

Time Control Technique

MINITIMER

Timer, On-delay

AA 7616, EC 7616, EF 7616, EH 7616

Translation
of the original instructions



Your advantages

- Large setting range
- Simple unit setting
- Purely mechanical timing

Features

- Power ON-delay relay according to EN 61812-1
- Delay up to 60 h
- Repeat accuracy $\pm 0.5\%$ ($\leq \pm 1\%$ for ranges 3 s and 6 s)
- Time lapse display
- On-delayed and instantaneous contact
- As option no-voltage safe version
- Switching position display (except for EH 7616)
- EF 7616: Front side, protected against beam water, IP 65
- 6 switchable time ranges, adjustable on front side
- AA 7616: Width 45 mm
- EC 7616: Front surface 48 x 72 mm
- EF 7616: Front surface 72 x 72 mm
- EH 7616: Front surface 96 x 96 mm

Product Description

The AA 7610, EC 7610 and EF 7610 time relays from the MINITIMER series are suitable for switching devices and controls with a pre-programmed response delay. These time relays can be used, for example, to take into account the individual start-up behaviour of system components such as the starting of motors. The delay times can be set easily and over large setting ranges via the infinitely variable rotary switches. AA-, EC-, EF-, and EH 7616 devices have adjustable time ranges.

Approvals and Markings



Applications

Time dependent controls

0227769



AA 7616



EC 7616

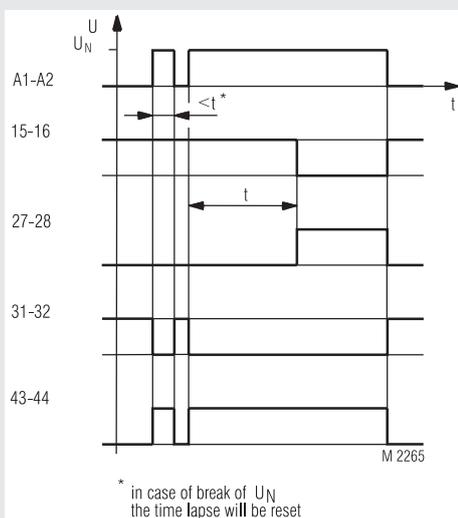


EF 7616

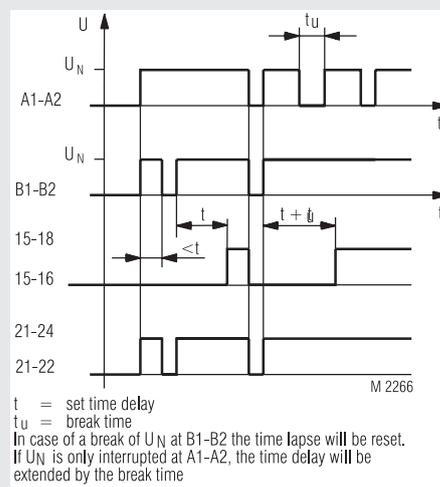


EH 7616

Function Diagrams

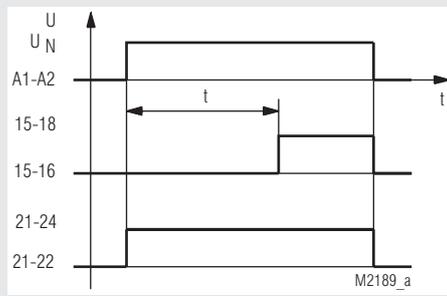


AA 7616.24

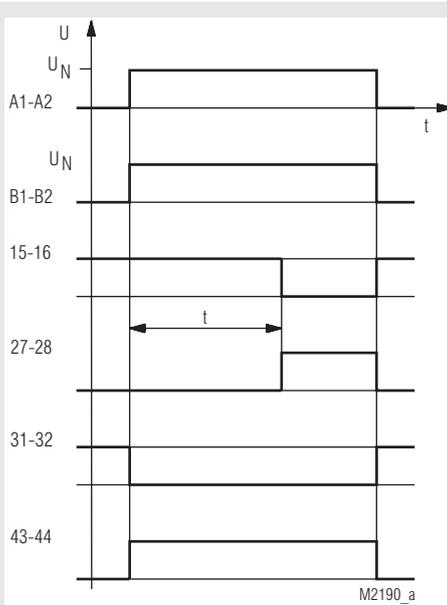


AA 7616.32

Function Diagram

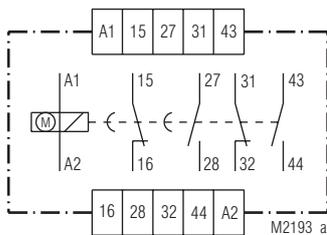


EC 7616.32

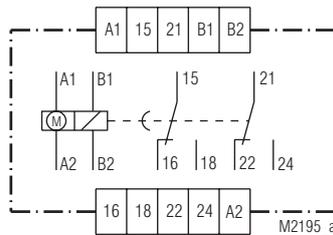


EF 7616.24, EH 7616.24

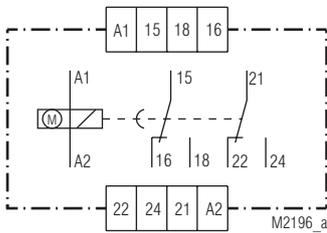
