# DATASHEET - ETR4-51-W

**Timing relay, star-delta, 50 ms, 1W, 3-60s, 400VAC**

| | |
|---|---|
| **Part no.** | **ETR4-51-W** |
| **Catalog No.** | **031885** |
| **Alternate Catalog No.** | **XTTR6A60S51N** |
| **EL-Nummer (Norway)** | **0004110007** |

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## Delivery program

| | | | |
|---|---|---|---|
| Product range | | | ETR4 timing relays |
| Basic function | | | Timer relays |
| Function | | | Star-delta switching |
| | | | Changeover contact with a changeover time of 50 ms<br>Fixed timing function |
| Number of changeover contacts | | | 1 |
| Time range | | | 3 - 60 s |
| Time range | | | 3 - 60 s |
| **Rated operational current** | | | |
| AC-14 | | | |
| 380 V 400 V 415 V | $I_e$ | A | 3 |
| | | | Value applies starting with release 001. |
| AC-15 | | | |
| 220 V 230 V 240 V | $I_e$ | A | 3 |
| 380 V 400 V 415 V | $I_e$ | A | 3 |
| | | | Value applies starting with release 001. |
| Voltage range | $U_{LN}$ | V | 400 V AC, 50/60 Hz |
| Width | | mm | 22.5 |

A1   17

A2   18   28

Terminal marking according to EN 50042

## Technical data
### General

| | | | |
|---|---|---|---|
| Standards | | | Standard IEC/EN 61812<br>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<br>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 |
| Terminal capacities | | mm$^2$ | |

| | | | |
|---|---|---|---|
| Solid | | mm² | 1 x (0.5 - 2.5) <br> 2 x (0.5 - 1.5) |
| Flexible with ferrule | | mm² | 1 x (0.5 - 2.5) <br> 2 x (0.5 - 1.5) |
| Solid or stranded | | AWG | 1 x (20 - 14) |

## Contacts

| | | | |
|---|---|---|---|
| Rated impulse withstand voltage | $U_{imp}$ | V AC | 6000 |
| | | | Value applies starting with release 001. |
| Overvoltage category/pollution degree | | | III/2 |
| Rated insulation voltage | $U_i$ | V AC | 600 |
| | | | Value applies starting with release 001. |
| Rated operational voltage | $U_e$ | V AC | 440 |
| | | | Value applies starting with release 001. |
| Safe isolation to EN 61140 | | | |
| between coil and auxiliary contacts | | V AC | 250 |
| between the auxiliary contacts | | V AC | 250 |
| Making capacity | | | |
| AC-14 cos φ = 0.3 400 V | | A | 48 |
| AC-15 cos φ = 0.3 220 V | | A | 50 |
| DC-11 L/R - 40 ms | | x $I_e$ | 1.1 |
| 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 $I_e$ | 1.1 |
| Rated operational current | $I_e$ | A | |
| AC-14 | $I_e$ | | |
| 380 V 400 V 415 V | $I_e$ | A | 3 |
| | | | Value applies starting with release 001. |
| AC--14 | | | |
| 440 V | $I_e$ | A | 3 |
| AC-15 | | | |
| 220 V 230 V 240 V | $I_e$ | A | 3 |
| DC-11 | | | |
| Note | | | Making and breaking conditions to DC13, time constant as stated |
| 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 | | | When supplied directly from mains or transformer > 1000 VA |
| Max. fuse, make contacts | | A gG/gL | 6 |
| Max. fuse, break contacts | | A gG/gL | 6 |
| Max. overcurrent protective device, 220/230 V | | Type | FAZ-B4/1-HI |

