Specifications

Eaton 118706

Catalog Number: 118706

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



General specifications

Product Name
Eaton ESR5 Contact expansion module

Catalog Number
118706

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 according to IEC 61508 and IEC 60204

Feature & Functions

Electric connection type

Screw connection

Features

Feedback current path

Safe insulation

6 kV between input circuit / NC contacts, and enable current paths

Basic insulation

Reinforced insulation

Fitted with:

Approval for TÜV

Detachable clamps

Approval according to UL

Feedback circuit

Functions

1-channel

Time function

Material

Contacts: silver tin oxide, gold plated (AgSnO2, 0.2 µm Au)

Enclosure: Polyamide (PA), not reinforced

General information

Connection type

M3 screw terminals

Current consumption

94 mA, DC

94 mA, AC

Degree of protection

IP20

Installation location: ≥ IP54

Enclosure: IP20

Terminals: IP20

Duty factor

100 %

Emitted interference

According to EN 61000-6-4

Interference immunity

According to EN 61000-6-2

LED indicator

Status indication of SmartWire-DT network: Green LED

Lifespan, mechanical

10,000,000 Operations

Model

Expansion device

Mounting method

Rail mounting possible

Top-hat rail fixing (according to IEC/EN 60715, 35 mm)

Mounting width

22.5 mm

Overvoltage category

III

Pollution degree

2

Power loss

Normally 4.52 W

Product category

Electronic safety relays

Protection

Finger and back-of-hand proof, Protection against direct contact when actuated from front (EN 50274)

Rated impulse withstand voltage (Uimp)

4000 V AC

Recovery time

1000 ms

Safety performance level (EN ISO 13849-1)

Level d

Safety parameter (IEC 62061)

SIL 3, Safety integrity level, In accordance with IEC 61508
SILCL 3, Safety integrity level claim limit
SILCL 2, Safety integrity level claim limit
SIL 2, Safety integrity level, In accordance with IEC 61508
13.5 x 10-10, PFHd, Probability of failure per hour
Cat. 3, Category

Stop category (IEC 60204)

1

Suitable for

Safety relay contact expansion block per DIN EN60204-1/VDE 0113 Part 1 for contact multiplication
Monitoring of position switches
Monitoring of emergency-stop circuits
The expansion unit can be used for contact multiplication for emergency stop relays and two-hand controls

Switching frequency

Max. 0.5 Hz, Input data

Type

Contact expansions

Voltage type

DC

Ambient conditions, mechanical

Mounting position

As required

Prooftest

67 Months (Low Demand)
240 Months (High Demand)

Switching capacity

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

Vibration resistance

10 - 150 Hz, Amplitude: 0.15 mm, Acceleration: 2 g, (IEC/EN 60068-2-6)

Climatic environmental conditions

Air pressure

795 - 1080 hPa (operation)

Altitude

Max. 2000 m

Ambient operating temperature - min

-20 °C

Ambient operating temperature - max

55 °C

Ambient storage temperature - min

-40 °C

Ambient storage temperature - max

70 °C

Climatic proofing

Damp heat, constant, to IEC 60068-2-3
Dry heat to IEC 60068-2-2

Environmental conditions

Condensation: Non-condensing
Clearance in air and creepage distances according to EN 50178, UL 508, CSA C22.2, No. 14-95

Operating temperature - min

-20 °C

Operating temperature - max

55 °C

Relative humidity

< 75 %

Terminal capacities

Terminal capacity

1 x (0.2 – 2.5) mm², solid

1 x (0.25 – 2.5) mm², flexible with ferrule

2 x (0.25 – 1) mm², flexible with ferrule

24 - 12 AWG, solid or stranded

2 x (0.2 – 1) mm², solid

Stripping length (main cable)

7 mm

Screwdriver size

0.6 x 3.5 mm, Terminal screws

2, Terminal screw, Pozidriv screwdriver

Tightening torque

0.6 Nm, Screw terminals

Electrical rating

Inrush current

0.025 - 6 A (N/O)

0.025 - 3 A (N/C)

Power supply circuit

2 W (DC operated)

Rated control supply voltage (Us) at AC, 50 Hz - min

0 V

Rated control supply voltage (Us) at AC, 50 Hz - max

26.4 V

Rated control supply voltage (Us) at AC, 60 Hz - min

20.4 V

Rated control supply voltage (Us) at AC, 60 Hz - max

26.4 V

Rated control supply voltage (Us) at DC - min

0 V

Rated control supply voltage (Us) at DC - max

24 V

Rated insulation voltage (Ui)