Circuit Diagrams



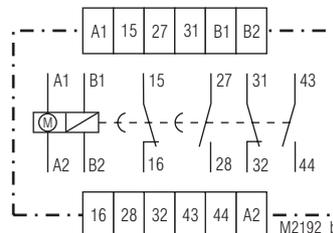
AA 7616.24



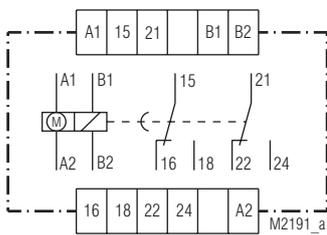
AA 7616.32



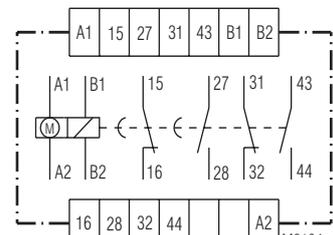
EC 7616.32



EF 7616.24



EF 7616.32



EH 7616.24

Function

Quick start:

For short times, the quick start is recommendable for a higher repeat accuracy. Here the version AA 7616.32 is necessary. The terminals A1-A2 always remain at nominal voltage (synchronous motor is continuously operating). Time elapse starts when connecting nominal voltage to B1-B2

Frequency selection:

The frequency change-over 50/60Hz is done by moving a switch on the back side of the device with a screw driver

Timer AA 7616.__/100, EC 7616.__/100, EF 7616.__/100, EH 7616.__/100 delay on make, no-voltage save

When energizing the clutch it will be locked by a barrier, so that in case of a voltage loss. The already expired time remains stored; also the non-delayed contacts remain in the closed position. After elapse of the set time, the barrier will be opened and the delayed contacts will be actuated. If the set-time should start again after a stop of the time lapse, the time setting in the no-voltage condition has to be turned down to 0 and back again to the pre-set time value.

Connection Terminals

Terminal designation	Signal description
A1, A2	Control- / operating voltage U_N (for versions without B1, B2) Operating voltage U_N (for versions with B1, B2)
B1, B2	Control voltage U_N
15, 16	NC contact, delayed
27, 28	NO contact, delayed
31, 32	NC contact, instantaneous
43, 44	NO contact, instantaneous
15, 16, 18	C/O delayed
21, 22, 24	C/O contact instantaneous

Indicators

Time display:
Red sign:

Via red pointer at device-scale
Visible, when NO contacts closed
(not for EH 7616)

