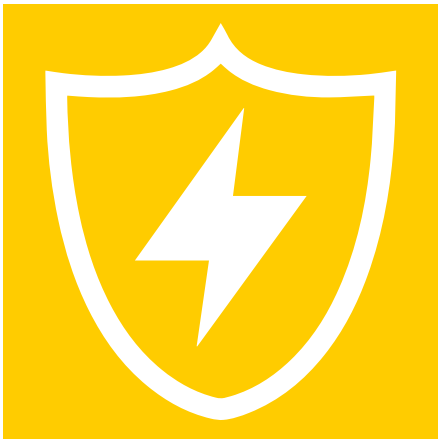
4.5



SURGE PROTECTION

S400 Series

S400 SERIES

High-efficiency surge protection

The SENECA **S400** surge protection devices are designed to protect electrical systems and equipment against transient and impulsive over-voltages caused by atmospheric phenomena and electrical maneuvers. The S400 series includes:

- **Type 2 and 3 surge arresters for industrial power supply systems**
- **Protections for control, measurement, and regulation systems that can be used in binary and analog circuits, such as pulses, 0..10 Vdc signals, and 0/4..20 mA current loops**
- **Surge protection for computer and communication networks (Token Ring, ISDN, DS1, Ethernet, Power over Ethernet, RS232/422/485, etc.) with extremely high transmission speed and discharge capacity.**

S400HV-2



S400LV-1-N



K400CL



S400CL-1



S400CL-1-N

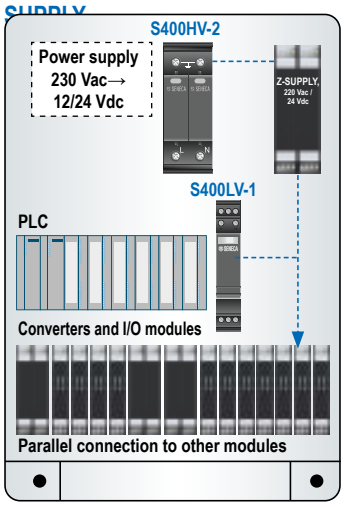


S400NET-1



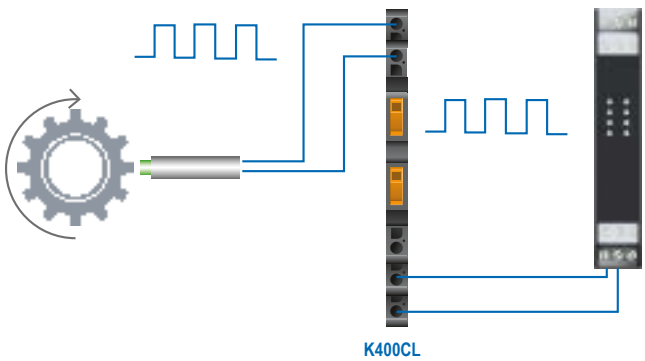
APPLICATION EXAMPLES

PROTECTION AND ISOLATION FOR TYPE 2 AND TYPE 3 POWER SUPPLY

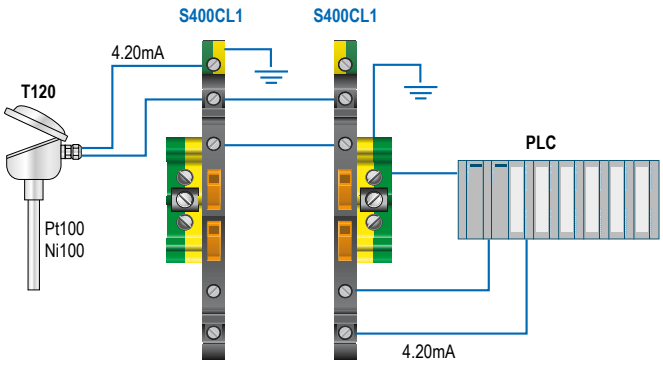


Automation panels, marshalling panels, PLC/DCS control panels, machine control panels, distribution boards, power center panels, MCC panels

