DATASHEET - ESR5-NZ-21-24VAC-DC



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

Powering Business Worldwide*

Part no. ESR5-NZ-21-24VAC-DC

Catalog No. 118703

EL-Nummer (Norway)

4133319

Delivery program

71 0			
Product range			Electronic safety relays
Basic function			Protective door Two-hand function Feedback circuit
Features			
Mounting width		mm	22.5
			Automatic start External contactor / expansion unit monitoring
Operation			Two-channel
Supply voltage	U_s		24 V DC 24 V AC, 50/60 Hz
Approval			TÜV TÜV (Theinland Group Type Approved
Safety related characteristics			EN 574 Typ III C Cat. 4 PL e according to EN ISO 13849-1 SILCL 3 according to IEC 62061 SIL 3 according to IEC 61508
Number of enabling paths to EN 60204-1 Stop functions category			
Enable current paths to IEC/EN 60204-1 Stop category 0			2
Signal current paths			1

Technical data

Genera

General			
Intended use			Safety relay for monitoring two-hand control per EN 574 Type IIIC and protective door switches. Module used to safely interrupt electrical circuits.
Policies List			EMV 2004/108/EG, Maschinen 2006/42/EG
Standards			EN 574 Part no. IIIC, EN ISO 13849-1:2008, EN 62061:2005+AC:2010, EN 61508, Parts 1-7:2001, EN 50178:1997, EN 60204-1:2006+A1:2009
Dimensions (W x H x D)		mm	22.5 x 99 x 114.5
Mounting width		mm	22.5
Weight		kg	0,19
Mounting position			As required
Mounting			Top-hat rail IEC/EN 60715, 35 mm
Connection type			M3 screw terminals
Lifespan, mechanical	Operations	x 10 ⁶	10
Terminal capacity			
Solid		mm ²	1x (0.2 – 2.5) 2x (0.2 – 1)
Flexible with ferrule		mm ²	1x (0.25 – 2.5) 2x (0.25 – 1)
Solid or stranded		AWG	24 - 12
Terminal screw		Nm	
Pozidriv screwdriver		Size	2
Standard screwdriver		mm	0.6 x 3.5
Max. tightening torque		Nm	0.6