## Magnet systems

| | | | |
|---|---|---|---|
| Rated operational voltage | $U_e$ | V | |
| AC | | | 400 |
| Rated frequency AC | | Hz | 47 - 63 |
| Tolerance AC operated min. | | x $U_c$ | 0.85 |
| Tolerance AC operated max. | | x $U_c$ | 1.1 |
| Power consumption | | | |
| Pick-up AC | | VA | 0.5 |
| Sealing AC | | VA | 0.5 |
| Duty factor | | % DF | 100 |
| Maximum operating frequency | | Ops/h | 4000 |
| Minimum command time | | | |

| | | | |
|---|---|---|---|
| AC | | ms | 50 |
| Repetition accuracy (deviation) | | % | ≦ 0.5 |
| Recovery time (after 100% time delay) | | ms | 70 |
| Contact changeover time | $t_u$ | 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 | 80 - 1000 MHz: 10<br>1.4 - 2 GHz: 3<br>2.0 - 2.7 GHz: 1 |
| Radio interference suppression | | | EN 55011, Class B (conducted)<br>EN 55011, Class B (radiated) |
| Burst | | kV | Supply cables: 2<br>Signal cables: 1<br>according to IEC/EN 61000-4-4 |
| power pulses (Surge) | | | 2 kV (symmetrical)<br>4 kV (asymmetrical)<br>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

| | | | |
|---|---|---|---|
| Technical data for design verification | | | |
| Rated operational current for specified heat dissipation | $I_n$ | A | 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 | 0.5 |
| 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 switchgear must be observed. |

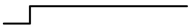| 10.13 Mechanical function | | The device meets the requirements, provided the information in the instruction leaflet (IL) is observed. |
|---|---|---|

# Technical data ETIM 7.0

Relays (EG000019) / Timer relay (EC001439)

Electric engineering, automation, process control engineering / Low-voltage 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 | 400 - 400 |
| Rated control supply voltage Us at AC 60HZ | V | 400 - 400 |
| Rated control supply voltage Us at DC | V | 0 - 0 |
| Voltage type for actuating | | AC |
| Nominal current | A | 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 |

