DATASHEET - ETR4-51-A



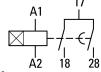
Timing relay, star-delta, 50 ms, 1W, 3-60s, 24-240VAC/DC

Powering Business Worldwide*

Part no. ETR4-51-A
Catalog No. 031884
Eaton Catalog No. XTTR6A60S51B
EL-Nummer 0004133308
(Norway)

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Product range			ETR4 timing relays
Basic function			Timer relays
Function			Star-delta switching
			Changeover contact with a changeover time of 50 ms Fixed timing function
Number of changeover contacts			1
Time range			3 - 60 s
Time range			3 - 60 s
Rated operational current			
AC-14			
300 V	I _e	Α	3
380 V 400 V 415 V	I _e	Α	3
			Value applies starting with release 001.
AC-15			
220 V 230 V 240 V	le	Α	3
300 V	I _e	Α	3
380 V 400 V 415 V	I _e	Α	3
			Value applies starting with release 001.
Voltage range	U_{LN}	V	24 - 240 V AC, 50/60 Hz 24 – 240 V DC
Width		mm	22.5



Terminal marking according to EN 50042

Technical data

General

delleral			
Standards			Standard IEC/EN 61812 VDE 0435
Lifespan, mechanical			
AC operated	Operations	x 10 ⁶	30
DC operated	Operations	x 10 ⁶	30
Climatic proofing			Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclic, to IEC 60068-2-30
Ambient temperature			
Ambient temperature, storage		°C	- 45 - + 85
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	
Make contact		g	4
Degree of protection			
Terminals			IP20

