



ESR5 SAFETY RELAYS  
118706



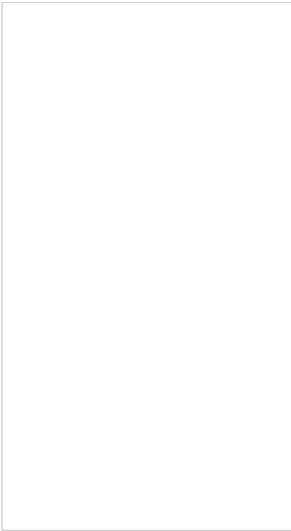
Overview



Specifications



Resources



118706

Eaton ESR5 Contact expansion module, 24VDC/AC  
delayed



Photo is representative

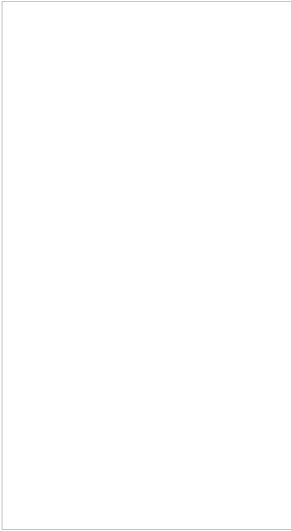


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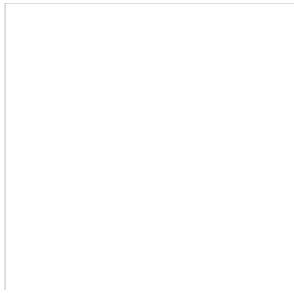


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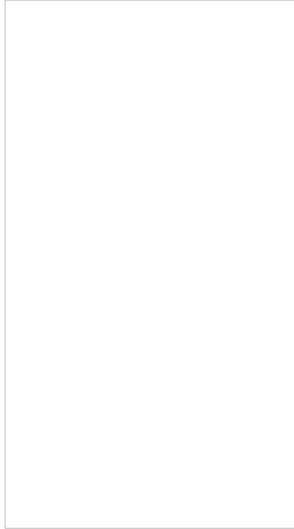


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### 119380

Eaton ESR5 Safety relay emergency stop/protective door, 230VAC, 3 enabling paths ESR5-NO-31-230VAC

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### 118703

Eaton ESR5 Safety two-hand relay, 24VDC/AC, 2-channel, 2 enabling paths

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### 118702

Eaton ESR5 Safety relay emergency stop/protective door, 24VDC/AC, 3 enabling paths

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### 118701

Eaton ESR5 Safety relay emergency stop/protective door, 24VDC/AC, 3 enabling paths

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## GENERAL SPECIFICATIONS

General specifications

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**PRODUCT NAME** Eaton ESR5 Contact expansion module**CATALOG NUMBER** 118706

Product specifications

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**MODEL CODE** ESR5-VE3-42**EAN** 4015081168460**PRODUCT LENGTH/DEPTH** 114.5 mm**PRODUCT HEIGHT** 99 mm**PRODUCT WIDTH** 22.5 mm**PRODUCT WEIGHT** 0.173 kg

## CERTIFICATIONS

UL File No.: E29184  
Certified by UL for use in Canada  
CSA Class No.: 3211-83; 3211-03  
UL  
2014/30/EU  
IEC 62061  
UL 508  
IEC/EN 60204  
EN 50178  
CE  
UL report applies to both US and Canada  
UL Category Control No.: NKCR; NKCR7  
EN ISO 13849-1  
CSA-C22.2 No. 14-95  
IEC 61508, Parts 1-7  
Machines 2006/42/EG

## CATALOG NOTES

The base unit determines the maximum stop category  
61508 and IEC 60204

## PRODUCT SPECIFICATIONS

**RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)** 0 A**OPERATING VOLTAGE AT AC, 50 HZ - MIN** 0 V**10.11 SHORT-CIRCUIT RATING** Is the panel builder's responsibility. The specification must be observed.**RATED OPERATIONAL VOLTAGE** 24 V DC (power supply)  
230 V AC**RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MIN** 0 V

