Product Selection

Safety Relays

Technical Overview

Single Channel	Dual Channel	Safety Output (NO)	Safety Output (NO) (Delayed)	Output Delay	Signal Output (NC)	Feedback Output	Control Voltage	Removable Terminal Blocks	Type of Unit	Catalog Number
■	—	4	—	—	1	—	24 Vac/Vdc	■	Main	**ESR5-NO-41-24VAC-DC**
■	■	2	—	—	1	—	24 Vac/Vdc	■	Main	**ESR5-NO-21-24VAC-DC**
■	■	3	—	—	1	—	24 Vac/Vdc	■	Main	**ESR5-NO-31-24VAC-DC**
■	■	3	—	—	1	—	230 Vac	■	Main	**ESR5-NO-31-230VAC**
■	■	3	—	—	1	—	24–230 Vac/Vdc	■	Main	**ESR5-NO-31-AC-DC**
■	■	2	2	0.1–30s	—	—	24 Vdc	■	Main	**ESR5-NV3-30**
—	■	2	—	—	1	—	24 Vac/Vdc	■	Main	**ESR5-NZ-21-24VAC-DC**
■	—	5	—	—	1	1	24 Vac/Vdc	■	Expansion	**ESR5-NE-51-24VAC-DC**
■	—	—	4	0.3–3s	1	1	24 Vdc	■	Expansion	**ESR5-VE3-42**

Application Overview

Emergency Stop	Safety Switches	Light Curtain/ OSSD ①	Two-Hand Control (EN 574 Type III C)	Contact Expansion	Off-Delayed	Cross Circuit Recognition	Monitored Manual Reset ②	Catalog Number
■	■	—	—	—	—	—	—	**ESR5-NO-41-24VAC-DC**
■	■	—	—	—	—	■	—	**ESR5-NO-21-24VAC-DC**
■	■	—	—	—	—	■	—	**ESR5-NO-31-24VAC-DC**
■	■	—	—	—	—	■	■	**ESR5-NO-31-230VAC**
■	■	—	—	—	—	■	■	**ESR5-NO-31-AC-DC**
■	■	■	—	—	■	■	■	**ESR5-NV3-30**
—	■	—	■	—	—	■	—	**ESR5-NZ-21-24VAC-DC**
—	—	—	—	■	—	—	—	**ESR5-NE-51-24VAC-DC**
—	—	—	—	■	■	—	—	**ESR5-VE3-42**

Application Overview, continued

Single Channel	Dual Channel	Stop Category EN 60204	Control Category to EN 954-1	Achievable PL per ISO 13849-1	Achievable SIL per EN IEC 62061	Catalog Number
■	—	0	2	PL d	SIL 3	**ESR5-NO-41-24VAC-DC**
■	■	0	4	PL e	SIL 3	**ESR5-NO-21-24VAC-DC**
■	■	0	4	PL e	SIL 3	**ESR5-NO-31-24VAC-DC**
■	■	0	4	PL e	SIL 3	**ESR5-NO-31-230VAC**
■	■	0	4	PL e	SIL 3	**ESR5-NO-31-AC-DC**
■	■	0/1	4	PL e	SIL 3	**ESR5-NV3-30**
—	■	0	4	PL e	SIL 3	**ESR5-NZ-21-24VAC-DC**
■	—	0	4	PL e	SIL 3	**ESR5-NE-51-24VAC-DC**
■	—	1	3	PL d	SIL 2	**ESR5-VE3-42**

Notes

① Laser scanners or light curtains with OSSD outputs.

② All main units can also be reset automatically or manually.

