# Eaton 118707

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

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| **PRODUCT NAME** | Eaton ESR5 Contact expansion module |
| **CATALOG NUMBER** | 118707 |
| **PRODUCT LENGTH/DEPTH** | 114.5 mm |
| **PRODUCT HEIGHT** | 99 mm |
| **PRODUCT WIDTH** | 22.5 mm |
| **PRODUCT WEIGHT** | 0.21 kg |
| **CERTIFICATIONS** | UL report applies to both US and Canada<br>UL Category Control No.: NKCR; NKCR7<br>Certified by UL for use in Canada<br>IEC 61508, Parts 1-7<br>EN ISO 13849-1<br>CE<br>UL 508<br>2014/30/EU<br>UL File No.: E29184<br>IEC/EN 60204<br>CSA-C22.2 No. 14-95<br>UL<br>IEC 62061<br>EN 50178<br>CSA Class No.: 3211-83; 3211-03<br>Machines 2006/42/EG |
| **CATALOG NOTES** | • The base unit determines the maximum stop category according to IEC 61508 and IEC 60204<br>• Replacement: ESR5-NE-51-24VDC (EP-401063) |

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| **TYPE** | Contact expansions |
| **MOUNTING METHOD** | Rail mounting possible<br>Top-hat rail fixing (according to IEC/EN 60715, 35 mm) |
| **OPERATING TEMPERATURE - MAX** | 55 °C |
| **OPERATING TEMPERATURE - MIN** | -20 °C |
| **FEATURES** | Safe insulation<br>6 kV between A1/A2, 11/12, 23/24, 71/72 and 33/34, 43/44, 53/54, 63/64<br>5 Non-delayed enable current paths<br>Basic insulation<br>Basic isolation<br>Reinforced insulation |
| **10.10 TEMPERATURE RISE** | The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices. |
| **10.11 SHORT-CIRCUIT RATING** | Is the panel builder's responsibility. The specifications for the switchgear must be observed. |
| **10.12 ELECTROMAGNETIC COMPATIBILITY** | Is the panel builder's responsibility. The specifications for the switchgear must be observed. |
| **10.13 MECHANICAL FUNCTION** | The device meets the requirements, provided the information in the instruction leaflet (IL) is observed. |
| **10.2.2 CORROSION RESISTANCE** | Meets the product standard's requirements. |
| **10.2.3.1 VERIFICATION OF THERMAL STABILITY OF ENCLOSURES** | Meets the product standard's requirements. |
| **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** | Meets the product standard's requirements. |

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| **CHARACTERISTIC CURVE** | eaton-safety-relays-esr5-safety-relay-characteristic-curve.eps |
| **DECLARATIONS OF CONFORMITY** | eaton-contact-expansion-module-declaration-of-conformity-uk251143en.pdf |
| | eaton-safety-relays-esr5-contact-expansion-module-wiring-diagram-002.eps<br><br>eaton-safety-relays-esr5-contact-expansion-module-wiring-diagram-003.eps<br><br>eaton-safety-relays-esr5-contact-expansion-module-wiring-diagram-004.eps |
| | eaton-safety-relays-relay-esr5-safety-relay-dimensions-002.eps<br><br>eaton-safety-relays-relay-esr5-safety-relay-3d-drawing.eps<br><br>eaton-general-esr5-safety-relay-symbol.eps<br><br>eaton-general-esr5-safety-relay-symbol-002.eps |

