DATASHEET - ETS4-VS3



Amplifier module, for separate mounting

Part no. ETS4-VS3 Catalog No. 083094



Delivery program

Delivery program			
Rated operational current			
AC-15			
240 V	I _e	Α	2
415 V	I _e	Α	2
DC			
Notes			Switch-on and switch-off conditions based on DC-13, time constant as specified.
DC-13 L/R - 300 ms			
220 V			
220 V	I _e	Α	0.03
Actuating voltage	U_{s}	V DC	24
Actuating current	I	mA	25
Contact sequence			+ 21 13 + 21 13 - 22 14
For use with			DILM DILMP DILL DILK DILK DILMF As required
Description			Input with built-in suppressor circuit for overvoltage limitation
Instructions Contactor coils with rated operational current > 2 A	must be actuated via the DILEF	R-G mini co	ntactor relay.

Technical data

General

General			
Standards			IEC/EN 60947, VDE 0660, UL, CSA
Lifespan, mechanical			
DC operated	Operations	x 10 ⁶	30
Maximum operating frequency		0ps./h	
DC operated	Operations	x 10 ⁶	72000
Climatic proofing			Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclic, to IEC 60068-2-30
Ambient temperature			
Open		°C	-25 - +60
Enclosed		°C	- 25 - 45
Mounting position			As required
Mechanical shock resistance (IEC/EN 60068-2-27)			
Half-sinusoidal shock, 20 ms		g	
N/O contact		g	10
Degree of Protection			IP20
Protection against direct contact when actuated from front (EN 50274)			Finger and back-of-hand proof
Weight		kg	0.09
Terminal capacities		mm^2	
Notes			Only use equal cross-sections.