Displacement	Stripping length		mm	7
Durison promises of the continues of th	Material			
Operating conditions Common proteing confidence				Contacts: Material: silver tin oxide, gold plated (AgSnO2, 0.2 µm Au)
Climatic environmental conditions Chimatic proteining Chimat	Duty factor		% DF	100
	Operating conditions			
Multilant interpreture	Climatic environmental conditions			
Ambient temperature	Climatic proofing			
Concession	Ambient temperature			Dailip fieat as per Liv 00000-2-3
Storage		9	۰C	-20 - 455
Condensation				
Ammospharic candifions	•			
Protection for print of the ministry Protection to operation Protection to operation Protection to operation Protection to Operate of Protection against direct contact when actuated from front [EN 50274) Protection against direct contact when actuated from front [EN 50274) Protection against direct contact when actuated from front [EN 50274) Protection against direct contact when actuated from front [EN 50274) Protection against direct contact when actuated from front [EN 50274) Protection against direct contact when actuated from front [EN 50274) Protection against direct contact when actuated from front [EN 50274) Protection against direct contact when actuated from front [EN 50274) Protection against direct contact when actuated from front [EN 50274) Protection against direct contact when actuated from front [EN 50274) Protection and actual variables withstand wolkage Protection actual variables workstand wolkage Protection actual variables Protection actual				ron condensing
Air pressure (operation) Air duide			0/2	May 75
Abitude Above say Included Above say 100 <td></td> <td></td> <td></td> <td></td>				
Power loads		Ahove sea		
Degree of protection to VICE NTO-1 Face	Annuc			2000
Degree of protection to VDE 0479-1 Fenoluses Fe		P	W	5.16
Procesures	Ambient conditions, mechanical			
Degree of Protection Degree of Degree o	Degree of protection to VDE 0470-1			
Bidd switching cycles Bidd switching cycles Bidd switching cycles Protection against direct contact when actuated from front (EN 50274) Protection against direct contact when actuated from front (EN 50274) Protection against direct contact when actuated from front (EN 50274) Protection against direct contact when actuated from front (EN 50274) Protection against direct contact when actuated from front (EN 50274) Protection against direct contact when actuated from front (EN 50274) Protection against direct contact when actuated from front (EN 50274) Protection against direct contact when actuated from front (EN 50274) Protection against direct contact when actuated from front (EN 50274) Protection against direct contact when actuated from front (EN 50274) Protect acts against direct against again				
Protection against direct contact when actuated from from (EN 50274) France ion against direct contact when actuated from from (EN 50274) France ion air and creepage distances Ump	Terminals			IP20
Protection against direct contact when actuated from front [EN 50274) Finger and back-of-hand proof Vibrations (ECJEN 80088-2-6) Reservations (ECJEN 80088-2-6) Reservations (ECJEN 80088-2-6) Probability of patients (ECJEN 80088-2-6) Probability of p	Degree of Protection			Installation location: ≥ IP54
The state of th	B10d [switching cycles]			300000
Clearance in air and creepage distances	Protection against direct contact when actuated from front (EN 50274)			Finger and back-of-hand proof
Clearance in air and creepage distances	Vibrations (IEC/EN 60068-2-6)			
Rated impulse withstand voltage Risulation Derivoltage catagory/pollution degree Stop category Performance level Category Category Category According to EN ISO 13849-1 Performance level Category C				
Insulation Overvoltage category/pollution degree Overvoltage category/pollution degree Stop category ENDEQUATION ENDEQUATION Performance level Category Catego	Clearance in air and creepage distances			EN 50178, UL 508, CSA C22.2, No. 14-95
Safe isolation Saf	Rated impulse withstand voltage	U _{imp}	V AC	6000
Note	Insulation			Basic isolation
Description of England Performance level				
Technical safety parameters: Values according to EN ISO 13849-1	Overvoltage category/pollution degree			III/2
Technical safety parameters: Values according to EN ISO 13849-1		according to		12.1
Values according to ENISO 13849-1 Performance level according to ENISO 13849-1 Category according to ENISO 13849-1 Category according to ENISO 13849-1 Category according to ENISO 13849-1 Safety integrity level claim limit in accordance with 62061- Safety integrity level claim limit in accordance with 1EC 61508 Probability of failure per hour PFH _d x 10 ⁻¹⁰ 12.1 Prooftest High Demand PFH _d x 10 ⁻¹⁰ 2.1 Rated operational voltage U ₀ VAC 20 Rated operational voltage U ₀ VAC 20 Rated operational voltage U ₀ VAC 20 Rated insulation voltage U ₁ VAC 250 Quadratic summation current According to ENISO 13849-1 Innush current According to ENISO 13849-1 Ninimum switching capacity U ₀ VAC 20 Quadratic summation current According to ENISO 13849-1 Ninimum switching capacity U ₀ VAC 24V DC Output Demonstrate U ₁ VAC 250 Output Demonstrate U ₂ VAC 260 Output Demon	, , ,			
Performance level sold in to EN ISO 13849-11 Category sold according to EN ISO 13849-11 Safety integrity level claim limit sold accordance with EC 61509 sold accordance with EC 61509 sold accordance with IEC 61509 s	Technical safety parameters:			
Lategory Category Safety integrity level claim limit Safety integrity level claim limit Safety integrity level claim limit Safety integrity level Safety integrity level claim limit Safety integrity level claim limitation lim	Values according to EN ISO 13849-1			
Category Safety integrity level claim limit Safety integrity level claim limit Safety integrity level claim limit Safety integrity level Safety integrity Safety integri	Performance level			PL e
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Probability of failure per hour Probability of failure per hour Profitest High Demand Lifetime Rated operational voltage Rated operational voltage Remissible range Rated insulation voltage Quadratic summation current Uinush current Minimum switching capacity Control circuit Probability of failure per hour PFHd x 10 ⁻¹ Nonths 40 Ao Nonths 240 240 240 240 240 240 240 24	, ,			
Probability of failure per hourPFHd PFD Prooftest High Demandx 10-10 Months240LifetimeMonths240Rated operational voltageUe V ACV AC230Rated operational voltageV B V B 	Safety integrity level			SIL3
Prooftest High Demand Lifetime Months 240 Rated operational voltage Rated operational voltage Rated insulation voltage Rated insulation voltage Ue V AC			3	
Prooftest High Demand Lifetime Months 240 Rated operational voltage Rated operational voltage Rated insulation voltage Rated insulation current Lifetime V AC V	Probability of failure per hour	PFH_d	x 10 ⁻¹⁰	12.1
Lifetime Months Rated operational voltage V AC 230 Rated operational voltage V British Permissible range V British Current V AC 250 Quadratic summation current V British Current Minimum switching capacity V British Control circuit V AC V AC V British Capacity V AC V A	Prooftest High Demand			240
Rated operational voltage Rated operational voltage V AC V AC, 24 V DC 24 V AC, 24 V DC 0.85 - 1.1 x Ue Rated insulation voltage Ui V AC 250 Quadratic summation current Inrush current Minimum switching capacity Control circuit				
Rated operational voltage Permissible range Rated insulation voltage Quadratic summation current Inrush current Minimum switching capacity Que V A 24 V AC, 24 V DC 0.85 - 1.1 x Ue 250 A2 72 A ² (I _{TH} ² = I ₁ ² + I ₂ ²) Min - max 0.025 - 6 W 0.4 Control circuit		$U_{\rm p}$		
Permissible range Rated insulation voltage Quadratic summation current Inrush current Minimum switching capacity Control circuit Discription 1.1 x Ue 0.85 - 1.1 x Ue 0.8				
Rated insulation voltage Quadratic summation current Inrush current Minimum switching capacity Control circuit V AC 250 A2 72 A ² (I _{TH} ² = I ₁ ² + I ₂ ²) A min - max 0.025 - 6 W 0.4		~e		
Quadratic summation current A^2 $72 A^2 (I_{TH}^2 = I_1^2 + I_2^2)$ Inrush current A $min - max 0.025 - 6$ Minimum switching capacity W 0.4 Control circuit		П	V AC	
Inrush current A min - max 0.025 - 6 Minimum switching capacity W 0.4 Control circuit		U _i		
Minimum switching capacity W 0.4 Control circuit	uuaurauc summation current		A ²	$72 A^{2} (I_{TH}^{2} = I_{1}^{2} + I_{2}^{2})$
Control circuit	Inrush current		Α	min - max 0.025 - 6
			W	0.4
Power supply circuit				
	Power supply circuit			