<b>10.4 CLEARANCES AND CREEPAGE DISTANCES</b>	Meets the product standard's requirements.
<b>MOUNTING METHOD</b>	Rail mounting possible Top-hat rail fixing (according to IEC/EN 60715, 35)
<b>NUMBER OF OUTPUTS (SAFETY RELATED, DELAYED, SEMICONDUCTORS)</b>	0
<b>CONTROL VOLTAGE 1 - MIN</b>	24 V
<b>SAFETY TYPE (IEC 61496-1)</b>	None
<b>LED INDICATOR</b>	Status indication of SmartWire-DT network: Green
<b>PROOF TEST</b>	67 Months (Low Demand) 240 Months (High Demand)
<b>AIR PRESSURE</b>	795 - 1080 hPa (operation)
<b>OPERATING VOLTAGE AT AC, 60 HZ - MAX</b>	0 V
<b>10.2.3.1 VERIFICATION OF THERMAL STABILITY OF ENCLOSURES</b>	Meets the product standard's requirements.
<b>AMBIENT STORAGE TEMPERATURE - MIN</b>	-40 °C
<b>OPERATING VOLTAGE AT AC, 50 HZ - MAX</b>	0 V
<b>FITTED WITH:</b>	Approval for TÜV Detachable clamps Approval according to UL Feedback circuit
<b>VIBRATION RESISTANCE</b>	10 - 150 Hz, Amplitude: 0.15 mm, Acceleration: 2 6)
<b>RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MAX</b>	26.4 V
<b>STOP CATEGORY (IEC 60204)</b>	1
<b>CONTROL VOLTAGE 1 - MAX</b>	24 V
<b>AMBIENT OPERATING TEMPERATURE - MAX</b>	55 °C
<b>CONTROL VOLTAGE 1 TYPE</b>	DC
<b>SWITCHING FREQUENCY</b>	Max. 0.5 Hz, Input data
<b>FEATURES</b>	Feedback current path Safe insulation 6 kV between input circuit / NC contacts, and enable Basic insulation Reinforced insulation
<b>RECOVERY TIME</b>	1000 ms
<b>AMBIENT OPERATING TEMPERATURE - MIN</b>	-20 °C
<b>SUPPLY VOLTAGE AT AC, 60 HZ - MAX</b>	0 V
<b>10.6 INCORPORATION OF SWITCHING DEVICES AND COMPONENTS</b>	Does not apply, since the entire switchgear needs to

POWER SUPPLY CIRCUIT	2 W (DC operated)
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	DC
QUADRATIC SUMMATION CURRENT	50 A <sup>2</sup> ( $I_{TH}^2 = I_1^2 + I_2^2 + I_3^2 + I_4^2$ )
CATEGORY (EN 954-1)	3
NOMINAL CURRENT	84 A
PRODUCT CATEGORY	Electronic safety relays
TERMINAL CAPACITY	1 x (0.2 – 2.5) mm <sup>2</sup> , solid 1 x (0.25 – 2.5) mm <sup>2</sup> , flexible with ferrule 2 x (0.25 – 1) mm <sup>2</sup> , flexible with ferrule 24 - 12 AWG, solid or stranded 2 x (0.2 – 1) mm <sup>2</sup> , solid
HEAT DISSIPATION CAPACITY PDISS	0 W
CONTROL VOLTAGE 2 TYPE	DC
POWER LOSS	Normally 4.52 W
PICK-UP TIME	20 ms typ. (K1, K2 - for UN automatic mode) 20 ms typ. (at U <sub>e</sub> in automatic mode) 20 ms typ. (K1, K2 - for UN manual operation) 20 ms typ. (at U <sub>e</sub> in manual mode)
INRUSH CURRENT	0.025 - 6 A (N/O) 0.025 - 3 A (N/C)
10.9.2 POWER-FREQUENCY ELECTRIC STRENGTH	Is the panel builder's responsibility.
DEGREE OF PROTECTION	IP20 Installation location: ≥ IP54 Enclosure: IP20 Terminals: IP20
OVERVOLTAGE CATEGORY	III
NUMBER OF INPUTS	1-channel
AMBIENT STORAGE TEMPERATURE - MAX	70 °C
POLLUTION DEGREE	2
FEEDBACK CURRENT PATH	Delayed feedback current path
RELEASE-DELAY - MAX	0 s
NUMBER OF OUTPUTS (SAFETY RELATED, UNDELAYED, SEMICONDUCTORS)	0
SAFETY PARAMETER (IEC 62061)	SIL 3, Safety integrity level, In accordance with IEC SILCL 3, Safety integrity level claim limit SILCL 2, Safety integrity level claim limit SIL 2, Safety integrity level, In accordance with IEC 13.5 x 10 <sup>-10</sup> , PFHd, Probability of failure per hour