Residu sent formatic Beakels with formic Gealed or stranded Auto 1	Solid		2	1 x (0.75 - 2.5)
Suid or summeded	Sullu		mm ²	
Tender serowiniver	Flexible with ferrule		mm ²	1 x (0.75 - 2.5) 2 x (0.75 - 1.5)
Peachins circurdiner SER SER 2 Standard Serverdiner 18.18.5 18.18.5 Max. Igalizating Locales UN 1.2 Contacts: Contacts: UN VAC 400 Read organization violage U, VAC 49.4 AC-15 U VAC 49.4 AC-15 U VAC 2.2 20 V 23D V 24D V I A 2.2 DC-13 LR-15 ms VA X 2.2 DC-14 LR-15 ms X X 2.2 Contacts in series: X X 2.2 DC-13 LR-15 ms X X 2.2 Contacts in series: X X 2.2 DC-13 LR-15 ms X X 2.2 Contacts in seri	Solid or stranded		AWG	
Standard a crewdiver War 1 Standard sequence War 1	Terminal screw			M3.5
New Bulletings to request 10	Pozidriv screwdriver		Size	2
Manual Englishering sorques 19	Standard screwdriver		mm	0.8 x 5.5
Contacts Ump VAC 000 Concerning cartegory/collision degree U, VAC 400 Rated controllage U, VAC 400 Rated controllage U, VAC 400 Rated controllage U, VAC 400 AC-15 AC-15 VAC 200 200 V200 V30 V19 V U, AC 2 DC-13 VR-15 ms VAC AC 2 Contracts in merics VAC AC 2 1 1 28 V A 2 1 1 100 V A 06 1 1 100 V A 08 1 1 100 V A 06 1 1 100 V A 06 </td <td>Martinharia</td> <td></td> <td>N</td> <td></td>	Martinharia		N	
Rated imputes withstand voltage Use VAC 0000 Certotiage caregory/polition of legree Us VAC 40 Rated operational voltage Us VAC 400 Rated operational voltage Us VAC 400 AC-15 CAC-15 CAC-19 CAC-19 CAC-19 DC-13 DC-15 CAC-19 CAC-19 CAC-19 DC-13 TAC-15 ms AC CAC-19 CAC-19 CAC-19 CAC-19 1 1 AC AC CAC-19 CA			NM	1.2
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Rated insulation voltage U		Оппр		
Rated operational current U _a V Med AC AC-15 1 A 2 220 V260 V240 V 1 _c A 2 380 V400 V415 V 1 _c A 2 DC-13 URS 15ms A 2 Contacts in series: A 1 1 60 V A 1 1 10 V A 1 1 10 V A 1 1 10 V A 2 1 10 V A 2 1 220 V A 2 1 220 V A 2 1 20 V A 2 1 10 V A 0.6 1 <td></td> <td>11:</td> <td>VΔC</td> <td></td>		11:	VΔC	
Ratio operational current				
AC-15 220 V 240 V 240 V 340 V 345 V				440 AC
1		l _e	А	
S80 V 450 V 415 V				
DC-13 DC-13 U/R - 15 ms Contacts in series:				
DC-13 L/R - 15 ms Contracts in series:		le	Α	2
Contacts in series:				
1	DC-13 L/R - 15 ms			
1	Contacts in series:		Α	
1	1	24 V	Α	2.6
1	1	60 V	Α	
DC LN = 50 ms	1	110 V	Α	0.6
Contacts in series:	1	220 V	Α	0.2
1	DC L/R ≦ 50 ms			
1 10 60 V A 0.6 1 110 V A 0.08 DC-13 L/R-300 ms Contacts in series: A 0.8 1 24 V A 0.8 1 1 60 V A 0.8 1 1 24 V A 0.8 1 1 20 V A 0.8 1 1 20 V A 0.8 Control circuit reliability Failure rate λ <00 d - 0.03 Control circuit reliability Failure rate λ <00 d - 0.03 Control circuit reliability Failure rate λ 10 d - 0.03 Control circuit reliability Conventional thermal current In A 6 Component lifespan AC-15 230 V, I ₀ = 0.1 A 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Contacts in series:		Α	
1 110 V A 0.08 1 220 V A 0.08 DC-13 L/R - 300 ms Contacts in series: A 0.6 1 24 V A 0.6 1 1 60 V A 0.2 1 110 V A 0.08 1 10 V A 0.08 Control circuit reliability Failure rate λ <10 ⁸ , < one failure at 100 million operations Conventional thermal current In 0 V A 0.08 Component lifespan AC-15 220 V A 0.03 Control circuit reliability Component lifespan AC-15 220 V I ₀ = 0.1 A 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1	24 V	Α	2
1 DC-13 L/R - 300 ms Contacts in series: A 1 1 24 V A 0.6 1 60 V A 0.2 1 110 V A 0.03 Control circuit reliability Conventional thermal current Component lifespan AC-15 230 V, I ₀ = 0.1 A 0perations AC-15 230 V, I ₀ = 0.1 A 0perations Short-circuit rating without welding Short-circuit protection maximum fuse 500 V A fast 4 Magnet systems Voltage tolerance Pick-up voltage DC operated Pick-up voltage DC operated Pck-up voltage Pck-up voltage Pck-up voltage Pck-up voltage Pck-up voltage Pck-up consumption DC operated Pull-in = W 0.6	1	60 V	Α	0.6
DC-13 L/R - 300 ms Contacts in series:	1	110 V	Α	0.08
Contacts in series: 1	1	220 V	Α	0.08
1 24V A 0.6 1 60V A 0.2 1 110V A 0.08 1 220V A 0.03 Control circuit reliability Failure rate λ < 10°3 , cone failure at 100 million operations Conventional thermal current	DC-13 L/R - 300 ms			
