### **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
Alternate Catalog XTTR6A60S51B

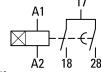
No.

EL-Nummer 0004133308

(Norway)

### **Delivery program**

Delivery program			
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 <sub>e</sub>	Α	3
380 V 400 V 415 V	I <sub>e</sub>	Α	3
			Value applies starting with release 001.
AC-15			
220 V 230 V 240 V	I <sub>e</sub>	Α	3
300 V	l <sub>e</sub>	Α	3
380 V 400 V 415 V	l <sub>e</sub>	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

General			
Standards			Standard IEC/EN 61812 VDE 0435
Lifespan, mechanical			
AC operated	Operations	x 10 <sup>6</sup>	30
DC operated	Operations	x 10 <sup>6</sup>	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 <sup>2</sup>	
Solid or stranded	Solid		mm <sup>2</sup>	
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>mm<sup>2</sup></td> <td>1 x (0.5 - 2.5) 2 x (0.5 - 1.5)</td>	Flexible with ferrule		mm <sup>2</sup>	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           Determent near all subling contacts         VAC         20         20           AC-14 cone = 0.3400 V         VAC         20         20           AC-15 cone = 0.3220 V         AC         30         30           AC-16 cone = 0.3400 V         AC         3         30           AC-16 cone = 0.3220 V         AC         AC         30           AC-16 cone = 0.3220 V         AC         AC         30           AC-16 cone = 0.3220 V         AC         AC         30	Solid or stranded		AWG	1 x (20 - 14)
Part	Contacts			
New Part   1972   197	Rated impulse withstand voltage	$U_{\text{imp}}$	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 <sub>I</sub> V AC         80           Rated insulation voltage         U <sub>I</sub> V AC         30           Rated operational voltage         U <sub>I</sub> V AC         40           Rated operational voltage         U <sub>I</sub> V AC         40           Rated operational voltage         U <sub>I</sub> V AC         40           Rated operational voltage         U <sub>I</sub> V AC         20           Return coal and auxiliary contacts         V AC         20           between coal and auxiliary contacts         V AC         20           Making capacity         V AC         20           AC-14 case y= 0.3 X20 V         AC         AC           AC-15 case y= 0.3 X20 V         AC         AC           AC-16 case y= 0.3 X20 V         AC         AC           AC-17 case y= 0.0 X20 V         AC         AC           AC-14 case y= 0.0 X20 V         AC         AC           AC-14 case y= 0.0 X20 V         AC         AC           AC-15 case y= 0.0 X20 V         AC <td></td> <td></td> <td></td> <td>Value applies starting with release 001.</td>				Value applies starting with release 001.
Rated persional voltage         U <sub>B</sub> VAC voltage         800           Rated operational voltage         U <sub>B</sub> VAC voltage         440           Rated operational voltage         U <sub>B</sub> VAC voltage         440           Safe solution to NB1140         VAC voltage starting with release 001.         200           between the auxiliary contacts         VAC voltage pleas starting with release 001.         200           Making capacity         VAC voltage pleas starting with release 001.         200           AC1-15 cos = 0.3 400 V         AC voltage pleas starting with release 001.         200           AC1-15 cos = 0.3 200 V         AC voltage pleas starting with release 001.         200           AC1-15 cos = 0.3 400 V         AC voltage pleas starting with release 001.         200           AC1-15 cos = 0.3 400 V         AC voltage pleas starting with release 001.         200           AC1-15 cos = 0.3 400 V         AC voltage pleas starting with release 001.         200           AC1-16 cos = 0.3 400 V         AC voltage pleas starting with release 001.         200           AC1-14         30         3           AC2-14         400 V         400 V         400 V           AC2-14         400 V         400 V         400 V           AC2-14         400 V         4	Overvoltage category/pollution degree			III/2
Nation of permitional voltage	Rated insulation voltage	$U_{i}$	V AC	400
Rated aperational voltage         U <sub>e</sub> VAC         300           Rated aperational voltage         U <sub>e</sub> VAC         440 applies starting with release 001.           Safe solution 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	Ui	V AC	600
Rated operational voltage				Value applies starting with release 001.
	Rated operational voltage	U <sub>e</sub>	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 ms         A         3           AC-14 do ms         A         3           AC-15 ms         A         3           AC-16 ms         A         3           AC-17 ms         A         3           AC-18 ms	Rated operational voltage	U <sub>e</sub>	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 <sub>0</sub> 1.1         Rated operational current       l <sub>0</sub> A         AC-14 380 V 400 V 415 V       l <sub>0</sub> A 3         AC-14 440 V       l <sub>0</sub> A 3         AC-14 440 V       l <sub>0</sub> A 3         AC-15 220 V 230 V 240 V       l <sub>0</sub> A 3         DC-11 Note L/R max. 15 ms       A 3         L/R max. 15 ms       A 1.5         L/R max. 50 ms       A 1.2         Conv. thermal current       l <sub>0</sub> A 5         Max. fuse, break contacts       A gG/gL 6         Max. fuse, break contacts       A g	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  L/R max. 50 ms  Note  Max. fuse, break contacts  Max. fuse, make contacts  Max. fuse, break contacts  A gG/gL  Fixe FAZ-B4/1-HI  Magnet systems	DC-11 L/R - 40 ms		x I <sub>e</sub>	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-10	Breaking capacity			
DC-11 L/R - 40 ms	AC-14 cos $\phi$ = 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 <sub>e</sub>	1.1
Box   A   3   Value applies starting with release 001.	Rated operational current	I <sub>e</sub>	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 <sub>e</sub>		
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 <sub>e</sub>	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 <sub>e</sub> 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  Magnet systems	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 <sub>e</sub>	Α	3
DC-11 Note L/R max. 15 ms A  24 V I <sub>e</sub> A 1.5  L/R max. 50 ms A 1.2  Conv. thermal current I <sub>th</sub> 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 <sub>e</sub>	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 <sub>e</sub>	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 <sub>th</sub>	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		0ps/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 <sub>u</sub>	ms	50