AC operated 50/60 Hz		W	3
DC operated		W	1.5
Fuse for control circuit supply			
24 V			short-circuit proof
Input data			onore on our proof
Rated current		mA	S11, S21:60, Y2:45
Current consumption		mA	AC: 125 DC: 60
Voltage at input, starting and feedback circuit		V DC	Approx. 24
Max. resistive load of the cable	R	Ω	≤ 22
Short-circuit current		Α	2.3
Pick-up time (K1, K2) for UN automatic mode, typical	t _A	ms	50
Pick-up time (K1, K2) for UN manual operation, typical	t _A	ms	50
Pick-up time	7	ms	at Ue in automatic mode: normally 50
			at Ue in manual mode: normally 50
Reset time (K1, K2) for U_N , normally	t _R	ms	20
Recovery time	t_{W}	ms	Approx. < 1000
Simultaneity for inputs 1/2	t _{sync}	ms	< 500
Maximum permissible total cable resistance (input and starting circuits for UN)	R_{L}	Ω	50
Maximum switching frequency		Hz	0.5
Status indication			Green LED
Output data			
Contact type			
Non-delayed enable current paths			2
Non-delayed signal current path			1
Switching voltage			min – max 15 - 250 V AC 15 - 250 V DC
Limiting continuous current		Α	per N/0: 6 N/C: 6
Short-circuit protection for output circuits, external			Fuse 6 A gL/gG
Output fuse			
NEOZED (N/O)		gL/gG	10
NEOZED (N/C)		gL/gG	6
Maximum breaking power			
Resistive load ($\tau = 0 \text{ ms}$)			
24 V DC		W	144
48 V DC		W	288
110 V DC		W	110
220 V DC		W	88
250 V AC		VA	1500
Inductive load (τ = 40 ms)			
24 V DC		W	42
48 V DC		W	42
110 V DC		W	42
220 V DC		W	42
Switching capacity			
			In accordance with IEC 60947-5-1
AC-15			F.A.b.; 00000/b
230 V		Α	5 A bei 3600S/h
DC-13			E.A.L.:00000//
24 V		Α	5 A bei 3600S/h
Further information (flip catalog)			description
Electromagnetic compatibility (EMC) Emitted interference			In accordance with EN 61000-6-4
Interference immunity			according to EN 61000-6-2
morrorous minumey			30001ding to Lit 01000 0 2

Design verification as per IEC	:/EN 61	1439
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Technical data for design verification

