



ESR5 SAFETY RELAYS
118701



Overview



Specifications



Resources

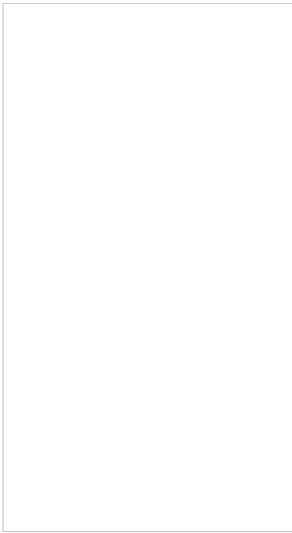
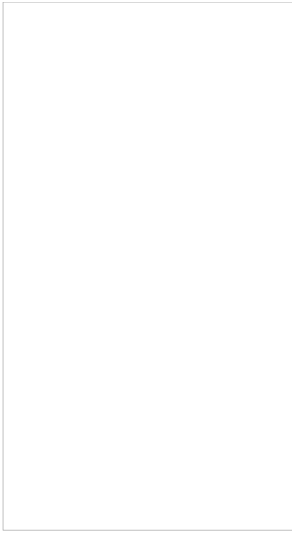
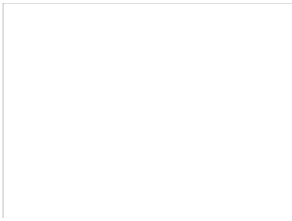
How to

118701

Eaton ESR5 Safety relay emergency stop/protective
enabling paths

How to buy





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118707

Eaton ESR5 Contact expansion module, 24VDC/AC, 5 enabling paths

118706

Eaton ESR5 Contact expansion module, 24VDC/AC, 4 enabling paths off-delayed

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GENERAL SPECIFICATIONS

General specifications	>	PRODUCT NAME	Eaton ESR5 Safety relay
		CATALOG NUMBER	118701
Product specifications	>	MODEL CODE	ESR5-NO-41-24VAC-DC
		EAN	4015081168415
		PRODUCT LENGTH/DEPTH	114.5 mm
		PRODUCT HEIGHT	99 mm
		PRODUCT WIDTH	22.5 mm
		PRODUCT WEIGHT	0.218 kg
		CERTIFICATIONS	UL Category Control No.: NKCR; NKCR7 Certified by UL for use in Canada CSA-C22.2 No. 14-95 IEC 62061 UL CSA Class No.: 3211-83; 3211-03 UL File No.: E29184 IEC 61508, Parts 1-7 EN ISO 13849-1 EN 50178 2014/30/EU IEC/EN 60204 CE UL 508 UL report applies to both US and Canada Machines 2006/42/EG

PRODUCT SPECIFICATIONS

RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)0 A

OPERATING VOLTAGE AT AC, 50 HZ - MIN	24 V
10.11 SHORT-CIRCUIT RATING	Is the panel builder's responsibility. The specification must be observed.
RATED OPERATIONAL VOLTAGE	24 V AC/DC (power supply) 230 V AC Approx. 24 V DC at input, starting and feedback circuit
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MIN	0 V
10.4 CLEARANCES AND CREEPAGE DISTANCES	Meets the product standard's requirements.
MOUNTING METHOD	Rail mounting possible Top-hat rail fixing (according to IEC/EN 60715, 35 mm)
NUMBER OF OUTPUTS (SAFETY RELATED, DELAYED, SEMICONDUCTORS)	0
CONTROL VOLTAGE 1 - MIN	24 V
SAFETY TYPE (IEC 61496-1)	None
LED INDICATOR	Status indication of SmartWire-DT network: Green
PROOF TEST	240 Months (High Demand) 167 Months (Low Demand)
AIR PRESSURE	795 - 1080 hPa (operation)
OPERATING VOLTAGE AT AC, 60 HZ - MAX	24 V
10.2.3.1 VERIFICATION OF THERMAL STABILITY OF ENCLOSURES	Meets the product standard's requirements.
AMBIENT STORAGE TEMPERATURE - MIN	-40 °C
OPERATING VOLTAGE AT AC, 50 HZ - MAX	24 V
FITTED WITH:	Feedback circuit Approval for TÜV Detachable clamps Start input Approval according to UL
VIBRATION RESISTANCE	10 - 150 Hz, Amplitude: 0.15 mm, Acceleration: 2 g
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MAX	26.4 V
STOP CATEGORY (IEC 60204)	0
CONTROL VOLTAGE 1 - MAX	24 V
AMBIENT OPERATING TEMPERATURE - MAX	55 °C
CONTROL VOLTAGE 1 TYPE	AC/DC
SWITCHING FREQUENCY	Max. 0.5 Hz, Input data
	4 Non-delayed enable current paths