	Weight		kg	0.1
Rebulb with ferruib Solid or stranded	Terminal capacities		mm ²	
Solid or stranded	Solid		mm ²	
Contacts Vac 1000 4000 Contact impulses withstand valtages 4000 Contact impulses starting with release 801. Contact impulses starting with release 801. <td>Flexible with ferrule</td> <td></td> <td>mm²</td> <td>1 x (0.5 - 2.5) 2 x (0.5 - 1.5)</td>	Flexible with ferrule		mm ²	1 x (0.5 - 2.5) 2 x (0.5 - 1.5)
Rated impulses withstand voltage Ump VAC 000 Convoltage category/pullution degree Ump VAC and pulses starting with release QO1. Rated insulations voltage Ump VAC INC Rated insulations voltage Ump VAC 300 Rated persistantive lostage Ump VAC 300 Rated operational voltage Ump VAC 300 Self insulation to RNA140 Ump VAC 300 Determent near all and subling contacts VAC 20 200 Determent near all subling contacts VAC 20 20 AC-14 coce = 0.3400 V VAC 20 20 AC-15 coce = 0.3220 V A 3 3 AC-16 coce = 0	Solid or stranded		AWG	1 x (20 - 14)
Part	Contacts			
New Part 1972 197	Rated impulse withstand voltage	U_{imp}	V AC	4000
Description of page of Ration includion voltage U, VAC (account of Notice (account of	Rated impulse withstand voltage	U_{imp}	V AC	6000
Rated insulation voltage U _I V AC 80 Rated insulation voltage U _I V AC 30 Rated operational voltage U _I V AC 40 Rated operational voltage U _I V AC 40 Rated operational voltage U _I V AC 40 Rated operational voltage U _I V AC 20 Return contained auxiliary contacts V AC 20 between coal and auxiliary contacts V AC 20 Making capacity V AC 20 AC-14 case y= 0.03 x80 V AC AC AC-15 case y= 0.3 x80 V AC AC AC-16 case y= 0.3 x80 V AC AC AC-16 case y= 0.03 x80 V AC AC AC-14 case y= 0.03 x80 V AC AC AC-17 case y= 0.03 x80 V AC AC AC-14 case y= 0.03 x80 V <				Value applies starting with release 001.
Rated persional voltage U _B VAC voltage 800 Rated operational voltage U _B VAC voltage 440 Rated operational voltage U _B VAC voltage 440 Side calculator to NB1140 VAC voltage pelles starting with release 001. 200 between the auxiliary contacts VAC voltage pelles starting with release 001. 200 Making capacity VAC voltage pelles starting with release 001. 200 AC1-15 cos = 0.3 400 V AC voltage pelles starting with release 001. 200 AC1-15 cos = 0.3 400 V AC voltage pelles starting with release 001. 200 AC1-15 cos = 0.3 400 V AC voltage pelles starting with release 001. 200 AC1-15 cos = 0.3 400 V AC voltage pelles starting with release 001. 200 AC1-15 cos = 0.3 400 V AC voltage pelles starting with release 001. 200 AC1-16 cos = 0.3 400 V AC voltage pelles starting with release 001. 200 AC1-14 30 3 AC2-14 400 V 400 V 3 AC-14 400 V 400 V 400 V 400 V AC-14	Overvoltage category/pollution degree			III/2
Nation of permitional voltage	Rated insulation voltage	U_{i}	V AC	400
Rated aperational voltage U _e VAC 300 Rated aperational voltage U _e VAC 440 applies starting with release 001. Safe solidion to EN 61140 VAC 250 between coil and auxiliary contacts VAC 250 Making capacity A 49 AC-14 cos e = 0.3 200 V A 49 AC-15 cos e = 0.3 220 V A 50 DC-11 UR- 40 ns I A AC-15 cos e = 0.3 220 V A 3 AC-16 cos e = 0.3 220 V A 3 AC-15 cos e = 0.3 220 V A 3 AC-15 cos e = 0.3 220 V A 3 AC-16 cos e = 0.3 220 V A 3 AC-15 cos e = 0.3 220 V A 3 AC-15 cos e = 0.3 220 V A 3 AC-15 cos e = 0.3 220 V A A AC-14 I A 440 V A A AC-14 A A 440 V A A AC-15 cos e = 0.3 220 V	Rated insulation voltage	U_{i}	V AC	600
Rated operational voltage				Value applies starting with release 001.
	Rated operational voltage	U _e	V AC	300
Sale isolation to EN \$1140 VAC 259 between the auxiliary contacts VAC 250 Making capacity AC-14 cos e = 0.3 220 V A 48 AC-15 cos e = 0.3 220 V A 50 DC-11 L/R - 40 ms A 50 Breaking capacity A 3 AC-14 cos e = 0.3 220 V A 3 AC-14 do ms A 3 AC-14 do ms A 3 AC-14 do ms A 3 AC-14 I _e A 3 AC-15 20 V 230 V 240 V I _e A 3 AC-15 20 V 230 V 240 V I _e A 1.5 Note I _e A 1.5 I _e A 1.5 I _e A 1.5	Rated operational voltage	U _e	V AC	440
between coil and auxiliary contacts between the auxiliary contacts Making capacity AC-14 cos ♥ = 0.3 440 V AC				Value applies starting with release 001.
Naking capacity	Safe isolation to EN 61140			
Making capacity A	between coil and auxiliary contacts		V AC	250
AC-14	between the auxiliary contacts		V AC	250
AC-15 cos φ = 0.3 220 V DC-11 L/R - 40 ms	Making capacity			
DC-11 L/R - 40 ms	$AC\text{-}14\cos\phi=0.3\ 400\ V$		Α	48
Breaking capacity AC-14 cos φ = 0.3 440 V A 3 AC-15 cos φ = 0.3 220 V A 3 DC-11 L/R - 40 ms x l ₀ 1.1 Rated operational current l ₀ A AC-14 380 V 400 V 415 V l ₀ A 3 AC-14 440 V l ₀ A 3 AC-14 440 V l ₀ A 3 AC-15 220 V 230 V 240 V l ₀ A 3 DC-11 Note L/R max. 15 ms A L/R max. 15 ms A 24 V l ₀ A 1.5 L/R max. 50 ms A 1.2 Conv. thermal current l ₀ A 6 Short-circuit rating without welding When supplied directly from mains or transformer > 1000 VA Max. fuse, break contacts A gG/gL 6 Max. fuse, break contacts A gG/gL 6 Max. covercurrent protective device, 220/230 V Type FAZ-B4/I-HI	AC-15 $\cos \varphi = 0.3 \ 220 \ V$		Α	50
AC-14 cos φ = 0.3 440 V AC-15 cos φ = 0.3 220 V DC-11 L/R -40 ms Rated operational current AC-14 380 V 400 V 415 V Ig AC-15 220 V 230 V 240 V DC-11 Note L/R max. 15 ms 24 V L/R max. 50 ms 24 V L/R max. 50 ms Conv. thermal current Ig AC-14 Ig A A 3 Value applies starting with release 001. Making and breaking conditions to DC13, time constant as stated L/R max. 50 ms AC-15 AC-16 AC-17 AC-18 AC-18 AC-18 AC-19 BA AC-19 BA AC-19 BA AC-19 BA	DC-11 L/R - 40 ms		x I _e	1.1