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| **ABNORMAL HEAT/FIRE BY INTERNAL ELECT. EFFECTS** | |
| **10.2.4 RESISTANCE TO ULTRA-VIOLET (UV) RADIATION** | Meets the product standard's requirements. |
| **10.2.5 LIFTING** | Does not apply, since the entire switchgear needs to be evaluated. |
| **10.2.6 MECHANICAL IMPACT** | Does not apply, since the entire switchgear needs to be evaluated. |
| **10.2.7 INSCRIPTIONS** | Meets the product standard's requirements. |
| **10.3 DEGREE OF PROTECTION OF ASSEMBLIES** | Does not apply, since the entire switchgear needs to be evaluated. |
| **10.4 CLEARANCES AND CREEPAGE DISTANCES** | Meets the product standard's requirements. |
| **10.5 PROTECTION AGAINST ELECTRIC SHOCK** | Does not apply, since the entire switchgear needs to be evaluated. |
| **10.6 INCORPORATION OF SWITCHING DEVICES AND COMPONENTS** | Does not apply, since the entire switchgear needs to be evaluated. |
| **10.7 INTERNAL ELECTRICAL CIRCUITS AND CONNECTIONS** | Is the panel builder's responsibility. |
| **10.8 CONNECTIONS FOR EXTERNAL CONDUCTORS** | Is the panel builder's responsibility. |
| **10.9.2 POWER-FREQUENCY ELECTRIC STRENGTH** | Is the panel builder's responsibility. |
| **10.9.3 IMPULSE WITHSTAND VOLTAGE** | Is the panel builder's responsibility. |
| **10.9.4 TESTING OF ENCLOSURES MADE OF INSULATING MATERIAL** | Is the panel builder's responsibility. |
| **ELECTRIC CONNECTION TYPE** | Screw connection |
| **FITTED WITH:** | Feedback circuit<br>Approval according to UL<br>Approval for TÜV<br>Detachable clamps |
| **POLLUTION DEGREE** | 2 |
| **CLIMATIC PROOFING** | Dry heat to IEC 60068-2-2<br>Damp heat, constant, to IEC 60068-2-3 |
| **RATED IMPULSE** | 4000 V AC |

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| **WITHSTAND VOLTAGE (UIMP)** | |
| **AIR PRESSURE** | 795 - 1080 hPa (operation) |
| **ALTITUDE** | Max. 2000 m |
| **CATEGORY (EN 954-1)** | 4 |
| **DEGREE OF PROTECTION** | Terminals: IP20<br>Installation location: ≥ IP54<br><br>IP20<br>Enclosure: IP20 |
| **ENVIRONMENTAL CONDITIONS** | Clearance in air and creepage distances according to EN 50178, UL 508, CSA C22.2, No. 14-95<br>Condensation: Non-condensing |
| **NUMBER OF INPUTS** | 1-channel |
| **FUNCTIONS** | 1-channel |
| **SAFETY PERFORMANCE LEVEL (EN ISO 13849-1)** | Level e |
| **AMBIENT OPERATING TEMPERATURE - MAX** | 55 °C |
| **AMBIENT OPERATING TEMPERATURE - MIN** | -20 °C |
| **AMBIENT STORAGE TEMPERATURE - MAX** | 70 °C |
| **AMBIENT STORAGE TEMPERATURE - MIN** | -40 °C |
| **EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT PVID** | 0 W |
| **HEAT DISSIPATION CAPACITY PDISS** | 0 W |
| **HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID** | 0 W |
| **NOMINAL CURRENT** | 92 A |
| **NUMBER OF OUTPUTS (SAFETY RELATED, DELAYED) WITH CONTACT** | 0 |
| **NUMBER OF OUTPUTS (SAFETY RELATED, DELAYED, SEMICONDUCTORS)** | 0 |
| **NUMBER OF OUTPUTS (SAFETY RELATED, UNDELAYED) WITH CONTACT** | 5 |

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| **NUMBER OF OUTPUTS (SAFETY RELATED, UNDELAYED, SEMICONDUCTORS)** | 0 |
| **NUMBER OF OUTPUTS (SIGNALING FUNCTION, DELAYED) WITH CONTACT** | 0 |
| **NUMBER OF OUTPUTS (SIGNALING FUNCTION, DELAYED, SEMICONDUCTORS)** | 0 |
| **NUMBER OF OUTPUTS (SIGNALING FUNCTION, UNDELAYED) WITH CONTACT** | 1 |
| **NUMBER OF OUTPUTS (SIGNALING FUNCTION, UNDELAYED, SEMICONDUCTORS)** | 0 |
| **RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MAX** | 26.4 V |
| **RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 50 HZ - MIN** | 0 V |
| **RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MAX** | 24 V |
| **SCREWDRIVER SIZE** | 2, Terminal screw, Pozidriv screwdriver<br>0.6 x 3.5 mm, Terminal screws |
| **VOLTAGE TYPE** | AC/DC |
| **CONNECTION TYPE** | M3 screw terminals |
| **MOUNTING POSITION** | As required |
| **BREAKING POWER** | 288 W max., Output data, resistive load (τ = 0 ms), at 48 V DC (for N/C contact 11/12 71/72)<br>42 W max., Output data, inductive load (τ = 40 ms), at 110 V DC<br>42 W max., Output data, inductive load (τ = 40 ms), at 24 V DC<br>88 W max., Output data, resistive load (τ = 0 ms), at 220 V DC<br>42 W max., Output data, inductive load (τ = 40 ms), at 48 V DC |