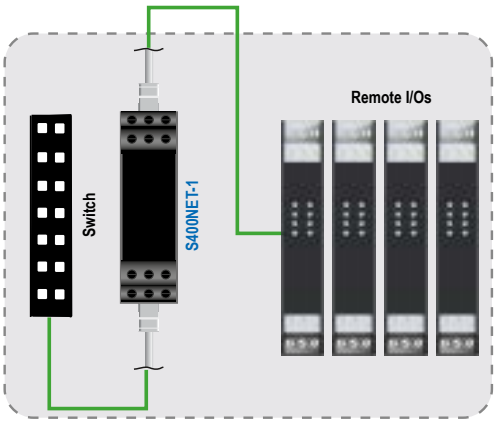
PROTECTION FOR PULSE MEASUREMENT DEVICES (REED, NAMUR, PNP, NPN, HALL EFFECT, ETC.)



PROTECTION OF AN ANALOG MEASUREMENT DEVICE



PROTECTION OF IT SIGNALS



Ethernet connection with the switch located in the local Electrical Panel

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HIGH-EFFICIENCY INTELLIGENT SURGE PROTECTION

	TYPE 2/3 PROTECTION FOR POWER SUPPLY SYSTEMS		PROTECTION FOR MEASUREMENT AND CONTROL DEVICES			PROTECTION FOR COMPUTER NETWORKS AND TELECOMMUNICATIONS
	S400HV-2	**S400LV-1-N**	**K400CL**	**S400CL-1**	**S400CL-1-N**	**S400NET-1**
		 NEW		 UNTIL STOCKS LAST	 UNTIL STOCKS LAST COMING SOON	
	230 Vac surge protection, type 2 with 3 conductors (L, N, PE)	**Surge protection type 3, nominal voltage: 24 V AC/DC**	**Surge protection for analog and logic signals, slim format 6.2 mm**	**Surge protection for analog and logic signals with knife switch**	**Surge protection with integrated status indicator and knife switch for a potential-free signal circuit with 2 wires**	**Surge protection for Ethernet networks, serial networks, and field bus with 5 wires**
ELECTRICAL PROTECTION DATA (L-N / N-PE / L-PEN)						
Test class IEC / Type EN	II / T2	III / T3	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1	C1 / C2 / C3 / D1
Nominal voltage U_N	240 / 415 Vac (TN-S); 240 / 415 Vac (TT)	24 Vac (TN-S)	24 Vdc	24 Vdc	24 Vdc	5 Vdc
Max permanent voltage U_C	L-N 335 Vac (L-N); 260 Vac (N-PE)	34 Vac	36 Vdc / 25 Vac	30 Vdc / 21 Vac	30 Vdc / 21 Vac	5.2 Vdc / 3.6 Vac
Nominal discharge current In (8/20)µs	L-N 20 kA / L-PE 20 kA / N-PE 20 kA	1kA	(wire-to-wire) 5 kA / (wire-to-ground) 5 kA / 10 kA (total)	(wire-to-wire) 5 kA / (wire-to-ground) 5 kA	5kA	(wire-to-wire) 10 kA / (wire-to-ground) 10 kA
Max. Max discharge current Imax (8/20)µs	L-N 40 kA / L-PE 40 kA / N-PE 40 kA	1kA	(wire-to-wire) 10 kA / (wire-to-ground) 10 kA / 20 kA (total)		20kA	(wire-to-wire) 10 kA / (wire-to-ground) 10 kA
Atmospheric test current I_{imp} (10/350) µs per conductor			500A	500A	0.5kA	
Nominal load current I_L	80A	16 Aac (@63°C); 10 Adc				
Cumulative current (8/20)µs			20kA	10kA		20kA