AC-15 cos q = 0.3 220 V DC-11 L/R - 40 ms Rated operational current AC-14 380 V 400 V 415 V Le AC-14 440 V AC-15 220 V 230 V 240 V DC-11 Note L/R max. 15 ms 24 V L/R max. 50 ms Conv. thermal current Note AC-14 AC-15 AC-15 AC-15 AC-16 AC-16 AC-17 AC-18 AC-18 AC-18 AC-18 AC-18 AC-18 AC-19 AC-10 AC-19 AC-19	Breaking capacity			
DC-11 L/R - 40 ms	AC-14 cos ϕ = 0.3 440 V		Α	3
Rated operational current	AC-15 $\cos \phi = 0.3 \ 220 \ V$		Α	3
AC-14	DC-11 L/R - 40 ms		x I _e	1.1
Box A 3 Value applies starting with release 001.	Rated operational current	I _e	Α	
Value applies starting with release 001. AC14 440 V Ie A 3 AC-15 220 V 230 V 240 V Ie A 3 DC-11 Note Making and breaking conditions to DC13, time constant as stated L/R max. 15 ms A 1.5 L/R max. 50 ms A 1.2 Conv. thermal current Iuh A 6 Short-circuit rating without welding Note When supplied directly from mains or transformer > 1000 VA Max. fuse, make contacts A gG/gL 6 Max. overcurrent protective device, 220/230 V Type FAZ-B4/1-HI Magnet systems	AC-14	I _e		
AC14 440 V Ie AC-15 220 V 230 V 240 V Ie A Be A Be A Be A Be A Be A Be	380 V 400 V 415 V	I _e	Α	3
Add V				Value applies starting with release 001.
AC-15 220 V 230 V 240 V DC-11 Note L/R max. 15 ms A 24 V I _e A 1.5 L/R max. 50 ms A 1.2 Conv. thermal current Short-circuit rating without welding Note Max. fuse, make contacts Max. fuse, break contacts Max. overcurrent protective device, 220/230 V Magnet systems A 3 Making and breaking conditions to DC13, time constant as stated A 4 A 5 A 4 B A 1.5 A 6 When supplied directly from mains or transformer > 1000 VA A gG/gL 6 Type FAZ-B4/1-HI	AC14			
DC-11 Note L/R max. 15 ms A L/R max. 50 ms L/R max. 50 ms L/R max. 50 ms A Short-circuit rating without welding Note Max. fuse, make contacts Max. fuse, break contacts Max. overcurrent protective device, 220/230 V Magnet systems Making and breaking conditions to DC13, time constant as stated A 1.5 A 1.5 A 6 When supplied directly from mains or transformer > 1000 VA A gG/gL 6 Type FAZ-B4/1-HI Magnet systems	440 V	I _e	Α	3
DC-11 Note L/R max. 15 ms A 24 V I _e A 1.5 L/R max. 50 ms A 1.2 Conv. thermal current I _{th} A 6 Short-circuit rating without welding Note Max. fuse, make contacts Max. fuse, break contacts Max. overcurrent protective device, 220/230 V Magnet systems Making and breaking conditions to DC13, time constant as stated A Making and breaking conditions to DC13, time constant as stated Mathod Short-circuit as stated Max. 1.5 A 6 When supplied directly from mains or transformer > 1000 VA A gG/gL 6 FAZ-B4/1-HI Magnet systems	AC-15			
Note L/R max. 15 ms A 24 V L/R max. 50 ms A 1.2 Conv. thermal current L/h A 6 Short-circuit rating without welding Note When supplied directly from mains or transformer > 1000 VA Max. fuse, make contacts Max. fuse, break contacts A gG/gL A gG/gL A gG/gL A gG/gL A gG/gL A gG/gL Max. overcurrent protective device, 220/230 V Magnet systems	220 V 230 V 240 V	I _e	Α	3
L/R max. 15 ms 24 V 1e A 1.5 L/R max. 50 ms A 1.2 Conv. thermal current Short-circuit rating without welding Note Max. fuse, make contacts Max. fuse, break contacts Max. overcurrent protective device, 220/230 V Magnet systems A 1.2 When supplied directly from mains or transformer > 1000 VA A gG/gL 6 Type FAZ-B4/1-HI Magnet systems	DC-11			
L/R max. 50 ms A 1.2 Conv. thermal current Ith Note Max. fuse, make contacts Max. overcurrent protective device, 220/230 V Magnet systems A 1.2 When supplied directly from mains or transformer > 1000 VA A gG/gL A gG/gL Type FAZ-B4/1-HI Magnet systems	Note			Making and breaking conditions to DC13, time constant as stated
L/R max. 50 ms A 1.2 Conv. thermal current Short-circuit rating without welding Note When supplied directly from mains or transformer > 1000 VA Max. fuse, make contacts A gG/gL Max. overcurrent protective device, 220/230 V Magnet systems	L/R max. 15 ms		Α	
Conv. thermal current Short-circuit rating without welding Note Max. fuse, make contacts Max. fuse, break contacts Max. overcurrent protective device, 220/230 V Magnet systems A 6 When supplied directly from mains or transformer > 1000 VA A gG/gL 6 Type FAZ-B4/1-HI Magnet systems	24 V	l _e	Α	1.5
Short-circuit rating without welding Note When supplied directly from mains or transformer > 1000 VA Max. fuse, make contacts A gG/gL Max. overcurrent protective device, 220/230 V Magnet systems When supplied directly from mains or transformer > 1000 VA A gG/gL 6 Type FAZ-B4/1-HI	L/R max. 50 ms		Α	1.2
Note When supplied directly from mains or transformer > 1000 VA Max. fuse, make contacts A gG/gL Max. fuse, break contacts A gG/gL Max. overcurrent protective device, 220/230 V Type FAZ-B4/1-HI Magnet systems	Conv. thermal current	I _{th}	Α	6
Max. fuse, make contacts A gG/gL Max. fuse, break contacts A gG/gL Max. overcurrent protective device, 220/230 V Type FAZ-B4/1-HI Magnet systems	Short-circuit rating without welding			
Max. fuse, break contacts A gG/gL Max. overcurrent protective device, 220/230 V Type FAZ-B4/1-HI Magnet systems	Note			When supplied directly from mains or transformer > 1000 VA
Max. overcurrent protective device, 220/230 V Magnet systems Type FAZ-B4/1-HI	Max. fuse, make contacts		A gG/gL	6
Magnet systems	Max. fuse, break contacts		A gG/gL	6
			Туре	FAZ-B4/1-HI
Power consumption				
	Power consumption		1/4	
Pick-up AC VA 2				
Sealing AC VA 2				
Pick-up DC W 1.8				
Sealing DC W 1.8				
Duty factor % DF 100	DULY IACTOI		70 UF	100