Technical Data	
Time circuit	
Time range:	6-range-versions 0.15 ... 3 s 1.5 ... 30 s 15 ... 300 s 0.4 ... 10 s 4 ... 100 s 40 ... 1000 s or 0.15 ... 3 s 0.15 ... 3 min 0.15 ... 3 h 1.5 ... 30 s 1.5 ... 30 min 1.5 ... 30 h or 0.2 ... 6 s 0.2 ... 6 min 0.2 ... 6 h 2 ... 60 s 2 ... 60 min 2 ... 60 h
Time setting:	Infinite via black (white) setting pointer on absolute scale
Recovery time:	150 ms
Repeat accuracy:	$\leq \pm 0.5\%$ of the max. scale value (for 3 and 6 s $\leq \pm 1\%$)
EH 7616, DC-version:	$\leq \pm 3\%$ of the max. scale value
Input	
Nominal voltage U_N:	AC 24, 110, 230, 240 V
Special voltages	
AA 7616:	AC 12, 400, 415 V
EH 7616:	DC 24, 48 V
Voltage range:	0.8 ... 1.1 U_N
Nominal consumption:	AC 7 VA DC 24 V 5 W DC 48 V 7 W
Nominal frequency:	50 / 60 Hz switchable
Frequency range:	$\pm 5\%$ f_N
Frequency influence:	Reverse proportional
Output	
Contacts	
AA 7616.24, EF 7616.24, EH 7616.24:	1 NC contact, delayed 1 NC contact, instantaneous 1 NO contact, delayed 1 NO contact, instantaneous
AA 7616.32, EC 7616.32, EF 7616.32:	1 changeover contact, delayed 1 changeover contact, instantaneous
Contact material:	AgNi + 0.2 μ m Au
Measured nominal voltage:	AC 250 V
Operate time of contacts:	< 35 ms
Release time:	< 60 ms
Thermal current I_{th}:	4 A
Switching capacity	
To AC 15:	3 A / AC 230 V IEC/EN 60947-5-1
Electrical life	IEC/EN 60947-5-1
To AC 15 at 3 A, AC 230 V:	1 x 10 ⁵ switching cycles
To AC 15 at 1 A, AC 230 V:	5 x 10 ⁵ switching cycles
Permissible switching frequency:	3000 switching cycles / h
Short circuit strength	
Max. fuse rating:	10 A gG/ gL IEC/EN 60947-5-1
Mechanical life:	> 30 x 10 ⁶ switching cycles or > 15000 h

Technical Data	
General Data	
Operating mode:	Continuous operation
Temperature range:	
Operation:	- 20 ... + 55 °C
Storage:	- 20 ... + 65 °C
Altitude:	≤ 2000 m
Clearance and creepage distances	
Rated impulse voltage / pollution degree:	4 kV / 2 IEC 60664-1
EMC	
Electrostatic discharge:	8 kV (air) IEC/EN 61000-4-2
HF irradiation:	10 V/m IEC/EN 61000-4-3
Fast transients:	4 kV IEC/EN 61000-4-4
Surge voltages	
Between wires for power supply:	2 kV IEC/EN 61000-4-5
Between wire and ground:	4 kV IEC/EN 61000-4-5
HF-wire guided:	10 V IEC/EN 61000-4-6
Interference suppression:	Limit value class B EN 55011 IEC/EN 60529
Degree of protection	
AA 7616:	
Housing:	IP 40
Terminals:	IP 20
EC, EH 7616:	
Housing-front:	IP 40
Housing:	IP 30
Terminals:	IP 10
EF 7616:	
Housing-front:	IP 65
Housing:	Thermoplast with V0-behaviour according to UL Subject 94
Vibration resistance:	Amplitude 0.35 mm frequency 10...55Hz, IEC/EN 60068-2-6 20 / 055 / 04; A/B/C IEC/EN 60068-1
Climate resistance:	
Terminal arrangement:	DIN 46199-5
Terminal designation:	EN 50005
Wire connection:	2 x 2.5 mm ² solid or 2 x 1.5 mm ² stranded wire with sleeve DIN 46228-1/-2/-3/-4 Flat terminals with self-lifting clamping piece IEC/EN 60999-1 0.8 Nm
Wire fixing:	
Fixing torque:	
Mounting	
AA 7616:	DIN rail IEC/EN 60715
Flush mounting	
EC 7616, EF 7616, EH 7616:	2 clamps with screws
Weight:	
AA 7616:	320 g
EC 7616:	320 g
EF 7616:	400 g
EH 7616:	450 g
Dimensions	
Width x height x depth	
AA 7616:	45 x 77 x 127 mm
EC 7616:	48 x 72 x 120 mm
EF 7616:	72 x 72 x 128 mm
EH 7616:	96 x 96 x 138 mm
Front panel cut-out	
EC 7616:	44 x 67 mm
EF 7616:	67 x 67 mm
EH 7616:	$\varnothing 91^{+1}$ mm
Front surface	
EC 7616:	48 x 72 mm
EF 7616:	72 x 72 mm
EH 7616:	96 x 96 mm