Technical Data and Specifications

Safety Relay

Description	Unit	ESR5-NO-21_	ESR5-NO-41_	ESR5-NO-31-24VAC-DC	ESR5-NZ-21_
General					
Standards		EN ISO 13849-1, IEC 62061, IEC 61508, DIN EN 50178, UL/CUL listed	EN ISO 13849-1, IEC 62061, IEC 61508, DIN EN 50178, UL/CUL listed	EN ISO 13849-1, IEC 62061, IEC 61508, DIN EN 50178, UL/CUL listed	EN ISO 13849-1, IEC 62061, IEC 61508, DIN EN 50178, UL/CUL listed
Type-dependent standards		—	—	—	EN 574 Part no. IIIC
Lifespan, mechanical—c (contacts)	x 10^6	10	10	10	10
Maximum operating frequency	Ops/h	3600	3600	3600	3600
Climatic proofing		Cold according to EN 60068-2-1, dry heat according to EN60068-2-2, damp heat according to EN 60068-2-3	Dry heat according to EN60068-2-2, damp heat according to EN 60068-2-3	Cold according to EN 60068-2-1, dry heat according to EN60068-2-2, damp heat according to EN 60068-2-3	Dry heat according to EN60068-2-2, damp heat according to EN 60068-2-3
Ambient temperature	°F (°C)	–4° to 131° (–20° to 55°)	–4° to 131° (–20° to 55°)	–4° to 131° (–20° to 55°)	–4° to 131° (–20° to 55°)
Ambient temperature storage	°F (°C)	–13° to 167° (–25° to 75°)	–13° to 167° (–25° to 75°)	–13° to 167° (–25° to 75°)	–13° to 167° (–25° to 75°)
Mounting position		Any	Any	Any	Any
Vibration resistance (IEC/EN 60068-2-6)		2g, frequency: 10–150 Hz, amplitude: 0.15 mm	2g, frequency: 10–150 Hz, amplitude: 0.15 mm	2g, frequency: 10–150 Hz, amplitude: 0.15 mm	2 g, frequency: 10–150 Hz, amplitude: 0.15 mm
Shock resistance (IEC 60068-2-27)		—	—	—	—
Protection type					
Housing		IP20	IP20	IP20	IP20
Terminals		IP20	IP20	IP20	IP20
Protection against direct contact when actuated from front (IEC 0106 Part 100)		Finger- and back-of-hand proof	Finger- and back-of-hand proof	Finger- and back-of-hand proof	Finger- and back-of-hand proof
Weight	kg	0.17	0.22	0.17	0.22
Terminal capacity					
Solid or flexible	mm^2	1 x (0.2–2.5) 2 x (0.2–1)	1 x (0.2–2.5) 2 x (0.2–1)	1 x (0.2–2.5) 2 x (0.2–1)	1 x (0.2–2.5) 2 x (0.2–1)
Flexible with ferrule	mm^2	1 x (0.25–2.5) 2 x (0.25–1)	1 x (0.25–2.5) 2 x (0.25–1)	1 x (0.25–2.5) 2 x (0.25–1)	1 x (0.25–2.5) 2 x (0.25–1)
Solid or stranded	AWG	24–12	24–12	24–12	24–12
Terminal screw					
Pozidriv screwdriver	Size	2	2	2	2
Flat-blade screwdriver	mm	0.6 x 3.5	0.6 x 3.5	0.6 x 3.5	0.6 x 3.5
Max. tightening torque	Nm	0.6	0.6	0.6	0.6
Main Contacts					
Rated impulse withstand voltage—U_{imp}	Vac	6000	4000	4000	6000
Overvoltage category/pollution degree					
Outside		III/2	III/2	III/2	III/2
Inside		—	—	—	—
Rated insulation voltage—U_i	Vac	250	250	250	250
Rated operating voltage—U_e	Vac	230	230	230	230
Rated operation current					
AC-15					
230V (360 ops./h)—I_e	A	5	4	5	4
230V (3600 ops./h)—I_e	A	3	3	3	3
DC-13					
24V (360 ops./h)—I_e	A	6	4	6	4
24V (3600 ops./h)—I_e	A	3	2.5	3	2.5
Max. summation current of all poles					
24 Vac/Vdc devices	A	72	72	72	72
230 Vac devices	A	—	—	—	—
Square of the total current (and total current) of all current paths		72 A^2 (6 + 6)	72 A^2 (4.2 + 4.2 + 4.2 + 4.2)	72 A^2 (4.9 + 4.9 + 4.9)	72 A^2 (6 + 6)
Short-circuit protection					
Max. fuse	A gG/gL	10	6	10	6