Maximum operating frequency		Ops/h	4000
Minimum command time			
AC		ms	50
DC		ms	30
Repetition accuracy (deviation)		%	≦ 0.5
Recovery time (after 100% time delay)		ms	70
Contact changeover time	t _u	ms	50

Electromagnetic compatibility (EMC)

	IEC/EN 61000-4-2
kV	8
kV	6
	IEC/EN 61000-4-3
V/m	80 - 1000 MHz: 10 1.4 - 2 GHz: 3 2.0 - 2.7 GHz: 1
	EN 55011, Class B (conducted) EN 55011, Class B (radiated)
kV	Supply cables: 2 Signal cables: 1 according to IEC/EN 61000-4-4
	2 kV (symmetrical) 4 kV (asymmetrical) according to IEC/EN 61000-4-5
V	10
	kV V/m kV

Design verification as per IEC/EN 61439

Design verification as per IEC/EN 61439			
Technical data for design verification			
Rated operational current for specified heat dissipation	In	Α	6
Heat dissipation per pole, current-dependent	P _{vid}	W	1.4
Equipment heat dissipation, current-dependent	P _{vid}	W	0
Static heat dissipation, non-current-dependent	P_{vs}	W	1.8
Heat dissipation capacity	P _{diss}	W	0
Operating ambient temperature min.		°C	-25
Operating ambient temperature max.		°C	60
EC/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 switchgear must be observed.
10.13 Mechanical function	The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