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1 110 V A 0.08 1 220 V A 0.03 Control circuit reliability Failure rate λ <10.8, < one failure at 100 million operations Conventional thermal current Ith A 6 Component lifespan AC-15 230 V, I _e = 0.1 A Operations x 10.6 7 230 V, I _e = 1.2 A Operations x 10.6 1 Short-circuit rating without welding Short-circuit protection maximum fuse 500 V A fast 4 Magnet systems Voltage tolerance Pick-up voltage DC operated Pick-up x U _c 0.85 - 1.2 Power consumption DC operated Pull-in = W 0.6	1	24 V	Α	0.6
1 220 V A 0.03 Control circuit reliability Failure rate λ <10 ° 4, < one failure at 100 million operations Conventional thermal current Ligh A 6 Component lifespan AC-15 230 V, I _e = 0.1 A Operations x 10 ° 7 230 V, I _e = 1.2 A Operations x 10 ° 1 Short-circuit rating without welding Short-circuit protection maximum fuse 500 V A fast 4 Magnet systems Voltage tolerance Pick-up voltage DC operated Pick-up x U _c Power consumption DC operated Pull-in = W 0.6	1	60 V	Α	0.2
Control circuit reliability Conventional thermal current Ith A 6 Component lifespan AC-15 230 V, I _e = 0.1 A 230 V, I _e = 1.2 A Operations Short-circuit rating without welding Short-circuit protection maximum fuse 500 V Magnet systems Voltage tolerance Pick-up voltage DC operated Pick-up Pick-up Pick-up Pick-up Pick-up Voltage Power consumption	1	110 V	Α	0.08
Conventional thermal current th	1	220 V	Α	0.03
Component lifespan AC-15 230 V, I _e = 0.1 A Operations x 10 ⁶ 7 230 V, I _e = 1.2 A Operations x 10 ⁶ 1 Short-circuit rating without welding Short-circuit protection maximum fuse 500 V A fast 4 Magnet systems Voltage tolerance Pick-up voltage DC operated Pick-up x U _c Pick-up x U _c Pick-up x U _c Oss 5-1.2 Power consumption DC operated Pull-in = W 0.6	Control circuit reliability	Failure rate	λ	<10 ⁻⁸ , < one failure at 100 million operations
AC-15 $230 \text{ V, } I_{\text{e}} = 0.1 \text{ A} \qquad 0 \text{ perations} \times 10^{6} 7$ $230 \text{ V, } I_{\text{e}} = 1.2 \text{ A} \qquad 0 \text{ perations} \times 10^{6} 1$ Short-circuit rating without welding $5 \text{ hort-circuit protection maximum fuse}$ $500 \text{ V} \qquad \text{A fast} 4$	Conventional thermal current	I _{th}	Α	6
230 V, I _e = 0.1 A 230 V, I _e = 1.2 A Operations x 10 ⁶ Short-circuit rating without welding Short-circuit protection maximum fuse 500 V Magnet systems Voltage tolerance Pick-up voltage DC operated Pick-up x U _c Pick-up x U _c Pick-up x U _c Power consumption DC operated Pull-in = W 0 Derations x 10 ⁶ 7 A fast 4	Component lifespan			
230 V, I _e = 1.2 A Operations x 10 ⁶ Short-circuit rating without welding Short-circuit protection maximum fuse 500 V A fast 4 Magnet systems Voltage tolerance Pick-up voltage DC operated Pick-up x U _c Pick-up x U _c Pick-up x U _c O.85 - 1.2 Power consumption DC operated Pull-in = W Operations x 10 ⁶ 1	AC-15			
230 V, I _e = 1.2 A Operations x 10 ⁶ Short-circuit rating without welding Short-circuit protection maximum fuse 500 V A fast 4 Magnet systems Voltage tolerance Pick-up voltage DC operated Pick-up Pick-up Pick-up VU _c Pick-up 0.85 - 1.2 Power consumption DC operated Pull-in = W 0.6	230 V, $I_e = 0.1 A$	Operations	x 10 ⁶	7
Short-circuit rating without welding Short-circuit protection maximum fuse 500 V A fast 4 Magnet systems Voltage tolerance Pick-up voltage DC operated Pick-up Pick-up VU _c Pick-up	230 V, I _e = 1.2 A	Operations		1
Short-circuit protection maximum fuse 500 V			10	
500 V A fast 4 Magnet systems Voltage tolerance X Us X Us Pick-up voltage X Uc X Uc Pick-up X Uc 0.85 - 1.2 Power consumption Pull-in = W 0.6				
Magnet systems Voltage tolerance x U _s Pick-up voltage x U _c DC operated Pick-up x U _c Pick-up x U _c 0.85 - 1.2 Power consumption Pull-in = W 0.6			A fast	4
Pick-up voltage $ \begin{array}{ccccccccccccccccccccccccccccccccccc$	Magnet systems		, , iust	
DC operated $ \begin{array}{ccccccccccccccccccccccccccccccccccc$	Voltage tolerance			
Pick-up $\times U_c$ 0.85 - 1.2 Power consumption $DC \ operated \ Pull-in = W \ 0.6$	Pick-up voltage		$x U_s$	
Power consumption DC operated Pull-in = W 0.6	DC operated	Pick-up	x U _c	
DC operated Pull-in = W 0.6		Pick-up	x U _c	0.85 - 1.2
DC operated Pull-in = W 0.6 sealing	Power consumption			
	DC operated		W	0.6
duty factor % DF 100	duty factor		% DF	100

