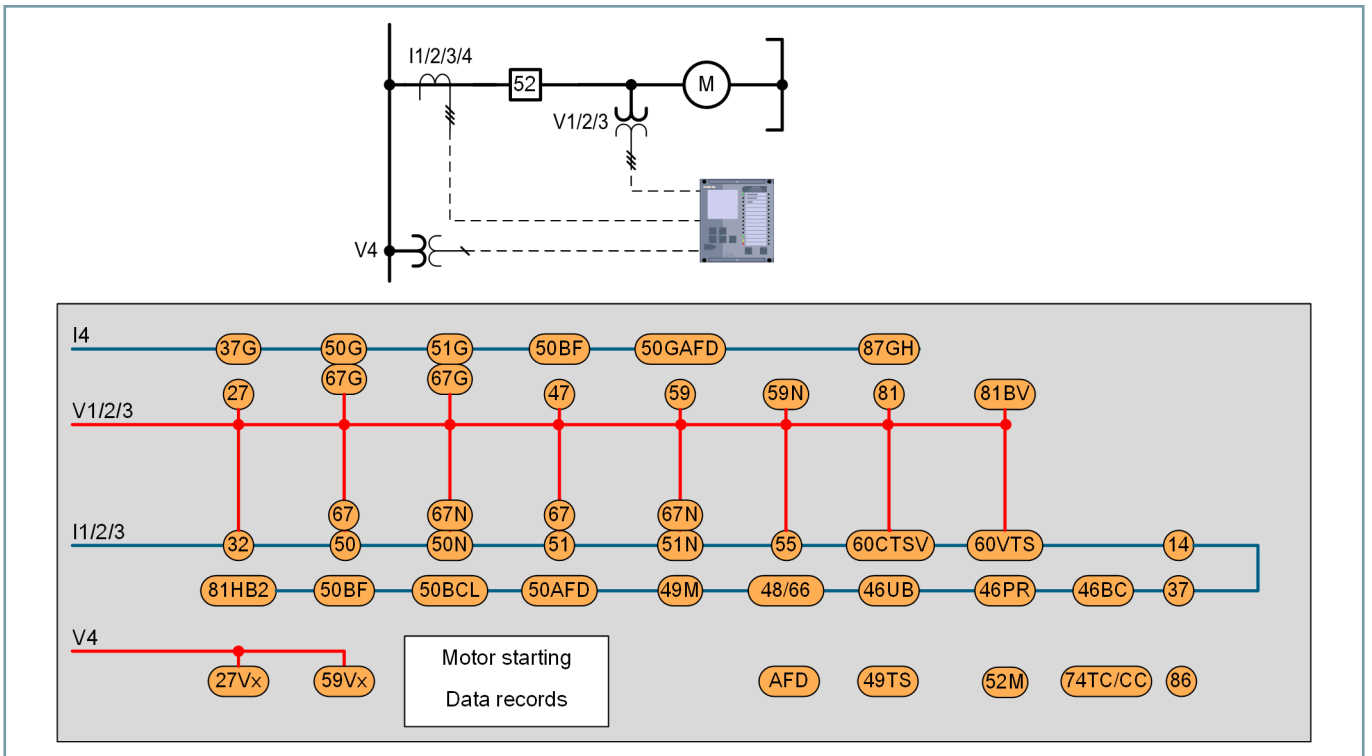
Application Templates

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[dw_7SR5_7SR5710_FunctionDiagram_4_en_US]