FEATURES	Automatic start Reinforced insulation 6 kV between input circuit / NC contacts, and enable Manual start Safe insulation Basic insulation
RESET TIME	45 ms
RECOVERY TIME	1000 ms
AMBIENT OPERATING TEMPERATURE - MIN	-20 °C
SUPPLY VOLTAGE AT AC, 60 HZ - MAX	24 V
10.6 INCORPORATION OF SWITCHING DEVICES AND COMPONENTS	Does not apply, since the entire switchgear needs to
POWER SUPPLY CIRCUIT	1.6 W (DC operated) 3.4 W (AC operated 50/60 Hz)
10.2.6 MECHANICAL IMPACT	Does not apply, since the entire switchgear needs to
10.3 DEGREE OF PROTECTION OF ASSEMBLIES	Does not apply, since the entire switchgear needs to
VOLTAGE TYPE	AC/DC
QUADRATIC SUMMATION CURRENT	72 A ² ($I_{TH}^2 = I_1^2 + I_2^2 + I_3^2 + I_4^2$)
CATEGORY (EN 954-1)	1
NOMINAL CURRENT	65 A
PRODUCT CATEGORY	Electronic safety relays
TERMINAL CAPACITY	2 x (0.2 – 1) mm ² , solid 1 x (0.25 – 2.5) mm ² , flexible with ferrule 2 x (0.25 – 1) mm ² , flexible with ferrule 24 - 12 AWG, solid or stranded 1 x (0.2 – 2.5) mm ² , solid
HEAT DISSIPATION CAPACITY PDISS	0 W
CONTROL VOLTAGE 2 TYPE	AC/DC
SHORT-CIRCUIT CURRENT	2.3 A, Input data
POWER LOSS	Normally 5.16 W
PICK-UP TIME	65 ms typ. (K1, K2 - for UN automatic mode) 20 ms typ.
INRUSH CURRENT	0.025 - 6 A
10.9.2 POWER-FREQUENCY ELECTRIC STRENGTH	Is the panel builder's responsibility.
DEGREE OF PROTECTION	IP20 Installation location: ≥ IP54 Terminals: IP20 Enclosure: IP20
OVERVOLTAGE CATEGORY	III
NUMBER OF INPUTS	One- and two-channel