Protection level Up	L-N ≤ 1,5 kV / L-PE ≤ 1,8 kV / N-PE ≤ 1,5 kV	≤ 0,18 kV (L-N) / ≤ 0,55 kV (L-PE) / ≤ 0,55 kV (N-PE)	(Conductor-to-conductor) 70 V (C2-10 kV / 5 kA / ≤50 V (C3-10A) / ≤80 V (D1 - 500 A) (Conductor-to-ground ≤650 V(C1-500 V / 250 A) / ≤700 V (C2-10 kV / 5 kA) / ≤700 V (D1 - 500 A)	(Conductor-to-conductor) ≤ 45 V (C1 - 500 V / 250 A ≤ 55 V /C2 - 10 kV / 5 kA)	(Conductor-to-conductor) ≤ 55 V (C1 - 1 kV / 500 A) ≤ 65 V (C2 - 10 kV / 5 kA) ≤ 50 V (C3 - 25 A) (Conductor-to-ground) ≤ 55 V (C3 - 100 A) ≤ 750 V (C1 - 1 kV / 500 A) ≤ 750 V (C2 - 10 kV / 5 kA) ≤ 700 V (C3 - 25 A) ≤ 750 V (C3 - 100 A) (Conductor-to-conductor) ≤ 50 V (C1 - 1 kV / 500 A) ≤ 65 V (C2 - 10 kV / 5 kA) (Conductor-to-ground) ≤ 750 V (C1 - 1 kV / 500 A) ≤ 750 V (C2 - 10 kV / 5 kA)	Conductor-to-conductor: ≤70 V (C1 - 1 kV / 500 A) ≤45 V (C3 - 25 A) ≤100 V (C2 - 10 kV / 5 kA) ≤70 V (6kV / 3 kA) Conductor-to-ground: ≤80 V /C1 - 1 kV / 500 A) ≤110 V (C2 - 10 kV / 5 kA) ≤100 V (6 kV / 3 kA) ≤45 V (C3 - 25 A) Conductor-GND: ≤45 V (C3 - 25 A)
Residual voltage at 5 kA	L-N ≤ 1,2 kV / L-PE ≤ 1,2 kV / N-PE ≤ 150 V					
Combination wave Uoc		≤ 25 ns				
Response time t_A	L-N ≤ 25 ns / N-PE ≤ 100 ns	L-N ≤ 25 ns / L-PE ≤ 100 ns / N-PE ≤ 100 ns	(wire-to-wire) ≤1 ns / (wire-to-ground) ≤100 ns	(wire-to-wire) ≤1 ns / (wire-to-ground) ≤100 ns		(wire-to-wire) ≤500 ns / (wire-to-ground) ≤500 ns
ELECTRICAL PROTECTION DATA (L-N / N-PE / L-PEN)						
Max prefuse for standard wiring	125 Aac (gG)	16 Aac - 10 Adc	315mA	315mA	630 mA (FF)	500mA
Max prefuse for pass-through wiring	80 Aac (gG)					
Short-circuit resistance I_{SCCR}	25kA					
Frequency limit fg (3dB) symmetric in the 50 Ohm system			typ. 6 MHz	typ. 6 MHz	typ. 940 kHz	
Conductor resistance			3.3 Ohm	3.3 Ohm	1.65 Ohm ±20%	2.2 Ohm
Limiting output voltage at 1 kV/ µs (spike/stat.)			(wire-to-wire) ≤ 60V / (wire-to-ground) ≤ 650V	≤45 V (wire-to-wire) / ≤650 V (wire-to-ground)		Spikes (wire-to-wire): ≤ 55 V Spikes (wire-to-ground): ≤ 55 V (PT 2x2-BE) / ≤ 1 µA (on PT 2x2+F-BE) Static voltage (wire-to-wire) ≤ 15 V Static voltage (wire-to-ground): ≤ 15 V / ≤ 30 V (PT 2x2+F-BE)
Dimensions (WxHxD)	35.6 x 90 x 58 mm	17.7 x 90 x 65.5 mm	6.2 x 93 x 102.5 mm	6.2 x 94.8 x 69.1 mm	6.2 x 105 x 83 mm	17.7 x 90 x 65.5 mm
Temperature range	-40°C.. +80°C	-40°C.. +80°C	-40°C.. +80°C	-40°C.. +80°C	-40..+70°C	-40°C.. +85°C
Protection class	IP20	IP20	IP20	IP20	IP20	IP20
UL 94 Combustibility class	V0	V0	V0	V0	V0	V0
Case Material	PA 6.6 - PBT	PA 6.6	PBT	PA 6.6	PBT	PA
Connection interface	Screw connection	Screw connection	Screw connection	Screw connection	Push-in connections	Screw connection (with the base element)
Certifications	CE, UL	CE	CE, UL	CE, UL	CE	CE, UL