Technical data ETIM 7.0

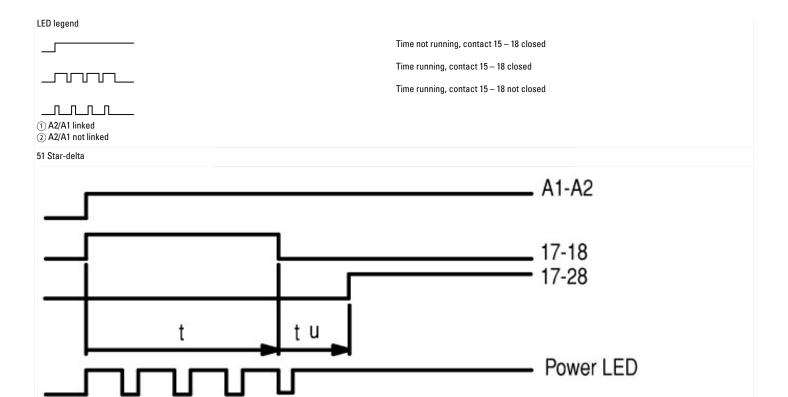
Technical data ETTIVI 7.0			
Relays (EG000019) / Timer relay (EC001439)			
Electric engineering, automation, process control engineering / Low-voltage	e switch technology /	Relay and	socket / Timed relay (ecl@ss10.0.1-27-37-16-05 [AKF092013])
Type of electric connection			Screw connection
Function delay-on energization			No
Function delay on de-energization			No
Function floating contact on energization			No
Function floating contact on de-energization			No
Function star-delta			Yes
Function pulse shaping			No
Function flashing, starting with pause, fixed time			No
Function flashing, starting with pulse, fixed time			No
Clock function, starting with pause, variable			No
Clock function, starting with pulse, variable			No
With plug-in socket			No
Remote operation possible			No
Suitable for remote control			No
Pluggable on auxiliary contact block			No
Rated control supply voltage Us at AC 50HZ		V	24 - 240
Rated control supply voltage Us at AC 60HZ		V	24 - 240
Rated control supply voltage Us at DC		V	24 - 240
Voltage type for actuating			AC/DC
Nominal current		Α	3
Time range		s	3 - 60
Number of outputs, undelayed, normally closed contact			0
Number of outputs, undelayed, normally open contact			1
Number of outputs, undelayed, change-over contact			0
Number of outputs, delayed, normally closed contact			0
Number of outputs, delayed, normally open contact			1
Number of outputs, delayed, change-over contact			0
Outputs, reversible delayed/undelayed			No
With semiconductor output			No
Suitable for DIN rail (top hat rail) mounting			Yes
Suitable for front mounting			No
Width		mm	23
Height		mm	83
Depth		mm	103

Approvals

Product Standards	IEC/EN 61812-1; IEC/EN 60947-5-1; UL 508; CSA-22.2 No. 14; CE marking
UL File No.	E29184
UL Category Control No.	NKCR
CSA File No.	12528
CSA Class No.	3211-03
North America Certification	UL listed, CSA certified
Degree of Protection	IEC: IP20, UL/CSA Type: -

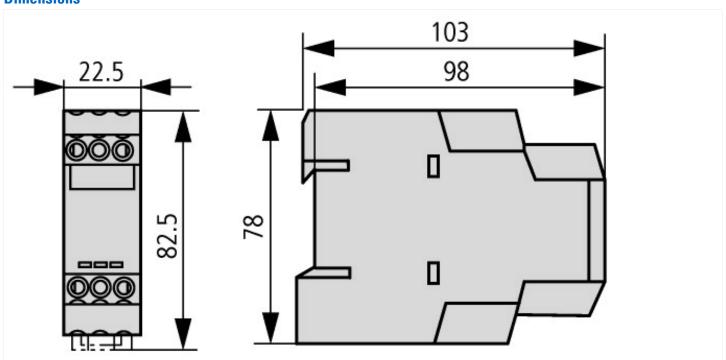
Characteristics

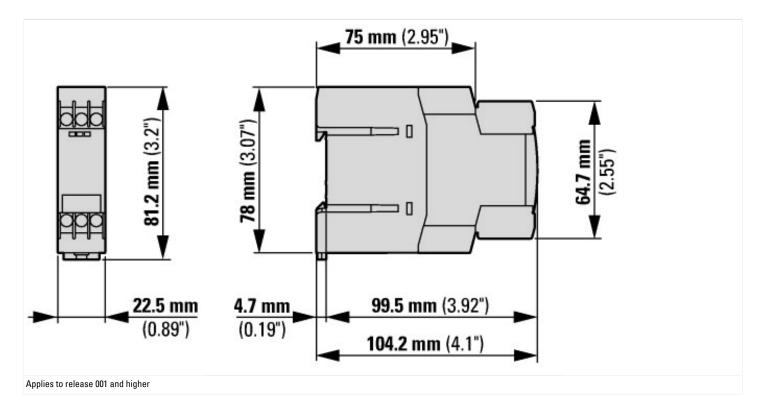
Flow diagram for timing functions



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Dimensions





Additional product information (links)

IL04910001Z (AWA2527-1485) Timing relay, star-delta relay, multifunction relay

IL04910001Z (AWA2527-1485) Timing relay, star-ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL04910001Z2018_05.pdf delta relay, multifunction relay