AMBIENT STORAGE TEMPERATURE - MAX	70 °C
POLLUTION DEGREE	2
RELEASE-DELAY - MAX	0 s
NUMBER OF OUTPUTS (SAFETY RELATED, UNDELAYED, SEMICONDUCTORS)	0
SAFETY PARAMETER (IEC 62061)	SIL 1, Safety integrity level, In accordance with IEC 61508 SILCL 1, Safety integrity level claim limit Cat. 1, Category 4.05 x 10 ⁻¹⁰ , PFHd, Probability of failure per hour
RATED IMPULSE WITHSTAND VOLTAGE (UIMP)	4000 V AC
FUNCTIONS	1-channel
BREAKING POWER	1500 VA, max., resistive load (τ = 0 ms), at 250 V DC 42 W max., inductive load (τ = 40 ms), at 24 V DC 88 W max., resistive load (τ = 0 ms), at 220 V DC 288 W max., resistive load (τ = 0 ms), at 48 V DC 144 W max., resistive load (τ = 0 ms), at 24 V DC 42 W max., inductive load (τ = 40 ms), at 220 V DC 42 W max., inductive load (τ = 40 ms), at 48 V DC 110 W max., resistive load (τ = 0 ms), at 110 V DC 42 W max., inductive load (τ = 40 ms), at 110 V DC
SIL (IEC 61508)	1
TIGHTENING TORQUE	0.6 Nm, Screw terminals
OPERATING VOLTAGE AT DC - MAX	24 V
TYPE	<ul style="list-style-type: none"> • Emergency stop category 0; emergency switching • Feedback circuit • Protective door
10.2.2 CORROSION RESISTANCE	Meets the product standard's requirements.
10.2.4 RESISTANCE TO ULTRA-VIOLET (UV) RADIATION	Meets the product standard's requirements.
10.2.7 INSCRIPTIONS	Meets the product standard's requirements.
NUMBER OF OUTPUTS (SIGNALLING FUNCTION, DELAYED, SEMICONDUCTORS)	0
ENVIRONMENTAL CONDITIONS	Clearance in air and creepage distances according to CSA C22.2, No. 14-95 Condensation: Non-condensing
CURRENT CONSUMPTION	140 mA, AC 65 mA, DC
MODEL	Basic device
OPERATING VOLTAGE AT DC - MIN	24 V
RELEASE-DELAY - MIN	0 s
10.12 ELECTROMAGNETIC COMPATIBILITY	Is the panel builder's responsibility. The specifications must be observed.

10.2.5 LIFTING	Does not apply, since the entire switchgear needs to
STRIPPING LENGTH (MAIN CABLE)	7 mm
SWITCHING CAPACITY	3 A at 3600 O/h, AC-15 at 230 V, Outputs 0.4 W 4 A at 360 O/h, AC-15 at 230 V, Outputs In accordance with IEC 60947-5-1, Outputs 4 A at 360 O/h, DC-13 at 24 V, Outputs 2.5 A at 3600 O/h, DC-13 at 24 V, Outputs
CONTROL VOLTAGE 2 - MAX	24 V
INPUT	∞ ms, Simultaneity for inputs 1/2
RATED CONTROL SUPPLY VOLTAGE (US) AT DC - MIN	0 V
NUMBER OF OUTPUTS (SIGNALING FUNCTION, DELAYED) WITH CONTACT	0
10.8 CONNECTIONS FOR EXTERNAL CONDUCTORS	Is the panel builder's responsibility.
CONTROL VOLTAGE 2 - MIN	24 V
VOLTAGE TYPE OF OPERATING VOLTAGE	AC/DC
PROTECTION	Finger and back-of-hand proof, Protection against di actuated from front (EN 50274)
SWITCHING VOLTAGE	250 V
SUPPLY VOLTAGE AT DC - MIN	24 V
CLIMATIC PROOFING	Dry heat to IEC 60068-2-2 Damp heat, constant, to IEC 60068-2-3
EMITTED INTERFERENCE	According to EN 61000-6-4
STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS	5.16 W
RATED CONTROL SUPPLY VOLTAGE (US) AT DC - MAX	24 V
NUMBER OF OUTPUTS (SIGNALING FUNCTION, UNDELAYED) WITH CONTACT	1
10.9.3 IMPULSE WITHSTAND VOLTAGE	Is the panel builder's responsibility.
RESISTANCE	22 Ω (impedance)
10.5 PROTECTION AGAINST ELECTRIC SHOCK	Does not apply, since the entire switchgear needs to
SUPPLY VOLTAGE AT DC - MAX	24 V
MOUNTING POSITION	As required
SAFETY PARAMETER (EN ISO 13849-1)	PL c, Performance level Cat. 1, Category 230,000 switching cycles, B10d PL e possible only with the aid of fault exclusions
ELECTRIC CONNECTION TYPE	Screw connection