# Characteristics

**Flow diagram for timing functions**

LED legend

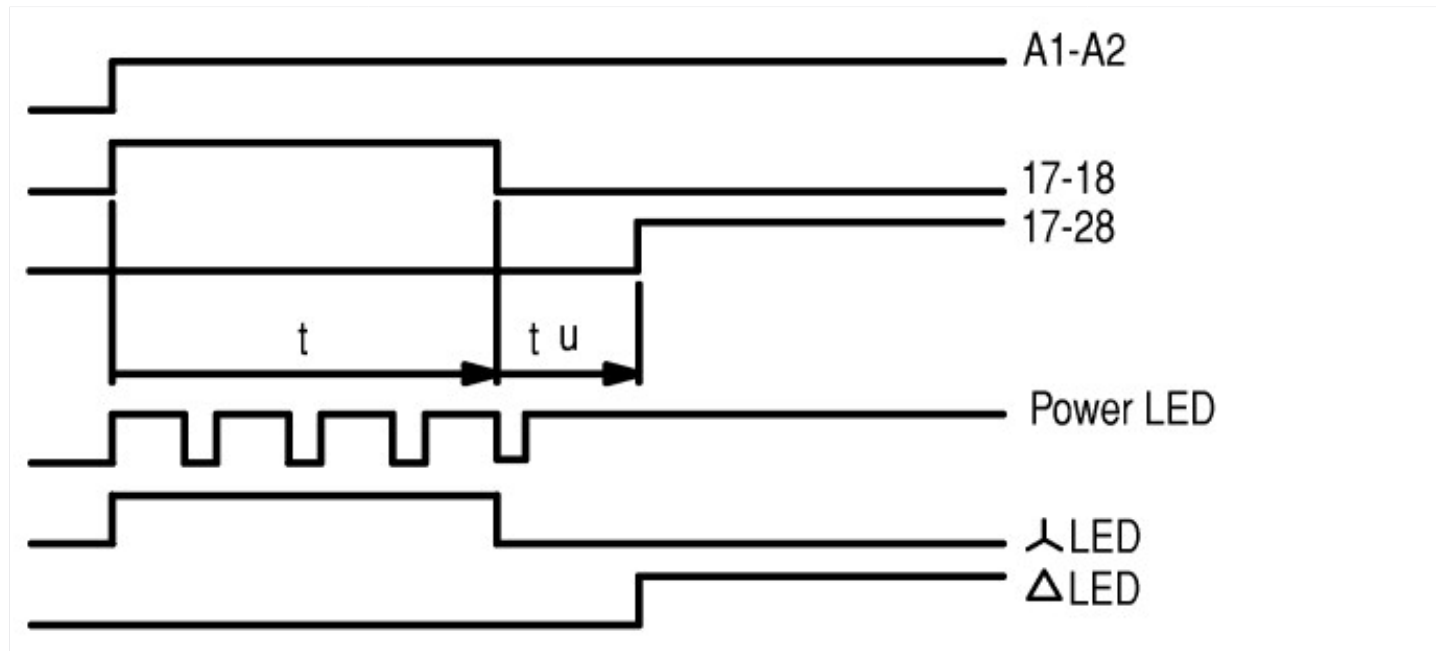Time not running, contact 15 – 18 closed

Time running, contact 15 – 18 closed
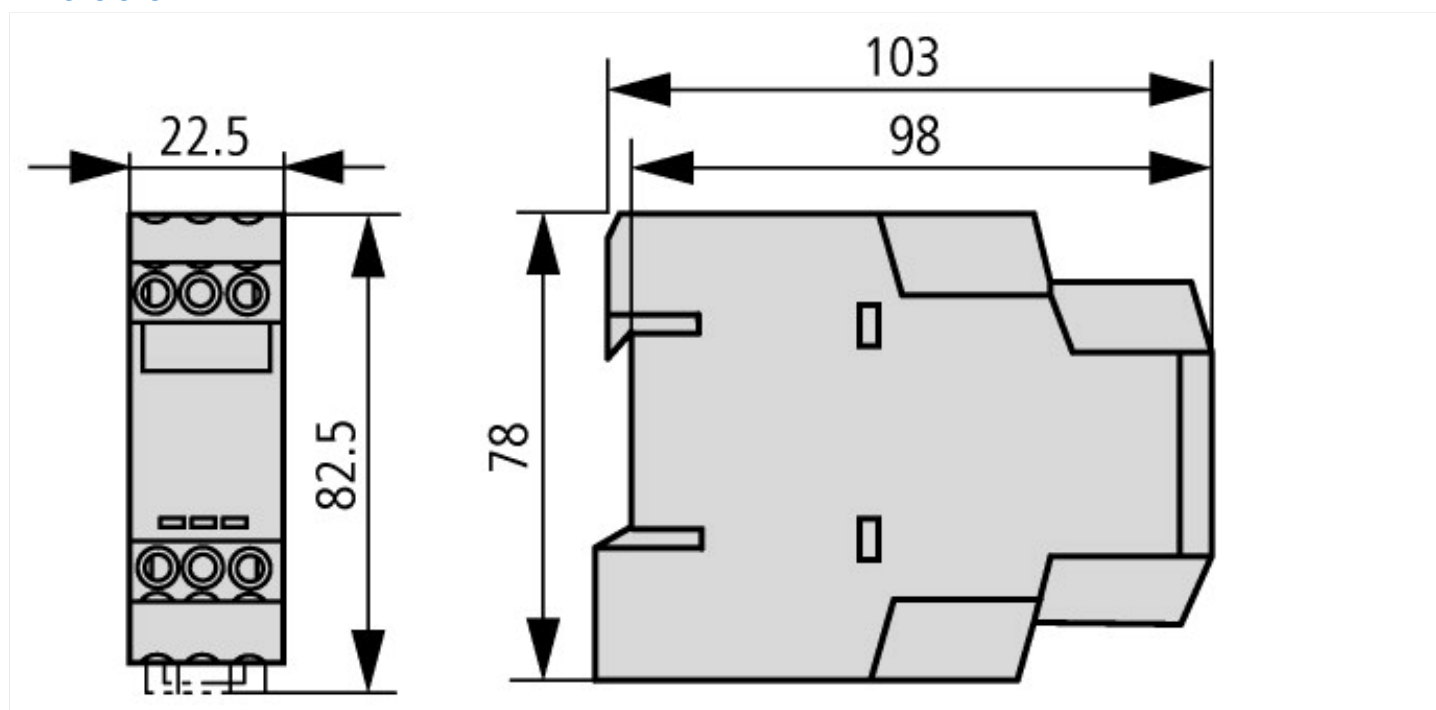
Time running, contact 15 – 18 not closed

