Timer Handbook

Versatile and flexible timing solutions – timing is everything
Timing is everything
Versatility and flexibility for timing needs

TIME RANGE SELECTION
- 0.1 sec to 100 hrs

MULTI-VERSIONS
- ON delay
- Star delta
- Recycling
- OFF delay
- Single shot
- Interval

MULTI-FLEXIBILITY
Control...
- Pumps
- Mixers
- Crushers
- Doors
- Motors
- Fans
- Compressors
- Conveyors

MULTI-HOUSING
Choose from...
- Mini DIN
- Plug-in
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Please refer to the NHP Pricelist Part A Section 9 for further information.
Timers

A Timer (Time Delay Relay) is a device that provides a time delay between 2 events or processes.

Switching off a light globe consist of two separate events or processes ie. flicking off the switch and light turning off. Without a timer the two events occur simultaneously.

Legend:

\[ T \quad = \quad \text{Time (sec, min, hr)} \]
\[ 1 \text{ C/O} \quad = \quad 1 \text{ changeover contact} \]
\[ 2 \text{ C/O} \quad = \quad 2 \text{ changeover contacts} \]
\[ \quad = \quad \text{Time Delayed changeover contact} \]

Dimensions (mm)

MINI D Housing
On Delay Timer

Also known as:
- Delay ON
- Delay “On Energisation”
- Delay “On Make”
- Delay “On Operate”

Mode of Operation

- Timing starts immediately when power is applied.
- Delayed output relay turns ON after the set time (T)
- On the 2 C/O version the second output relay is selectable to operate as either instantaneous or delayed output. For example: 2 delay or (1 delay + 1 instant). Instantaneous output will mirror the power supply status.
- Disconnection of supply at anytime will turn the output relays OFF and reset the delay time (T). The instantaneous output relay will mirror the power supply.

Typical Applications

- Stagger start of motors to limit inrush current
- Security systems, delay system lock down for set period. It allows the person setting the alarm to clear the area.
## Suitable Products

<table>
<thead>
<tr>
<th>Housing</th>
<th>Supply</th>
<th>Output</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.5 mm, DIN</td>
<td>24 V DC / 24-240 V AC</td>
<td>1 C/O</td>
<td>DAA-51-C-M24</td>
</tr>
<tr>
<td>22.5 mm, DIN</td>
<td>24 V DC / 24-240 V AC</td>
<td>1 C/O</td>
<td>DAA-01-C-M24</td>
</tr>
<tr>
<td>22.5 mm, DIN</td>
<td>24-240 V AC / DC</td>
<td>2 C/O</td>
<td>DAA-01-D-M24</td>
</tr>
<tr>
<td>36 mm, 11 Pin, Plug-in</td>
<td>24-240 V AC / DC</td>
<td>2 C/O</td>
<td>PAA-01-D-M24</td>
</tr>
</tbody>
</table>

### DAA51, DAA01 . . .

![Diagram of DAA51, DAA01](image)

### PAA01 . . .

![Diagram of PAA01](image)
Off Delay Timer

Also known as:
- Delay Off
- Delay “On De-energisation
- Delay “On Break”

Mode of Operation

- Power must be connected for timer to operate
- The output relay turns ON as soon as trigger is applied. Timing starts on trigger release.
- The output relay turns OFF after a set time delay (T)
- Disconnection of supply at any time will reset both the relay output and delay time (T)

Typical Applications

- Stairwell light operated via momentary “ON” switch
- Switch OFF delay of toilet exhaust fan.
  If used in conjunction with a light circuit the timer will allow the fan to continue to operate (for a set delay time) after the light has been turned OFF.
Suitable Products

<table>
<thead>
<tr>
<th>Housing</th>
<th>Supply</th>
<th>Output</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.5 mm DIN</td>
<td>24 V DC / 24-240 V AC</td>
<td>1 C/O</td>
<td>DBA-52-C-M24</td>
</tr>
<tr>
<td>22.5 mm DIN</td>
<td>24 V DC / 24-240 V AC</td>
<td>1 C/O</td>
<td>DBA-02-C-M24</td>
</tr>
<tr>
<td>36 mm, 11 Pin, Plug-in</td>
<td>24 V DC / 24-240 V AC</td>
<td>1 C/O</td>
<td>PBA-02-C-M24</td>
</tr>
</tbody>
</table>

**DBA52, DBA02**

**PBA02**
True Off Delay Timer

Also known as:
• True Delay Off
• True Delay “On Break”
• True Delay “On De-energisation”

Mode of Operation

• The output relay turns ON as soon as power is connected
• Timing starts on loss of power.
• The output relay turns OFF after the delay time (T).
• True OFF Delay timer require a minimum charge time before operation. Please consult specs as the charge time will vary depending on the model & the set delay time (T).