Figure 2.6/1 7SR5710 Motor Protection Function Diagram



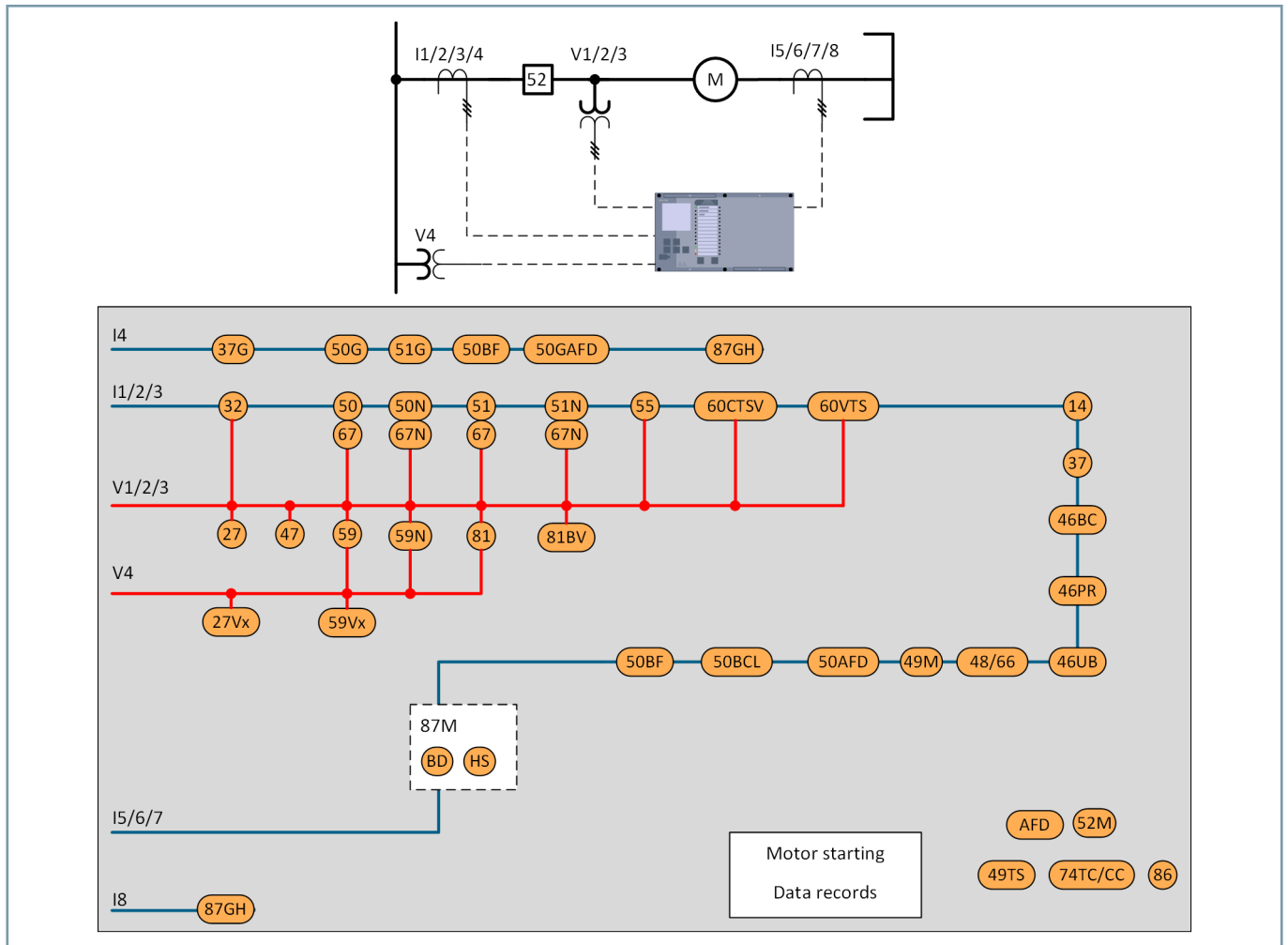
[dw_7SR5_7SR5711_functiondiagram, 4, en_US]

Figure 2.6/2 7SR5711 Motor Protection Function Diagram

Devices and Application

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[dw_7SR5_7SR5721_functiondiagram_5_en_US]