① A2/A1 linked
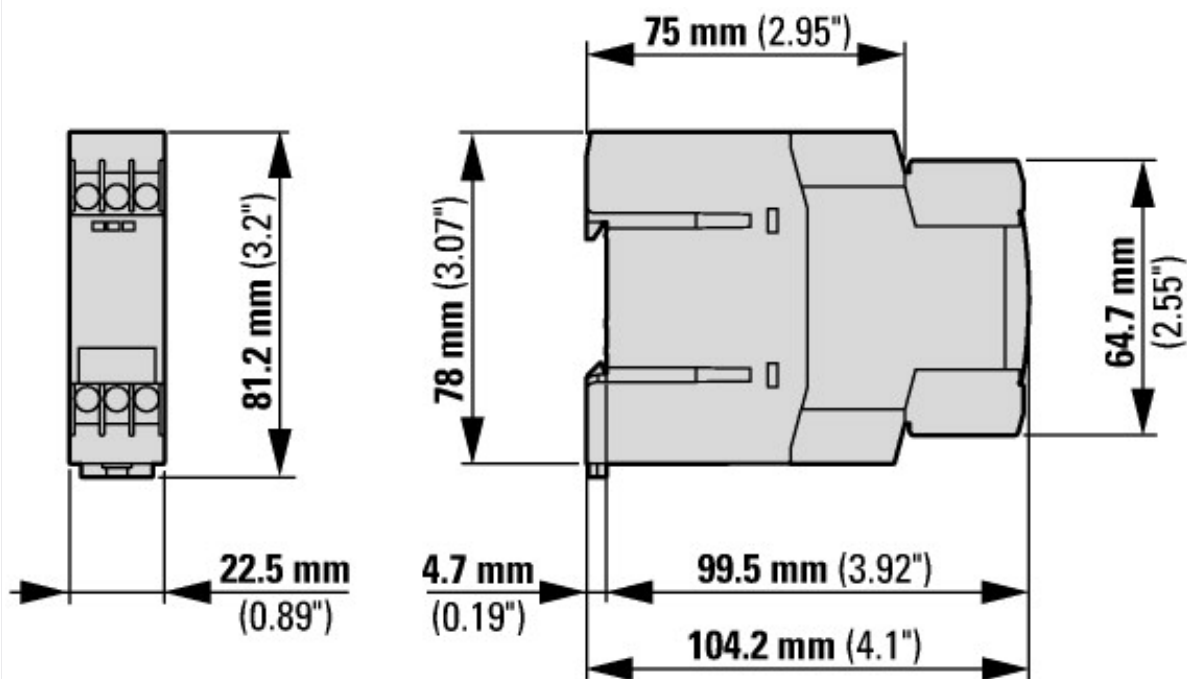② A2/A1 not linked

51 Star-delta

A1-A2

17-18

17-28

t    t u

Power LED

人LED

△LED

## Dimensions

22.5

82.5

103

98

78

Applies to release 001 and higher

## Assets (links)

**Declaration of CE Conformity**
00002787

**Instruction Leaflets**
IL049003ZU2018_05

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