Typical Applications

• Connected to the main light switch a True OFF Delay timer allows the last person sufficient time to clear the building before all lights are turned off.
Suitable Products

<table>
<thead>
<tr>
<th>Housing</th>
<th>Supply</th>
<th>Output</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.5 mm DIN</td>
<td>24 V DC / 24-240 V AC</td>
<td>1 C/O</td>
<td>DBB-51-C-M24 1M</td>
</tr>
<tr>
<td>17.5 mm DIN</td>
<td>24 V DC / 24-240 V AC</td>
<td>1 C/O</td>
<td>DBB-51-C-M24 10M</td>
</tr>
<tr>
<td>17.5 mm DIN</td>
<td>24 V DC / 24-240 V AC</td>
<td>1 C/O</td>
<td>DBB-51-C-M24 10S</td>
</tr>
<tr>
<td>22.5 mm DIN</td>
<td>24-240 V AC/DC</td>
<td>2 C/O</td>
<td>DBB-01-D-M24</td>
</tr>
</tbody>
</table>

**DBB51**

**DBB01**

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**Asymmetrical Recycler Timer**

- Timer operates as soon as power is connected
- The output relay will continuously cycle “ON / OFF” as long as power is connected.
- The duration of delay time “T1” and “T2” are independently adjustable.
- The cycle can be set to begin with either the “ON” or “OFF” state.

**Typical Applications**

- Running a discharge pump for 1hr every 10 hrs cycle
- Turning a beacon “ON” for 2 secs every 6 secs cycle
## Suitable Products

<table>
<thead>
<tr>
<th>Housing</th>
<th>Supply</th>
<th>Output</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.5 mm DIN</td>
<td>24 V DC / 24-240 V AC</td>
<td>1 C/O</td>
<td>DCB-51-C-M24</td>
</tr>
<tr>
<td>22.5 mm DIN</td>
<td>24 V DC / 24-240 V AC</td>
<td>1 C/O</td>
<td>DCB-01-C-M24</td>
</tr>
<tr>
<td>36 mm, 11 Pin, Plug-in</td>
<td>24 V DC / 24-240 V AC</td>
<td>1 C/O</td>
<td>PCB-01-C-M24</td>
</tr>
</tbody>
</table>

### DCB01  DCB51

![Diagram of DCB01 and DCB51](image)

### PCB01

![Diagram of PCB01](image)
Multifunction Timer

The multifunction timer incorporates 7 of the most popular functions in a single unit.

1. [Dr] OFF Delay
2. [Op] ON Delay
3. [In] Interval
4. [Id] Double Interval
5. [Io] Fleeting OFF (ie. Interval on trigger open)
6. [R] Symmetrical Recycling (ON first)
7. [Rb] Symmetrical Recycling (OFF first)

The timer can be wired to operate on “Automatic” or “Manual” start. Please refer to details on the specific timing functions as “Automatic” & “Manual start” operation is not applicable to every function.

Important Notes

• On the 2 C/O version the second output relay is selectable to operate as either instantaneous or delayed output. ie 2 delay or (1 delay + 1 instant)
• In the case of “Automatic start/trigger ”, timing will start as soon as power is applied. Trigger input (ie. terminal “Y1” or “S”) must be bridged to the supply (ie. Terminal “A1” or “2”).
• In the case of “Manual start/trigger ” timing will start after the trigger signal (via external switch “S”) has been applied.
**Suitable Products**

<table>
<thead>
<tr>
<th>Housing</th>
<th>Supply</th>
<th>Output</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.5 mm DIN</td>
<td>12-240 V AC/DC</td>
<td>1 C/O</td>
<td>DMB-51-C-W24</td>
</tr>
<tr>
<td>22.5 mm DIN</td>
<td>24 V DC / 24-240 V AC</td>
<td>1 C/O</td>
<td>DMB-01-C-M24</td>
</tr>
<tr>
<td>22.5 mm DIN</td>
<td>24-240 V AC/DC</td>
<td>2 C/O</td>
<td>DMB-01-D-M24</td>
</tr>
<tr>
<td>36 mm, 11 Pin, Plug-in</td>
<td>24 V DC / 24-240 V AC</td>
<td>1 C/O</td>
<td>PMB-01-C-M24</td>
</tr>
<tr>
<td>36 mm, 11 Pin, Plug-in</td>
<td>24-240 V AC/DC</td>
<td>2 C/O</td>
<td>PMB-01-D-M24</td>
</tr>
</tbody>
</table>