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| | 42 W max., Output data, inductive load (τ = 40 ms), at 220 V DC<br>144 W max., Output data, resistive load (τ = 0 ms), at 24 V DC (for N/C contact 11/12 71/72)<br>1500 VA max., Output data, resistive load (τ = 0 ms), at 250 V AC (for N/C contact 11/12 71/72)<br>110 W max., Output data, resistive load (τ = 0 ms), at 110 V DC |
| **OVERVOLTAGE CATEGORY** | III |
| **SHORT-CIRCUIT PROTECTION RATING** | 6 A, Output fuse, Output data |
| **DUTY FACTOR** | 100 % |
| **EMITTED INTERFERENCE** | According to EN 61000-6-4 |
| **CURRENT CONSUMPTION** | 92 mA, AC<br>92 mA, DC |
| **MATERIAL** | Contacts: silver tin oxide, gold plated (AgSnO2, 0.2 µ m Au)<br>Enclosure: Polyamide (PA), not reinforced |
| **INTERFERENCE IMMUNITY** | According to EN 61000-6-2 |
| **TIGHTENING TORQUE** | 0.6 Nm, Screw terminals |
| **MOUNTING WIDTH** | 22.5 mm |
| **SUITABLE FOR** | Monitoring of position switches<br>Safety relay contact expansion block per DIN EN60204-1/VDE 0113 Part 1 for contact multiplication<br><br>Monitoring of emergency-stop circuits<br>The expansion unit can be used for contact multiplication for emergency stop relays and two-hand controls |
| **RELATIVE HUMIDITY** | < 75 % |
| **LED INDICATOR** | Status indication of SmartWire-DT network: Green LED |
| **FEEDBACK CURRENT PATH** | Feedback current path |

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| **PICK-UP TIME** | 20 ms typ. (at $U_e$ in manual mode)<br>20 ms typ. (K1, K2 - for UN manual operation)<br>20 ms typ. (at $U_e$ in automatic mode)<br>20 ms typ. (K1, K2 - for UN automatic mode) |
| **LIFESPAN, MECHANICAL** | 10,000,000 Operations |
| **INPUT** | ∞ ms, Simultaneity for inputs 1/2 |
| **INRUSH CURRENT** | 0.025 - 6 A |
| **MODEL** | Expansion device |
| **SAFETY TYPE (IEC 61496-1)** | None |
| **VIBRATION RESISTANCE** | 10 - 150 Hz, Amplitude: 0.15 mm, Acceleration: 2 g, (IEC/EN 60068-2-6) |
| **SAFETY PARAMETER (EN ISO 13849-1)** | Cat. 4, Category<br>PL e, Performance level<br>230,000 switching cycles, B10d |
| **TERMINAL CAPACITY** | 2 x (0.2 – 1) $mm^2$, solid<br>24 - 12 AWG, solid or stranded<br>1 x (0.25 – 2.5) $mm^2$, flexible with ferrule<br>2 x (0.25 – 1) $mm^2$, flexible with ferrule<br>1 x (0.2 – 2.5) $mm^2$, solid |
| **RATED CONTROL SUPPLY VOLTAGE (US) AT AC, 60 HZ - MIN** | 20.4 V |
| **RATED CONTROL SUPPLY VOLTAGE (US) AT DC - MAX** | 24 V |
| **RATED CONTROL SUPPLY VOLTAGE (US) AT DC - MIN** | 0 V |
| **RATED INSULATION VOLTAGE (UI)** | 250 V |
| **RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)** | 0 A |
| **RELEASE-DELAY - MAX** | 0 s |
| **RELEASE-DELAY - MIN** | 0 s |
| **STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS** | 5.8 W |