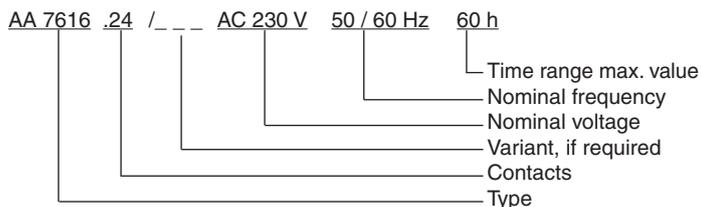
Standard Type

AA 7616.24	AC 230 V	50/60 Hz	0.15 s ... 30 h
Article number:	0000678		
• Time range:	0.15 s ... 30 h		
• Nominal voltage U_N :	AC 230 V		
• Output:	1 NC contact, delayed 1 NC contact, instantaneous 1 NO contact, delayed 1 NO contact, instantaneous		
• Width:	45 mm		

Variant

AA 7616.___/100:	No-voltage safe
AA 7616.___/102:	Switchable from auto-reset to no-voltage safe version
AA 7616.24/103:	With switchable no-voltage safe function holding current ≥ 5 mA
EC 7616.___/100:	No-voltage safe
EF 7616.___/100:	No-voltage safe
EH 7616.___/100:	No-voltage safe

Ordering example for variants



Accessories

For EC 7616:

ZS 700.06:	Lockable cover Article number: 0004057
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For EF 7616:

ZS 700.07:	Lockable cover Article number: 0004058
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ET 7616-0-22:	Sealing ring for sealing at the front side Article number: 0045909
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Safety Notes



Risk of electrocution!

Danger to life or risk of serious injuries.

- Disconnect the system and device from the power supply and ensure they remain disconnected during electrical installation.
- The device may only be used for the applications described in the mutually applicable operating instructions / data sheet. The notes in the respective documentation must be heeded. The permissible ambient conditions must be observed.
- Note the VDE and local regulations, particularly those related to protective measures.



Risk of fire or other thermal hazards!

Danger to life, risk of serious injuries or property damage.

- The device may only be used for the applications described in the mutually applicable operating instructions / data sheet. The notes in the respective documentation must be heeded. The permissible ambient conditions must be observed. In particular, the current limit curve must be heeded.
- The device may only be installed and put into operation by experts who are familiar with this technical documentation and the applicable health and safety and accident prevention regulations.



Functional error!

Danger to life, risk of serious injuries or property damage.

- The device may only be used for the applications described in the mutually applicable operating instructions / data sheet. The notes in the respective documentation must be heeded. The permissible ambient conditions must be observed.
- The device may only be installed and put into operation by experts who are familiar with this technical documentation and the applicable health and safety and accident prevention regulations.



Attention!

- Disposal!
The device must be disposed of in compliance with nationally applicable rules and requirements.