Figure 2.6/3 7SR5721 Motor Protection Function Diagram

Functions, Application Templates

ANSI	Functions	7SR5710	7SR5711	7SR5721
14	Locked rotor protection	■	■	■
27	Undervoltage protection – 3-phase	–	■	■
27Vx	Undervoltage protection – Vx	–	■	■
32	Power protection	–	■	■
37	Undercurrent protection – phase	■	■	■
37G	Undercurrent earth fault – measured	■	■	■
46BC	Broken conductor detection	■	■	■
46PR	Phase-rotation reversal	■	■	■
46UB	Phase unbalance	■	■	■
47	Sequence overvoltage protection	–	■	■
48	Starting-time supervision	■	■	■
49M	Motor thermal overload protection	■	■	■
49TS	Temperature sensor supervision ¹³	■	■	■
50	Instantaneous overcurrent – phase	■	■	■
50AFD	Arc flash detection ¹⁴	■	■	■
50BCL	Break capacity limit	■	■	■
50BF	Circuit-breaker failure protection – 3-pole	■	■	■
50G	Instantaneous earth fault – measured	■	■	■
50N	Instantaneous earth fault – calculated	■	■	■
51	Time-delayed overcurrent – phase	■	■	■
51G	Time delayed earth fault – measured	■	■	■
51N	Time-delayed earth fault – calculated	■	■	■
52	Circuit-breaker control	■	■	■
55	Power factor	–	■	■
59	Overvoltage protection – 3-phase	–	■	■
59N	Neutral voltage displacement	–	■	■
59Vx	Overvoltage protection – Vx	–	■	■
60CTS-I	CT supervision – current reference	■	–	–
60CTS-V	CT supervision – voltage reference	–	■	■
60VTS	VT supervision	–	■	■
66	Number of starts	■	■	■
67	Directional overcurrent – phase	–	■	■
67G	Directional earth fault – measured	–	■	■
67N	Directional earth fault – calculated	–	■	■
74CC	Close-circuit supervision	■	■	■
74TC	Trip-circuit supervision	■	■	■
81	Frequency protection – "f>" or "f<"	–	■	■
81B	Backspin monitor	■	–	–
81B-V	Backspin monitor – voltage reference	–	■	■
81HB2	Inrush current detection	■	■	■
86	Lockout	■	■	■
87GH	Restricted earth fault protection – high-impedance	■	■	■
87M	Motor differential protection	–	–	■
	Measured values	■	■	■
	Switching-statistic counters	■	■	■
	Circuit-breaker wear monitoring	■	■	■
	Logic editor	■	■	■
	External trip initiation	■	■	■

¹³ An external interface unit is required where optional TSI module not fitted.

¹⁴ Requires external components

Devices and Application

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ANSI	Functions	7SR5710	7SR5711	7SR5721
	Control	■	■	■
	Fault recording of analog and binary signals	■	■	■
	Sequence of events recorder	5000	5000	5000
	Motor operating records	■	■	■
	Security log	2048	2048	2048
	Monitoring and supervision	■	■	■
	Setting groups	4	4	4
	Changeover of setting group	■	■	■
	Binary inputs (max)	23	29	27
	Arc flash detector inputs (AFD)	0 or 3	0 or 3	0 or 3
	Temperature sensor inputs (TSI)	0 or 8	0, 8, or 16	0, 8, or 16
	Binary outputs (max) incl. healthy contact	12	16	14
	High speed binary outputs (HSBO)	0 or 3	0 or 3	0 or 3
	Current inputs	4	4	8
	Voltage inputs	0	4	4
	Size	6, 8, or 12	6, 8, or 12	8 or 12
	LCD resolution	128x128		
	Push buttons	7	7	7
	LEDs	28	28	28
	Power supply unit rated voltages	DC 24 to 250 V AC 100 to 230 V		
	Front user interface	■	■	■
	User selectable languages: English, French, German, Portuguese, Spanish, Turkish	■	■	■
	IEC 60870-5-103	■	■	■
	IEC 61850	■	■	■
	Modbus RTU	■	■	■
	Modbus TCP	■	■	■
	SNMP v3	■	■	■
	DNP3	■	■	■
	DNP3 TCP	■	■	■
	Time synchronization: Binary input, DNP3, Modbus RTU, DNP TCP, Modbus TCP, SNTP, IEEE 1588 PTP	■	■	■