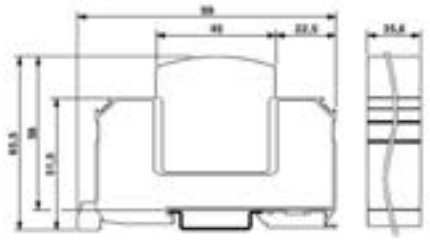
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The technical data and diagrams in this document are indicative and not binding.

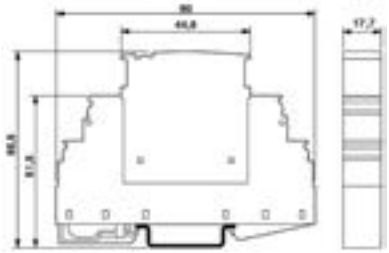
S400 SERIES

DIMENSIONS

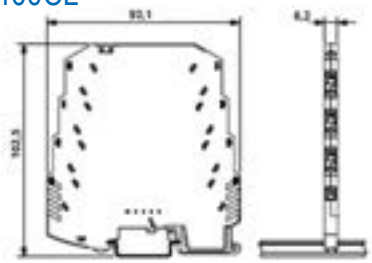
S400HV-2



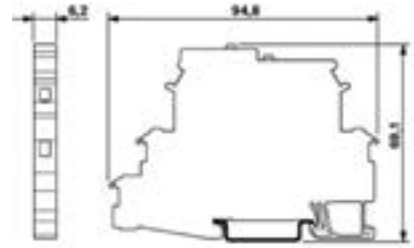
S400LV-1-N



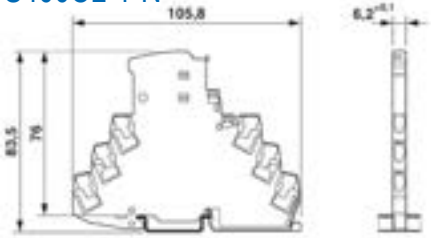
K400CL



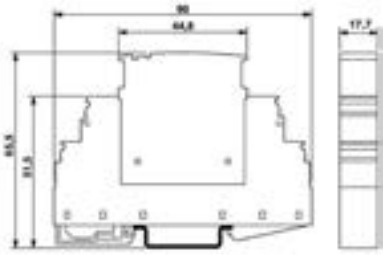
S400CL1



S400CL-1-N



S400NET-1



ACCESSORIES

S400HV-2-RIC-SL



S400HV-2-RIC-SN



S400LV-1-RIC-SL



S400LV-1-RIC-SL



ORDER CODES

Code	Description
K400CL	Surge protection for analog and logic signals, slim format 6.2 mm
K400CL-10	Kit 10 p.zi K400CL
S400HV-2	230 Vac surge protection, type 2 with 3 conductors (L, N, PE)
S400HV-2-RIC-SL	Replacement plug 1L-N/PE for S400HV-2, without FM contact
S400HV-2-RIC-SN	Replacement plug N/PE for S400HV-2
S400LV-1	Surge protection 24VAac/dc, with FM contact, type 3 with 3 conductors (L, N, PE)
S400LV-1-RIC-SL	Replacement plug 24VAC/DC for S400LV-1, with FM contact
S400CL-1	Surge protection for analog and logic signals with knife switch
S400CL-1-15	Kit 15 pcs S400CL-1
S400CL-1-P5	Pack of 5 pcs closure walls for module S400CL-1
S400NET-1	Surge protection for Ethernet networks, serial networks, and field bus with 5 wires
S400NET-1-RIC-CL	Replacement plug for S400NET-1
S400ETH-DSK	Surge protection for Ethernet networks Class D/Cat.5 (100 Mbps)/5e (1 Gbps), PoE

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