	Cat. 3, Category
<b>RATED IMPULSE WITHSTAND VOLTAGE (UIMP)</b>	4000 V AC
<b>FUNCTIONS</b>	1-channel Time function
<b>BREAKING POWER</b>	1500 VA max., Output data, resistive load ( $\tau = 0$ ms) N/C contacts 65 - 66) 288 W max., Output data, resistive load ( $\tau = 0$ ms) N/C contacts 65 - 66) 40 W max., Output data, inductive load ( $\tau = 40$ ms) 35 W max., Output data, inductive load ( $\tau = 40$ ms) 144 W max. resistive load ( $\tau = 0$ ms), at 24 V DC 66) 33 W max., Output data, inductive load ( $\tau = 40$ ms) 77 W max., Output data, resistive load ( $\tau = 0$ ms), 88 W max., Output data, resistive load ( $\tau = 0$ ms), 48 W max., Output data, inductive load ( $\tau = 40$ ms)
<b>SIL (IEC 61508)</b>	3
<b>TIGHTENING TORQUE</b>	0.6 Nm, Screw terminals
<b>OPERATING VOLTAGE AT DC - MAX</b>	24 V
<b>TYPE</b>	Contact expansions
<b>10.2.2 CORROSION RESISTANCE</b>	Meets the product standard's requirements.
<b>10.2.4 RESISTANCE TO ULTRA-VIOLET (UV) RADIATION</b>	Meets the product standard's requirements.
<b>10.2.7 INSCRIPTIONS</b>	Meets the product standard's requirements.
<b>NUMBER OF OUTPUTS (SIGNALING FUNCTION, DELAYED, SEMICONDUCTORS)</b>	0
<b>ENVIRONMENTAL CONDITIONS</b>	Condensation: Non-condensing Clearance in air and creepage distances according to CSA C22.2, No. 14-95
<b>CURRENT CONSUMPTION</b>	94 mA, DC 94 mA, AC
<b>MODEL</b>	Expansion device
<b>OPERATING VOLTAGE AT DC - MIN</b>	24 V
<b>RELEASE-DELAY - MIN</b>	0 s
<b>10.12 ELECTROMAGNETIC COMPATIBILITY</b>	Is the panel builder's responsibility. The specifications must be observed.
<b>10.2.5 LIFTING</b>	Does not apply, since the entire switchgear needs to
<b>STRIPPING LENGTH (MAIN CABLE)</b>	7 mm
<b>SWITCHING CAPACITY</b>	3 A at 3600 O/h, AC-15 at 230 V, Outputs In accordance with IEC 60947-5-1, Outputs 0.4 W 3 A at 3600 O/h, DC-13 at 24 V, Outputs
<b>CONTROL VOLTAGE 2 - MAX</b>	24 V