Table 2.6/1 Reyrolle 7SR57 – Functions and Application Templates



NOTE

■ - Basic








Standard Variants

Standard Variants for 7SR57		
7SR5710-1AA	3/8, 8 BI, 6 BO, 4 I Housing width 3/8 x 19" (size 6), housing height 4U 8 binary inputs 6 binary outputs (1 break, 2 changeover, 3 make) 4 current transformer inputs Communication: USB, RS485, 2 x Ethernet	
7SR5710-1AD	3/8, 8 BI, 9 BO (inc. 3 HSBO), 4 I, 3 AFD Housing width 3/8 x 19" (size 6), housing height 4U 8 binary inputs 9 binary outputs (1 break, 2 changeover, 6 make) 4 current transformer inputs Communication: USB, RS485, 2 x Ethernet	
7SR5710-1AF	3/8, 8 BI, 6 BO, 4 I, 8 TSI Housing width 3/8 x 19" (size 6), housing height 4U 8 binary inputs 6 binary outputs (1 break, 2 changeover, 3 make) 4 current transformer inputs Communication: USB, RS485, 2 x Ethernet	
7SR5710-2AA	3/8, 13 BI, 8 BO, 4 I Housing width 3/8 x 19" (size 6), housing height 4U 13 binary inputs 8 binary outputs (1 break, 2 changeover, 5 make) 4 current transformer inputs Communication: USB, RS485, 2 x Ethernet	
7SR5710-2AD	3/8, 13 BI, 11 BO (inc. 3 HSBO), 4 I, 3 AFD Housing width 3/8 x 19" (size 6), housing height 4U 13 binary inputs 11 binary outputs (1 break, 2 changeover, 8 make) 4 current transformer inputs Communication: USB, RS485, 2 x Ethernet	
7SR5710-2AF	3/8, 13 BI, 8 BO, 4 I, 8 TSI Housing width 3/8 x 19" (size 6), housing height 4U 13 binary inputs 8 binary outputs (1 break, 2 changeover, 5 make) 4 current transformer inputs Communication: USB, RS485, 2 x Ethernet	
7SR5710-3AA	1/2, 18 BI, 10 BO, 4 I Housing width 1/2 x 19" (size 8), housing height 4U 18 binary inputs 10 binary outputs (1 break, 2 changeover, 7 make) 4 current transformer inputs Communication: USB, RS485, 2 x Ethernet	

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7SR5710-3AD	1/2, 18 BI, 13 BO (inc. 3 HSBO), 4 I, 3 AFD Housing width 1/2 x 19" (size 8), housing height 4U 18 binary inputs 13 binary outputs (1 break, 2 changeover, 10 make) 4 current transformer inputs Communication: USB, RS485, 2 x Ethernet	
7SR5710-3AF	1/2, 18 BI, 10 BO, 4 I, 8 TSI Housing width 1/2 x 19" (size 8), housing height 4U 18 binary inputs 10 binary outputs (1 break, 2 changeover, 7 make) 4 current transformer inputs Communication: USB, RS485, 2 x Ethernet	
7SR5710-4AA	1/2, 23 BI, 12 BO, 4 I Housing width 1/2 x 19" (size 8), housing height 4U 23 binary inputs 12 binary outputs (1 break, 2 changeover, 9 make) 4 current transformer inputs Communication: USB, RS485, 2 x Ethernet	
7SR5710-4AD	1/2, 23 BI, 15 BO (inc. 3 HSBO), 4 I, 3 AFD Housing width 1/2 x 19" (size 8), housing height 4U 23 binary inputs 15 binary outputs (1 break, 2 changeover, 12 make) 4 current transformer inputs Communication: USB, RS485, 2 x Ethernet	
7SR5710-4AF	1/2, 23 BI, 12 BO, 4 I, 8 TSI Housing width 1/2 x 19" (size 8), housing height 4U 23 binary inputs 12 binary outputs (1 break, 2 changeover, 9 make) 4 current transformer inputs Communication: USB, RS485, 2 x Ethernet	
7SR5711-1AA	3/8, 9 BI, 8 BO, 4 I, 4 V Housing width 3/8 x 19" (size 6), housing height 4U 9 binary inputs 8 binary outputs (1 break, 2 changeover, 5 make) 4 current transformer inputs 4 voltage transformer inputs Communication: USB, RS485, 2 x Ethernet	
7SR5711-1AD	3/8, 9 BI, 11 BO (inc. 3 HSBO), 4 I, 4 V, 3 AFD Housing width 3/8 x 19" (size 6), housing height 4U 9 binary inputs 11 binary outputs (1 break, 2 changeover, 8 make) 4 current transformer inputs 4 voltage transformer inputs Communication: USB, RS485, 2 x Ethernet	