Changeover time at 100 % U_{S} (recommended value)			
DC operated closing delay	n	ms	
Switching times, DC operated, max. closing delay	n	ms	7
DC operated, opening delay	n	ms	3

Notes

Notes For rated operational current: Making and breaking conditions to DC-13, L/R constant as stated Max. fuses for short-circuit protection: Transparent overlay "Fuses" for time/current characteristics (please enquire) For pick-up voltage, DC operated:Pure DC, AC bridge rectifier or smoothed double-wave rectification. For connection cross section: only use equal cross-sections

Rating data for approved types

Auxiliary contacts	
Pilot Duty	
AC operated	B300

Design verification as per IEC/EN 61439

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	0.47
Heat dissipation capacity	P _{diss}	W	0
Operating ambient temperature min.		°C	-25
Operating ambient temperature max.		°C	60
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 switchgear must be observed.
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 6.0

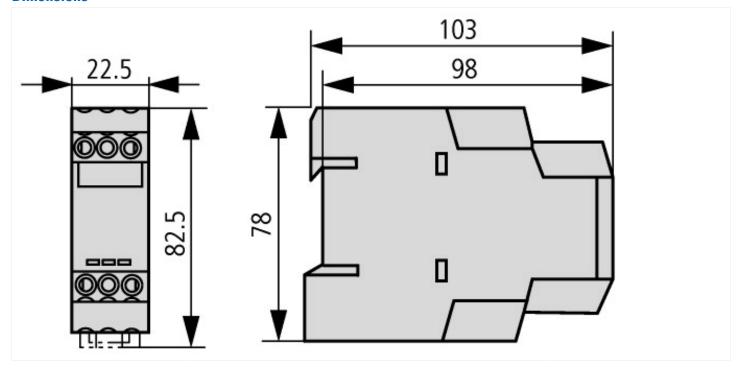
Low-voltage industrial components (EG000017) / Amplifier module for contactor (EC000198)			
Electric engineering, automation, process control engineering / Low-voltage switch technology / Contactor (LV) / Amplifier module for contactor (ecl@ss8.1-27-37-10-11 [AKF020010])			
Type of set-up	Separate positioning		
With integrated suppressor	Yes		

Rated operation current le at DC-13, 230 V	А	0
Rated operation current le at AC-15, 230 V	А	2
Rated control supply voltage Us at AC 50HZ	V	0 - 0
Rated control supply voltage Us at AC 60HZ	V	0 - 0
Rated control supply voltage Us at DC	V	24 - 24
Voltage type for actuating		DC

Approvals

Product Standards	IEC/EN 60947-4-1; UL 508; CSA-C22.2 No. 14-05; CE marking
UL File No.	E29184
UL Category Control No.	NKCR
CSA File No.	012528
CSA Class No.	2411-03, 3211-04
North America Certification	UL listed, CSA certified
Specially designed for North America	No

Dimensions



Additional product information (links)

Motor starters and "Special Purpose Ratings" for the North American market	http://www.eaton.eu/ecm/groups/public/@pub/@europe/@electrical/documents/content/pct_3258146.pdf
Switchgear of Power Factor Correction Systems	http://www.moeller.net/binary/ver_techpapers/ver934en.pdf
X-Start - Modern Switching Installations Efficiently Fitted and Wired Securely	http://www.moeller.net/binary/ver_techpapers/ver938en.pdf
$\label{lem:mirror contacts} \mbox{Mirror Contacts for Highly-Reliable Information Relating to Safety-Related Control Functions}$	http://www.moeller.net/binary/ver_techpapers/ver944en.pdf
Effect of the Cabel Capacitance of Long Control Cables on the Actuation of Contactors	http://www.moeller.net/binary/ver_techpapers/ver949en.pdf
Switchgear for Luminaires	http://www.moeller.net/binary/ver_techpapers/ver955en.pdf
Standard Compliant and Functionally Safe Engineering Design with Mechanical Auxiliary Contacts	http://www.moeller.net/binary/ver_techpapers/ver956en.pdf
The Interaction of Contactors with PLCs	http://www.moeller.net/binary/ver_techpapers/ver957en.pdf
Busbar Component Adapters for modern Industrial control panels	http://www.moeller.net/binary/ver_techpapers/ver960en.pdf