250 V

Rated operational voltage

24 V DC (power supply)

Input/Output

Breaking power

1500 VA max., Output data, resistive load (τ = 0 ms), at 250 V AC (for N/C contacts 65 - 66)

288 W max., Output data, resistive load (τ = 0 ms), at 48 V DC (for N/C contacts 65 - 66)

40 W max., Output data, inductive load (τ = 40 ms), at 48 V DC

35 W max., Output data, inductive load (τ = 40 ms), at 110 V DC

144 W max. resistive load (τ = 0 ms), at 24 V DC (for N/C contacts 65 - 66)

33 W max., Output data, inductive load (τ = 40 ms), at 220 V DC

77 W max., Output data, resistive load (τ = 0 ms), at 110 V DC

88 W max., Output data, resistive load (τ = 0 ms), at 220 V DC

48 W max., Output data, inductive load (τ = 40 ms), at 24 V DC

Feedback current path

Delayed feedback current path

Input

∞ ms, Simultaneity for inputs 1/2

Nominal current

84 A

Number of inputs

1-channel

230 V AC

Short-circuit protection

Fuse 4 A gL/gG (Signal current paths), For output circuits, External

Fuse 10 A gL/gG (Enable current paths), For output circuits, External

Short-circuit protection rating

10A gL/gG, NEOZED (N/O), Output fuse, External, Output data

4A gL/gG, NEOZED (N/C), Output fuse, External, Output data

Number of outputs (safety related, delayed) with contact

4

Number of outputs (safety related, undelayed) with contact

0

Number of outputs (signaling function, delayed) with contact

1

Number of outputs (signaling function, undelayed) with contact

0

Off-delay

0.3 - 3 s (± 50 %)

Pick-up time

20 ms typ. (K1, K2 - for UN automatic mode)

20 ms typ. (at U_e in automatic mode)

20 ms typ. (K1, K2 - for UN manual operation)

20 ms typ. (at U_e in manual mode)

Quadratic summation current

50 A² (ITH² = I1² + I2² + I3² + I4²)

Switching voltage

250 V

Uninterrupted current

3 A N/C, Limiting continuous current

6 A N/O, Limiting continuous current

Design verification

Equipment heat dissipation, current-dependent Pvid

0 W

Heat dissipation capacity Pdiss

0 W

Heat dissipation per pole, current-dependent Pvid

0 W

Rated operational current for specified heat dissipation (In)

0 A

Static heat dissipation, non-current-dependent Pvs

4.52 W

10.2.2 Corrosion resistance

Meets the product standard's requirements.

10.2.3.1 Verification of thermal stability of enclosures

Resources

Brochures

eaton-esr5-safety-relay-brochure-br049005en-en-us.pdf

Catalogs

eaton-product-overview-for-machinery-catalogue-ca08103003zen-en-us.pdf

Characteristic curve

eaton-safety-relays-esr5-contact-expansion-module-characteristic-curve.eps

Declarations of conformity

DA-DC-00004590.pdf

DA-DC-00005018.pdf

Drawings

eaton-safety-relays-relay-esr5-safety-relay-dimensions-002.eps

eaton-general-esr5-safety-relay-symbol-002.eps

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 abnormal heat/fire by internal elect. effects

Meets the product standard's requirements.

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.

10.10 Temperature rise

eaton-safety-relays-relay-esr5-safety-relay-3d-drawing.eps

eaton-general-esr5-safety-relay-symbol.eps

eCAD model

DA-CE-ETN.ESR5-VE3-42

Installation instructions

IL05013034Z

Manuals and user guides

MN049003_EN

mCAD model

DA-CS-esr5_nv3_ve3

eaton-esr5_nv3_30_ve3-42-3d-model.stp

DA-CD-esr5_nv3_ve3

eaton-esr5_nv3_30_ve3-42-drawing.dwg

Wiring diagrams

eaton-safety-relays-esr5-contact-expansion-module-wiring-diagram.eps

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.

Eaton Corporation plc
Eaton House
30 Pembroke Road
Dublin 4, Ireland
Eaton.com

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