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| **STRIPPING LENGTH (MAIN CABLE)** | 7 mm |
| **SWITCHING VOLTAGE** | 250 V |
| **PRODUCT CATEGORY** | Electronic safety relays |
| **PROTECTION** | Finger and back-of-hand proof, Protection against direct contact when actuated from front (EN 50274) |
| **SIL (IEC 61508)** | 3 |
| **POWER LOSS** | Normally 5.8 W |
| **POWER SUPPLY CIRCUIT** | 2.2 W (DC operated)<br>2.2 W (AC operated 50/60 Hz) |
| **PROOFTEST** | 240 Months (High Demand)<br>84 Months (Low Demand) |
| **QUADRATIC SUMMATION CURRENT** | 72 $A^2$ ($ITH^2 = I1^2 + I2^2 + I3^2 + I4^2 + I5^2$) |
| **RATED OPERATIONAL VOLTAGE** | 24 V AC/DC (power supply)<br><br>230 V AC |
| **RESET TIME** | Normally 20 ms |
| **SAFETY PARAMETER (IEC 62061)** | 1.02 x 10-10, PFHd, Probability of failure per hour<br>Cat. 4, Category<br>SIL 3, Safety integrity level, In accordance with IEC 61508<br>SIL 3, Safety integrity level<br>SILCL 3, Safety integrity level claim limit |
| **UNINTERRUPTED CURRENT** | 6 A N/O, Limiting continuous current<br>3 A N/C, Limiting continuous current |
| **SHORT-CIRCUIT PROTECTION** | Fuse 6 A gL/gG, For output circuits, External |
| **STOP CATEGORY (IEC 60204)** | 0 |
| **SWITCHING CAPACITY** | 0.4 W<br>In accordance with IEC 60947-5-1, Outputs<br>4 A at 360 O/h, AC-15 at 230 V, Outputs<br>3 A at 3600 O/h, AC-15 at 230 V, Outputs<br>4 A at 360 O/h, DC-13 at 24 V, Outputs |

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| | 2.5 A at 3600 O/h, DC-13 at 24 V, Outputs |
| **SWITCHING FREQUENCY** | Max. 0.5 Hz, Input data |
| **POWER CONSUMPTION** | 2.2 W |
| **CONTROL VOLTAGE 1 - MIN** | 24 V |
| **CONTROL VOLTAGE 1 - MAX** | 24 V |
| **CONTROL VOLTAGE 2 - MIN** | 24 V |
| **CONTROL VOLTAGE 2 - MAX** | 24 V |
| **CONTROL VOLTAGE 1 TYPE** | AC/DC |
| **CONTROL VOLTAGE 2 TYPE** | AC/DC |
| **VOLTAGE TYPE OF SUPPLY VOLTAGE** | AC/DC |
| **VOLTAGE TYPE OF OPERATING VOLTAGE** | AC/DC |
| **RATED SWITCH CURRENT** | 4 A |
| **SUPPLY VOLTAGE AT AC, 50 HZ - MIN** | 24 V |
| **SUPPLY VOLTAGE AT AC, 50 HZ - MAX** | 24 V |
| **SUPPLY VOLTAGE AT AC, 60 HZ - MIN** | 24 V |
| **SUPPLY VOLTAGE AT AC, 60 HZ - MAX** | 24 V |
| **SUPPLY VOLTAGE AT DC - MIN** | 24 V |
| **SUPPLY VOLTAGE AT DC - MAX** | 24 V |
| **OPERATING VOLTAGE AT AC, 50 HZ - MIN** | 24 V |
| **OPERATING VOLTAGE AT AC, 50 HZ - MAX** | 24 V |
| **OPERATING VOLTAGE AT AC, 60 HZ - MIN** | 24 V |
| **OPERATING VOLTAGE AT AC, 60 HZ - MAX** | 24 V |
| **OPERATING VOLTAGE AT DC - MIN** | 24 V |
| **OPERATING VOLTAGE AT DC - MAX** | 24 V |

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| **PROJECT NAME:** | |
| **PROJECT NUMBER:** | |
| **PREPARED BY:** | |
| : | |

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