NUMBER OF OUTPUTS (SIGNALING FUNCTION, UNDELAYED, SEMICONDUCTORS)	0
10.13 MECHANICAL FUNCTION	The device meets the requirements, provided the instruction leaflet (IL) is observed.
10.9.4 TESTING OF ENCLOSURES MADE OF INSULATING MATERIAL	Is the panel builder's responsibility.
HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID	0 W
SAFETY PERFORMANCE LEVEL (EN ISO 13849-1)	Level c
SHORT-CIRCUIT PROTECTION	Short-circuit proof 24 V, Fuse for control circuit su Miniature circuit-breaker with characteristic C: 24 V output circuits, External Fuse 6 A gL/gG, For output circuits, External
NUMBER OF OUTPUTS (SAFETY RELATED, DELAYED) WITH CONTACT	0
SUPPLY VOLTAGE AT AC, 60 HZ - MIN	24 V
OPERATING TEMPERATURE - MIN	-20 °C
UNINTERRUPTED CURRENT	6 A N/O, Limiting continuous current 3 A N/C, Limiting continuous current
EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT PVID	0 W
RATED SWITCH CURRENT	4 A
SUITABLE FOR	Module used to safely interrupt electrical circuits Monitoring of position switches Monitoring of emergency-stop circuits Safety relay for monitoring emergency stop and prot
POWER CONSUMPTION	5.16 W
INTERFERENCE IMMUNITY	According to EN 61000-6-2
OPERATING TEMPERATURE - MAX	55 °C
10.2.3.2 VERIFICATION OF RESISTANCE OF INSULATING MATERIALS TO NORMAL HEAT	Meets the product standard's requirements.
10.2.3.3 RESIST. OF INSUL. MAT. TO ABNORMAL HEAT/FIRE BY INTERNAL ELECT. EFFECTS	Meets the product standard's requirements.
CONNECTION TYPE	M3 screw terminals
LIFESPAN, MECHANICAL	10,000,000 Operations
VOLTAGE TYPE OF SUPPLY VOLTAGE	AC/DC
RELATIVE HUMIDITY	< 75 %
SUPPLY VOLTAGE AT AC, 50 HZ - MIN	24 V
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MIN	20.4 V

10.7 INTERNAL ELECTRICAL CIRCUITS AND CONNECTIONS	Is the panel builder's responsibility.
SUPPLY VOLTAGE AT AC, 50 HZ - MAX	24 V
10.10 TEMPERATURE RISE	The panel builder is responsible for the temperature Eaton will provide heat dissipation data for the device
MATERIAL	Enclosure: Polyamide (PA), not reinforced Contacts: silver tin oxide, gold plated (AgSnO ₂ , 0.05 μm)
NUMBER OF OUTPUTS (SAFETY RELATED, UNDELAYED) WITH CONTACT	4
PERMISSIBLE TOTAL CABLE RESISTANCE	22 Ω (input and starting circuits for UN)
OPERATING VOLTAGE AT AC, 60 HZ - MIN	24 V
SCREWDRIVER SIZE	0.6 x 3.5 mm, Terminal screws 2, Terminal screw, Pozidriv screwdriver
DUTY FACTOR	100 %
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MAX	24 V
SHORT-CIRCUIT PROTECTION RATING	6 A, Output fuse, Output data
MOUNTING WIDTH	22.5 mm
ALTITUDE	Max. 2000 m
RATED INSULATION VOLTAGE (UI)	250 V

Brochures

Certification reports

Characteristic curve

Drawings

eCAD model

Installation instructions

Manuals and user guides

mCAD model

Wiring diagrams

118701



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