<p>7SR5711-1AF</p> <p>Housing width 3/8 x 19" (size 6), housing height 4U</p> <p>9 binary inputs</p> <p>8 binary outputs (1 break, 2 changeover, 5 make)</p> <p>4 current transformer inputs</p> <p>4 voltage transformer inputs</p> <p>Communication: USB, RS485, 2 x Ethernet</p>		
<p>7SR5711-3AA</p> <p>Housing width 1/2 x 19" (size 8), housing height 4U</p> <p>19 binary inputs</p> <p>12 binary outputs (1 break, 2 changeover, 9 make)</p> <p>4 current transformer inputs</p> <p>4 voltage transformer inputs</p> <p>Communication: USB, RS485, 2 x Ethernet</p>		
<p>7SR5711-3AA</p> <p>Housing width 3/4 x 19" (size 12), housing height 4U</p> <p>19 binary inputs</p> <p>12 binary outputs (1 break, 2 changeover, 9 make)</p> <p>4 current transformer inputs</p> <p>4 voltage transformer inputs</p> <p>Communication: USB, RS485, 2 x Ethernet</p>		
<p>7SR5711-3AD</p> <p>Housing width 1/2 x 19" (size 8), housing height 4U</p> <p>19 binary inputs</p> <p>15 binary outputs (1 break, 2 changeover, 12 make)</p> <p>4 current transformer inputs</p> <p>4 voltage transformer inputs</p> <p>Communication: USB, RS485, 2 x Ethernet</p>		
<p>7SR5711-3AD</p> <p>Housing width 3/4 x 19" (size 12), housing height 4U</p> <p>19 binary inputs</p> <p>15 binary outputs (1 break, 2 changeover, 12 make)</p> <p>4 current transformer inputs</p> <p>4 voltage transformer inputs</p> <p>Communication: USB, RS485, 2 x Ethernet</p>		
<p>7SR5711-3AF</p> <p>Housing width 1/2 x 19" (size 8), housing height 4U</p> <p>19 binary inputs</p> <p>12 binary outputs (1 break, 2 changeover, 9 make)</p> <p>4 current transformer inputs</p> <p>4 voltage transformer inputs</p> <p>Communication: USB, RS485, 2 x Ethernet</p>		
<p>7SR5711-5DD</p> <p>Housing width 3/4 x 19" (size 12), housing height 4U</p> <p>29 binary inputs</p> <p>19 binary outputs (1 break, 2 changeover, 16 make)</p> <p>4 current transformer inputs</p> <p>4 voltage transformer inputs</p> <p>Communication: USB, RS485, 2 x Ethernet</p>		

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7SR5721-2AA	<p>1/2, 17 BI, 10 BO, 8 I, 4 V</p> <p>Housing width 1/2 x 19" (size 8), housing height 4U</p> <p>17 binary inputs</p> <p>10 binary outputs (1 break, 2 changeover, 7 make)</p> <p>8 current transformer inputs</p> <p>4 voltage transformer inputs</p> <p>Communication: USB, RS485, 2 x Ethernet</p>	
7SR5721-2AD	<p>1/2, 17 BI, 13 BO (inc. 3 HSBO), 8 I, 4 V, 3 AFD</p> <p>Housing width 1/2 x 19" (size 8), housing height 4U</p> <p>17 binary inputs</p> <p>13 binary outputs (1 break, 2 changeover, 10 make)</p> <p>8 current transformer inputs</p> <p>4 voltage transformer inputs</p> <p>Communication: USB, RS485, 2 x Ethernet</p>	
7SR5721-2AF	<p>1/2, 17 BI, 10 BO, 8 I, 4 V, 8 TSI</p> <p>Housing width 1/2 x 19" (size 8), housing height 4U</p> <p>17 binary inputs</p> <p>10 binary outputs (1 break, 2 changeover, 7 make)</p> <p>8 current transformer inputs</p> <p>4 voltage transformer inputs</p> <p>Communication: USB, RS485, 2 x Ethernet</p>	
7SR5721-4DD	<p>3/4, 27 BI, 17 BO (inc. 3 HSBO), 8 I, 4 V, 3 AFD, 16 TSI</p> <p>Housing width 3/4 x 19" (size 12), housing height 4U</p> <p>27 binary inputs</p> <p>17 binary outputs (1 break, 2 changeover, 14 make)</p> <p>8 current transformer inputs</p> <p>4 voltage transformer inputs</p> <p>Communication: USB, RS485, 2 x Ethernet</p>	

Table 2.6/2 Standard Variants for 7SR57

The technical data of the devices can be found in the hardware manual.

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