

# Time Control Technique

## MINITIMER

Timer, On Delayed

AA 7616, EC 7616, EF 7616, EH 7616



- According to IEC/EN 61 812-1
- Delay up to 60 h
- 6 switchable time ranges, adjustable on front side
- Repeat accuracy  $\leq \pm 0.5\%$  ( $\leq \pm 1\%$  for ranges 3 s and 6 s)
- Time lapse display
- Switching position display (except for EH 7616)
- With instantaneous contact
- Available no-voltage safe
- EF 7616: front side, protected against beam water, IP 65
- AA 7616: width 45 mm
- EC 7616: front surface 48 x 72 mm
- EF 7616: front surface 2 x 72 mm
- EH 7616: front surface 96 x 96 mm

### Approvals and Markings



### Applications

Time dependent controls

### 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

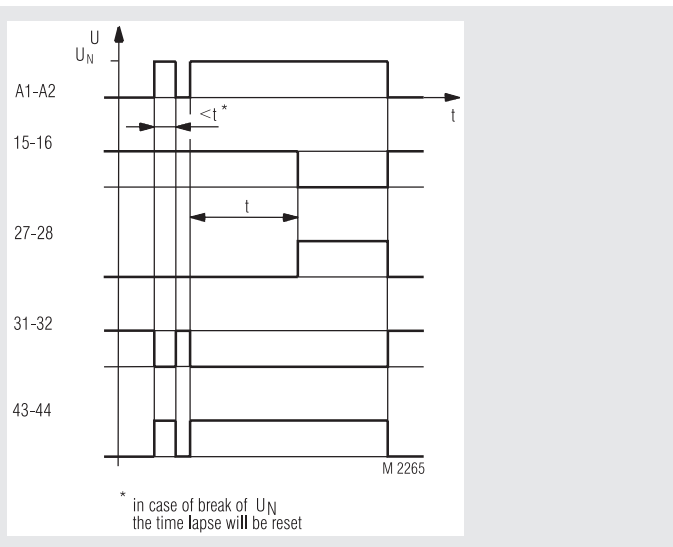
#### Frequency selection:

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

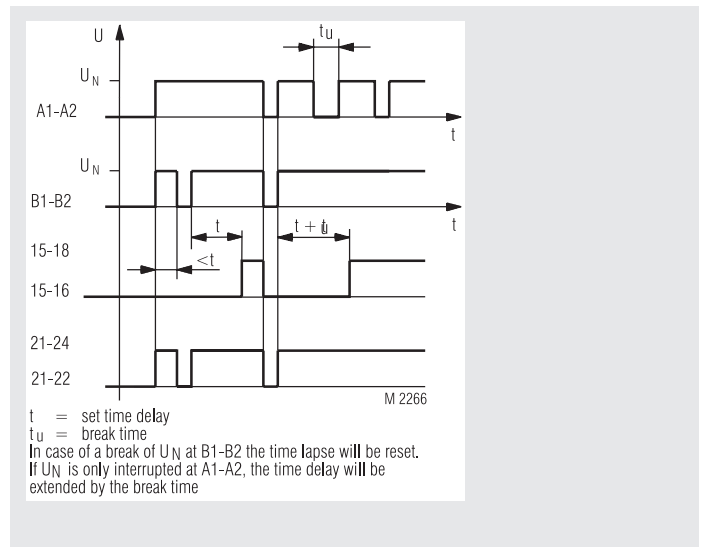
**Timer AA 7616.\_\_/100, EC 7616.\_\_/100, EF 7616.\_\_/100, EH 7616.\_\_/100 delay on make, no-voltage save**

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.