**Electromagnetic compatibility (EMC)** 

Electrostatic discharge (ESD)		
applied standard		IEC/EN 61000-4-2
Air discharge	kV	8
Contact discharge	kV	6
Electromagnetic fields (RFI)		
applied standard		IEC/EN 61000-4-3
	V/m	m 80 - 1000 MHz: 10 1.4 - 2 GHz: 3 2.0 - 2.7 GHz: 1
Radio interference suppression		EN 55011, Class B (conducted) EN 55011, Class B (radiated)
Burst	kV	Supply cables: 2 Signal cables: 1 according to IEC/EN 61000-4-4
power pulses (Surge)		2 kV (symmetrical) 4 kV (asymmetrical) according to IEC/EN 61000-4-5
Immunity to line-conducted interference to (IEC/EN 61000-4-6)	V	10

### **Design verification as per IEC/EN 61439**

Design verification as per IEC/EN 61439			
Fechnical data for design verification			
Rated operational current for specified heat dissipation	In	Α	6
Heat dissipation per pole, current-dependent	P <sub>vid</sub>	W	1.4
Equipment heat dissipation, current-dependent	P <sub>vid</sub>	W	0
Static heat dissipation, non-current-dependent	$P_{vs}$	W	1.8
Heat dissipation capacity	P <sub>diss</sub>	W	0
Operating ambient temperature min.		°C	-25
Operating ambient temperature max.		°C	60
C/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**

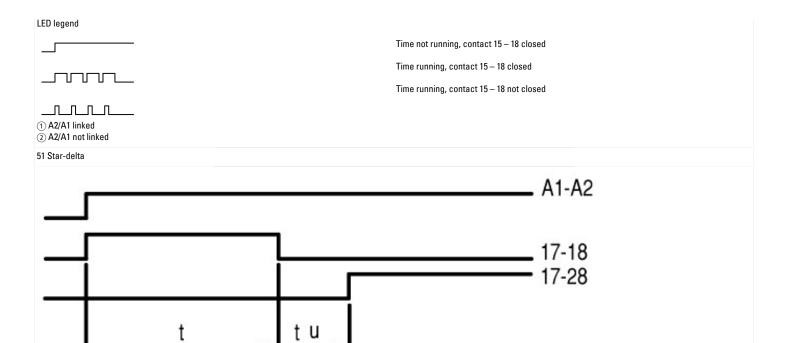
TECHNICAL UALA ETTIVI 7.0			
Relays (EG000019) / Timer relay (EC001439)			
Electric engineering, automation, process control engineering / Low-voltage swi	tch technology /	Relay and	socket / Timed relay (ecl@ss10.0.1-27-37-16-05 [AKF092013])
Type of electric connection			Screw connection
Function delay-on 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**

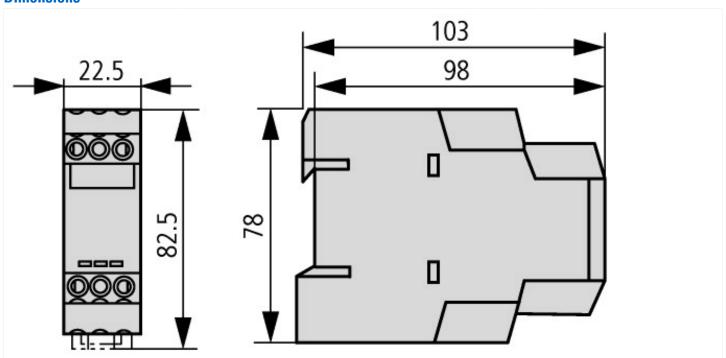
Flow diagram for timing functions

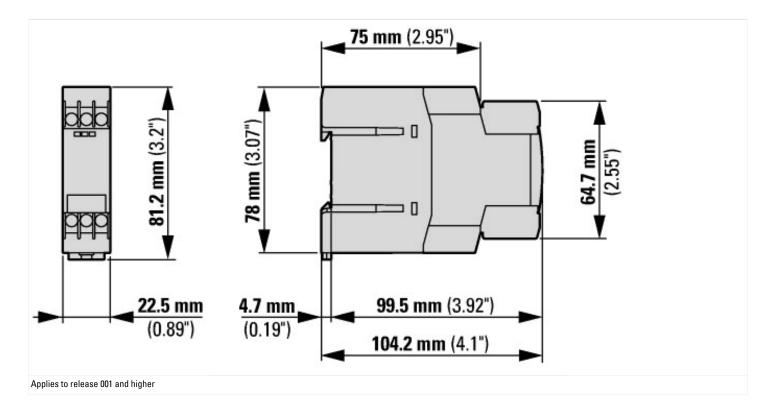


Power LED

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## **Dimensions**





### **Assets (links)**

**Declaration of CE Conformity** 

00002787

**Instruction Leaflets** 

IL04910001Z2018\_05

# **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/IL04910001Z2019\_08.pdf delta relay, multifunction relay