<b>INPUT</b>	$\infty$ ms, Simultaneity for inputs 1/2
<b>RATED CONTROL SUPPLY VOLTAGE(US) AT DC - MIN</b>	0 V
<b>NUMBER OF OUTPUTS (SIGNALING FUNCTION, DELAYED) WITH CONTACT</b>	1
<b>10.8 CONNECTIONS FOR EXTERNAL CONDUCTORS</b>	Is the panel builder's responsibility.
<b>CONTROL VOLTAGE 2 - MIN</b>	24 V
<b>VOLTAGE TYPE OF OPERATING VOLTAGE</b>	DC
<b>PROTECTION</b>	Finger and back-of-hand proof Protection against di actuated from front (EN 50274)
<b>SWITCHING VOLTAGE</b>	250 V
<b>SUPPLY VOLTAGE AT DC - MIN</b>	24 V
<b>CLIMATIC PROOFING</b>	Damp heat, constant, to IEC 60068-2-3 Dry heat to IEC 60068-2-2
<b>EMITTED INTERFERENCE</b>	According to EN 61000-6-4
<b>STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS</b>	4.52 W
<b>RATED CONTROL SUPPLY VOLTAGE(US) AT DC - MAX</b>	24 V
<b>NUMBER OF OUTPUTS (SIGNALING FUNCTION, UNDELAYED) WITH CONTACT</b>	0
<b>10.9.3 IMPULSE WITHSTAND VOLTAGE</b>	Is the panel builder's responsibility.
<b>10.5 PROTECTION AGAINST ELECTRIC SHOCK</b>	Does not apply, since the entire switchgear needs to
<b>SUPPLY VOLTAGE AT DC - MAX</b>	24 V
<b>MOUNTING POSITION</b>	As required
<b>SAFETY PARAMETER (EN ISO 13849-1)</b>	300,000 switching cycles, B10d PL d, Performance level Cat. 3, Category
<b>ELECTRIC CONNECTION TYPE</b>	Screw connection
<b>NUMBER OF OUTPUTS (SIGNALING FUNCTION, UNDELAYED, SEMICONDUCTORS)</b>	0
<b>10.13 MECHANICAL FUNCTION</b>	The device meets the requirements, provided the inf instruction leaflet (IL) is observed.
<b>10.9.4 TESTING OF ENCLOSURES MADE OF INSULATING MATERIAL</b>	Is the panel builder's responsibility.
<b>HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID</b>	0 W
<b>SAFETY PERFORMANCE LEVEL (EN ISO 13849-1)</b>	Level d
<b>SHORT-CIRCUIT PROTECTION</b>	Fuse 4 A gL/gG (Signal current paths), For output

SHORT-CIRCUIT PROTECTION	Fuse 10 A gL/gG (Enable current paths), For output
NUMBER OF OUTPUTS (SAFETY RELATED, DELAYED) WITH CONTACT	4
SUPPLY VOLTAGE AT AC, 60 HZ - MIN	0 V
OPERATING TEMPERATURE - MIN	-20 °C
UNINTERRUPTED CURRENT	3 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	Safety relay contact expansion block per DIN EN6021 for contact multiplication Monitoring of position switches Monitoring of emergency-stop circuits The expansion unit can be used for contact multiplication stop relays and two-hand controls
POWER CONSUMPTION	4.52 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	DC
RELATIVE HUMIDITY	< 75 %
SUPPLY VOLTAGE AT AC, 50 HZ - MIN	0 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.
OFF-DELAY	0.3 - 3 s (± 50 %)
SUPPLY VOLTAGE AT AC, 50 HZ - MAX	0 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	0



<b>OPERATING VOLTAGE AT AC, 60 HZ - MIN</b>	0 V
<b>SCREWDRIVER SIZE</b>	0.6 x 3.5 mm, Terminal screws 2, Terminal screw, Pozidriv screwdriver
<b>DUTY FACTOR</b>	100 %
<b>RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MAX</b>	26.4 V
<b>SHORT-CIRCUIT PROTECTION RATING</b>	10A gL/gG, NEOZED (N/O), Output fuse, External 4A gL/gG, NEOZED (N/C), Output fuse, External,
<b>MOUNTING WIDTH</b>	22.5 mm
<b>ALTITUDE</b>	Max. 2000 m
<b>RATED INSULATION VOLTAGE (UI)</b>	250 V

Brochures

Certification reports

Characteristic curve

Drawings

eCAD model

Installation instructions

Manuals and user guides

mCAD model

Wiring diagrams



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