### Function Diagrams

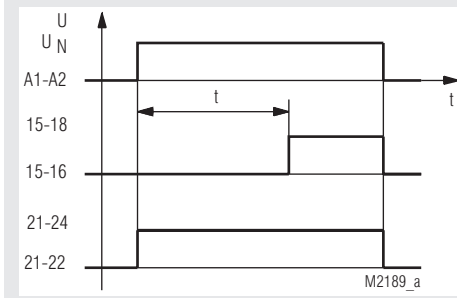


AA 7616.24

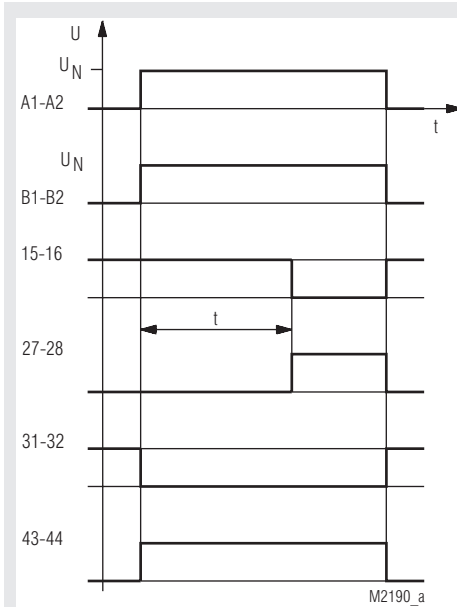


AA 7616.32

## Function Diagram

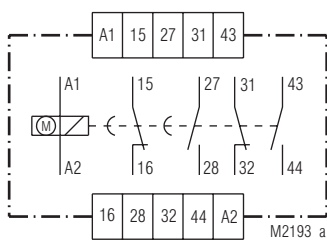


EC 7616.32

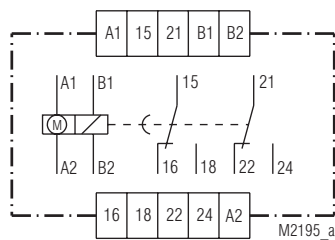


EF 7616.24, EH 7616.24

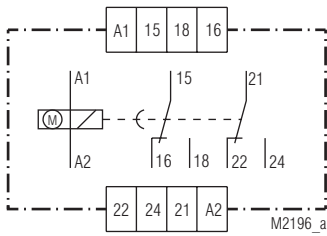
## Circuit Diagrams



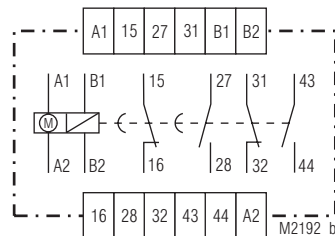
AA 7616.24



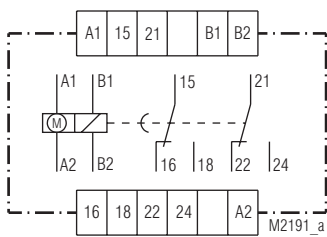
AA 7616.32



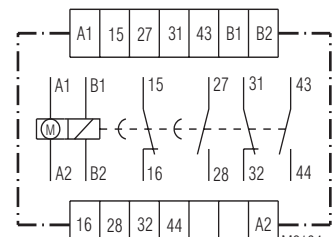
EC 7616.32



EF 7616.24



EF 7616.32



EH 7616.24

## 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
33, 34;	NO contact, instantaneous
15, 16, 18	C/O delayed
21, 22, 24	C/O contact instantaneous

## Indicators

Time display: via red pointer at device-scale  
Red sign: 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 12, 24, 48 V  
**Voltage range:** 0.8 ... 1.1  $U_N$   
**Nominal consumption:**  
AC 7 VA  
DC 12 V 5 W  
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  $\mu$ 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 60 947-5-1  
to AC 15 at 3 A, AC 230 V: IEC/EN 60 947-5-1  
to AC 15 at 1 A, AC 230 V: 1 x 10<sup>5</sup> switching cycles  
5 x 10<sup>5</sup> switching cycles  
**Permissible switching frequency:** 3 000 switching cycles / h  
**Short circuit strength**  
**max. fuse rating:** 10 A gG/ gL IEC/EN 60 947-5-1  
**Mechanical life:** > 30 x 10<sup>6</sup> switching cycles or > 15 000 h

## Technical Data

### General Data

**Operating mode:** Continuous operation

### Temperature range:

Operation: - 20 ... + 55 °C

Storage: - 20 ... + 65 °C

**Altitude:** < 2,000 m

### Clearance and creepage distances

rated impulse voltage /

pollution degree: 4 kV / 2 IEC 60 664-1

### EMC

Electrostatic discharge: 8 kV (air) IEC/EN 61 000-4-2

HF irradiation: 10 V/m IEC/EN 61 000-4-3

Fast transients: 4 kV IEC/EN 61 000-4-4

Surge voltages

between

wires for power supply: 2 kV IEC/EN 61 000-4-5

between wire and ground: 4 kV IEC/EN 61 000-4-5

HF-wire guided: 10 V IEC/EN 61 000-4-6

Interference suppression: Limit value class B EN 55 011

**Degree of protection** IEC/EN 60 529

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

Amplitude 0.35 mm

frequency 10...55Hz, IEC/EN 60 068-2-6

20 / 055 / 04; A/B/C IEC/EN 60 068-1

**Terminal arrangement:** DIN 46 199-5

**Terminal designation:** EN 50 005

**Wire connection:** 2 x 2.5 mm<sup>2</sup> solid or

2 x 1.5 mm<sup>2</sup> stranded wire with sleeve

DIN 46 228-1/-2/-3/-4

Flat terminals with self-lifting

clamping piece IEC/EN 60 999-1

0.8 Nm

**Fixing torque:**

**Mounting**

AA 7616: DIN rail IEC/EN 60 715

**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  $\geq 5$  mA

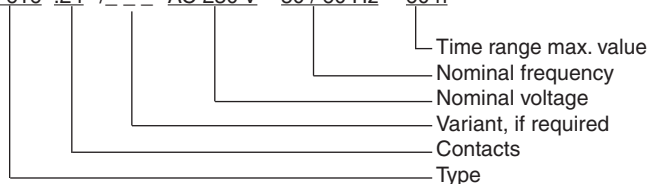
EC 7616.\_\_\_/100: no-voltage safe

EF 7616.\_\_\_/100: no-voltage safe

EH 7616.\_\_\_/100: no-voltage safe

## Ordering example for variants

AA 7616 .24 / \_ \_ \_ AC 230 V 50 / 60 Hz 60 h



## Accessories

**for EC 7616:**

ZS 700.06: Lockable cover  
Article number: 0004057

ET 7001.407.034: Plug-in-socket for EC 7616.21  
Article number: 0004072

**for EF 7616:**

ZS 700.07: Lockable cover  
Article number: 0004058

ET 7616-0-22: Sealing ring for sealing at the front side  
Article number: 0045909