Rated operational current for specified heat dissipation	In	Α	0
Heat dissipation per pole, current-dependent	P _{vid}	W	0
Equipment heat dissipation, current-dependent	P _{vid}	W	0
Static heat dissipation, non-current-dependent	P _{vs}	W	5.16
Heat dissipation capacity	P _{diss}	W	0
Operating ambient temperature min.		°C	-20
Operating ambient temperature max.		°C	55
IEC/EN 61439 design verification			
10.2 Strength of materials and parts			
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.
$10.2.3.3\ Verification\ of\ resistance\ of\ insulating\ materials\ to\ abnormal\ heat\ and\ fire\ due\ to\ internal\ electric\ effects$			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 Insulation properties			
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			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 switch gear must be observed. $\label{eq:constraint}$
10.12 Electromagnetic compatibility			Is the panel builder's responsibility. The specifications for the switch gear must be observed. $\label{eq:constraint}$
10.13 Mechanical function			The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

Technical data ETIM 8.0

Relays (EG000019) / Two-hand control relay (EC001452)

Electric engineering, automation, process control engineering / Low-voltage switch technology / Monitoring equipment (low-voltage switch technology) / Two-hand switchgear (eci@ss10.0.1-27-37-18-21 [ACO306011])

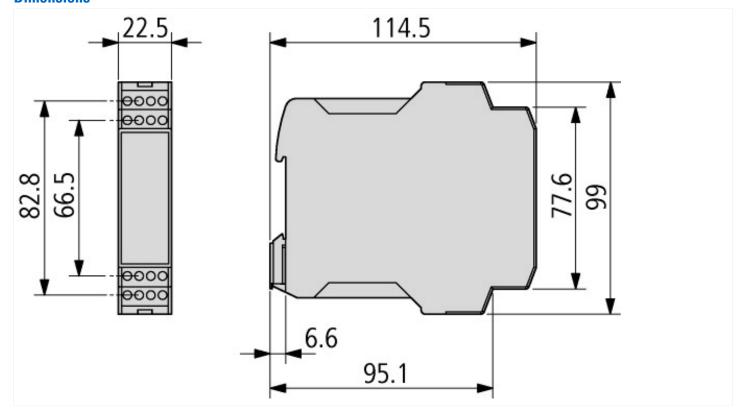
(ecl@ss10.0.1-27-37-18-21 [ACO306011])		ming oquipment flow voltage owner technology// two name owneriged
Type of electric connection		Screw connection
Rail mounting possible		Yes
Rated control supply voltage Us at AC 50HZ	V	0 - 24
Rated control supply voltage Us at AC 60HZ	V	20.4 - 24
Rated control supply voltage Us at DC	V	0 - 24
Voltage type for actuating		AC/DC
With detachable clamps		Yes
Type of switch function of the inputs		Normally closed contact and normally open contact
With feedback circuit		Yes
With start input		No
Number of outputs, safety related, undelayed, with contact		2
Number of outputs, safety related, delayed, with contact		0
Number of outputs, safety related, undelayed, semiconductors		0
Number of outputs, safety related, delayed, semiconductors		0

Number of outputs, signalling function, undelayed, with contact		1
Number of outputs, signalling function, delayed, with contact		0
Number of outputs, signalling function, undelayed, semiconductors		0
Number of outputs, signalling function, delayed, semiconductors		0
Suitable for safety functions		Yes
Type class for safety demands according to EN 574		Type III C
SIL according to IEC 61508		3
Performance level according to EN ISO 13849-1		Level e
With approval for BG BIA		No
With approval according to UL		Yes
Width	mm	22.5
Height	mm	99
Depth	mm	114.5
With approval for TÜV		Yes

Approvals

Product Standards	IEC/EN see Technical Data; UL 508; CSA-C22.2 No. 14-95; CE marking
UL File No.	E29184
UL Category Control No.	NKCR; NKCR7
CSA File No.	UL report applies to both US and Canada
CSA Class No.	3211-83; 3211-03
North America Certification	UL listed, certified by UL for use in Canada
Degree of Protection	IEC: IP20, UL/CSA Type: -

Dimensions



Additional product information (links)

IL05013030Z operator manual for electricians	
IL05013030Z operator manual for electricians	https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL05013030Z2018_06.pdf
Manual ESR5-NZ-21-24VAC/DC MN049004	
Manual ESR5-NZ-21-24VAC/DC MN049004 - Deutsch	https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN049004_DE.pdf
Manual ESR5-NZ-21-24VAC/DC MN049004 - English	https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN049004_EN.pdf
description	http://de.ecat.moeller.net/flip-cat/?edition=HPLTE&startpage=13.15

http://www.eaton.eu/esr5