



ESR5 SAFETY RELAYS
118702


Overview


Specifications


Resources

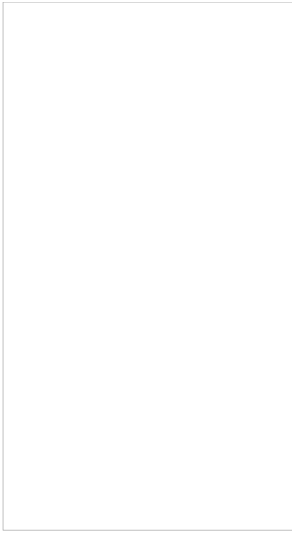
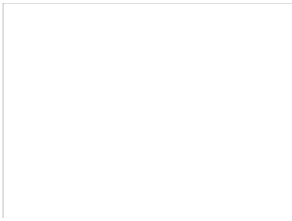
How to

118702

Eaton ESR5 Safety relay emergency stop/protective
enabling paths

How to buy





Designed to work together

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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

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GENERAL SPECIFICATIONS

Product specifications

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PRODUCT NAME	Eaton ESR5 Safety relay
CATALOG NUMBER	118702
MODEL CODE	ESR5-NO-31-24VAC-DC
EAN	4015081168422
PRODUCT LENGTH/DEPTH	114.5 mm
PRODUCT HEIGHT	99 mm
PRODUCT WIDTH	22.5 mm
PRODUCT WEIGHT	0.164 kg
CERTIFICATIONS	2014/30/EU UL File No.: E29184 EN ISO 13849-1 UL report applies to both US and Canada CE UL Category Control No.: NKCR; NKCR7 UL 508 IEC 62061 UL EN 50178 Certified by UL for use in Canada IEC/EN 60204 IEC 61508, Parts 1-7 CSA-C22.2 No. 14-95 CSA Class No.: 3211-83; 3211-03 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	230 V AC 24 V AC/DC (power supply) 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	66 Months (Low Demand) 240 Months (High 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:	Approval for TÜV Feedback circuit Approval according to UL Start input Detachable clamps
VIBRATION RESISTANCE	10 - 150 Hz, Amplitude: 0.15 mm, Acceleration: 2 6)
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
FEATURES	6 kV between input circuit and enable current paths Safe insulation Reinforced insulation 3 Non-delayed enable current paths Automatic reset Basic insulation
RESET TIME	Normally 10 ms (dual-channel) 45 ms (single-channel)
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 ($I_{TH}^2 = I_1^2 + I_2^2 + I_3^2$)
CATEGORY (EN 954-1)	4
NOMINAL CURRENT	30 A
PRODUCT CATEGORY	Electronic safety relays
TERMINAL CAPACITY	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 2 x (0.2 – 1) mm ² , solid 1 x (0.25 – 2.5) mm ² , flexible with ferrule
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	100 ms typ. (K1, K2 - for UN automatic mode) 100 ms typ. (at U _c in automatic mode)
INRUSH CURRENT	0.025 - 6 A
10.9.2 POWER-FREQUENCY ELECTRIC STRENGTH	Is the panel builder's responsibility.
DEGREE OF PROTECTION	IP20 Terminals: IP20 Installation location: ≥ IP54 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 3, Safety integrity level SIL 3, Safety integrity level, In accordance with IEC Cat. 4, Category SILCL 3, Safety integrity level claim limit 5.05 x 10 ⁻¹⁰ , PFHd, Probability of failure per hour
RATED IMPULSE WITHSTAND VOLTAGE (UIMP)	4000 V AC
FUNCTIONS	2-channel 1-channel

BREAKING POWER	35 W max., inductive load ($\tau = 40$ ms), at 110 V DC 40 W max., inductive load ($\tau = 40$ ms), at 48 V DC 48 W max., inductive load ($\tau = 40$ ms), at 24 V DC 1500 VA, max., resistive load ($\tau = 0$ ms), at 250 V DC 288 W max., resistive load ($\tau = 0$ ms), at 48 V DC 77 W max., resistive load ($\tau = 0$ ms), at 110 V DC 144 W max., resistive load ($\tau = 0$ ms), at 24 V DC 88 W max., resistive load ($\tau = 0$ ms), at 220 V DC 33 W max., inductive load ($\tau = 40$ ms), at 220 V DC
SIL (IEC 61508)	3
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 (SIGNALING 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 specification must be observed.
10.2.5 LIFTING	Does not apply, since the entire switchgear needs to be lifted
STRIPPING LENGTH (MAIN CABLE)	7 mm
SWITCHING CAPACITY	4 A at 360 O/h, DC-13 at 24 V, Outputs In accordance with IEC 60947-5-1, Outputs 3 A at 3600 O/h, AC-15 at 230 V, Outputs 2.5 A at 3600 O/h, DC-13 at 24 V, Outputs 0.4 W 4 A at 360 O/h, AC-15 at 230 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.	

UNDELAYED) 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 dis- 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 Cold to EN 60068-2-1 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	50 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)	300,000 switching cycles, B10d Cat. 4, Category PL e, Performance level
ELECTRIC CONNECTION TYPE	Screw connection
NUMBER OF OUTPUTS (SIGNALING FUNCTION, UNDELAYED, SEMICONDUCTORS)	0
10.13 MECHANICAL FUNCTION	The device meets the requirements, provided the in- struction 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 e
SHORT-CIRCUIT PROTECTION	Short-circuit proof, 24 V, Fuse for control circuit su- Fuse 6 A gL/gG, For output circuits, External
NUMBER OF OUTPUTS (SAFETY RELATED, DELAYED)	

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/C, Limiting continuous current 6 A N/O, Limiting continuous current
EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT PVID	0 W
RATED SWITCH CURRENT	6 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 662061_x 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 devi
MATERIAL	Contacts: silver tin oxide, gold plated (AgSnO2, 0. Enclosure: Polyamide (PA), not reinforced
NUMBER OF OUTPUTS (SAFETY RELATED, UNDELAYED) WITH CONTACT	3
PERMISSIBLE TOTAL CABLE RESISTANCE	Approx. 50 Ω (input and starting circuits for UN)
OPERATING VOLTAGE AT AC, 60 HZ - MIN	24 V

SCREWDRIVER SIZE	0.0 x 3.5 mm, 1 terminal screws 2, Terminal screw, Pozidriv screwdriver
DUTY FACTOR	100 %
LIFETIME	240 month
RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MAX	24 V
SHORT-CIRCUIT PROTECTION RATING	10A gL/gG, NEOZED (N/O), Output fuse, External 6A gL/gG, NEOZED (N/C), Output fuse, External,
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

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