**DMB51, DMB01**

![Diagram of DMB51, DMB01](image)

**PMB01**

![Diagram of PMB01](image)
Multifunction Timer (continued)

1. [Dr] OFF DELAY (MANUAL START)

As soon as trigger is applied the output relay turns on. Timing starts on trigger release. The output relay turns OFF after a set time delay. Interruption of supply at any time will reset both the relay output and delay time (T).

**Function Dr – OFF Delay**

- **Power supply**
- **Trigger input**
- **Relay ON**
- **Relay ON (Instant)**

![Diagram showing the sequence of events for Dr OFF Delay](image-url)
Multifunction Timer (continued)

2. [ Op ]  ON DELAY (AUTOMATIC & MANUAL START)

The output relay turns ON after a set time delay.

In the case of “Automatic” start / trigger, timing will start immediately on power up. On “Manual” trigger, timing will start on the rising edge of the “Trigger” pulse. Subsequent application of Trigger pulse before the delay time (T) has elapsed will reset the time delay.

Interruption of supply at anytime will reset both the relay output and delay time (T).
**Multifunction Timer (continued)**

3. **[ In ] INTERVAL (AUTOMATIC & MANUAL START)**

In the case of “Automatic start” the output relay turns ON as soon as power is applied. Timing begins immediately and the output relay will remain ON for the set time delay (T). Interruption of supply at anytime will reset both the relay output and timing.

In the case of “Manual start” the output relay turns ON as soon as trigger signal is applied. Timing will begin on the rising edge of the trigger signal. The output relay turns OFF after the delay time (T). Subsequent trigger pulses prior to the delay time (T) have elapsed will reset the timing. The output relay however will remain in the ON state.

---

**Function In – Interval – Automatic start**

- **Power supply**
- **Relay ON**
- **Relay ON (Instant)**

**Function In – Interval – Manual start**

- **Power supply**
- **Trigger input**
- **Relay ON**
- **Relay ON (Instant)**
Multifunction Timer (continued)

4. [Id] DOUBLE INTERVAL (MANUAL START)

As soon as trigger signal is applied the output relay turns ON and timing begins. The output relay then turns OFF after the delay time \((T)\) for the 1st interval whether the trigger signal is maintained or not. Double Interval is only applicable if the trigger signal is applied for longer than the 1st delay time \((T)\) and then released. As soon as the trigger signal is released the output relay turns ON for another delay time \((T)\) ie “Double Interval”.

Interruption of supply at any time will reset both the relay output and the timing.

**Function Id – Double interval**

<table>
<thead>
<tr>
<th>Power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trigger input</td>
</tr>
<tr>
<td>Relay ON</td>
</tr>
<tr>
<td>Relay ON (instant)</td>
</tr>
</tbody>
</table>
Multifunction Timer (continued)

5. [Io] INTERVAL ON TRIGGER OPEN (MANUAL START)

The output relay turns ON as soon as the trigger signal is released. Timing will start on the falling edge of the trigger signal. The output relay turns OFF after the delay time (T). Subsequent reapplication of trigger signal and release prior the output relay turns OFF will reset the delay time (T).

6. [R] SYMMETRICAL RECYCLER ‘ON’ FIRST (AUTOMATIC AND MANUAL START)

The output relay will cycle “ON / OFF” continuously as long as power is connected. The delay time T1 and T2 are of equal duration ie. Symmetrical.
Multifunction Timer (continued)

7. [ Rb ] SYMMETRICAL RECYCLER ‘OFF’ FIRST (AUTOMATIC & MANUAL START)

The output relay will cycle “ON / OFF” continuously as long as power is connected. The delay time T1 and T2 are of equal duration ie. Symmetrical.
STAR-DELTA TIMER

MODE OF OPERATION

When power is applied to the timer, the output relay changes over to the Star (Y) configuration for a duration of TY.

At the end of the TY the output relay goes back to its normal de-energised state for a duration of TYΔ.

At the end of TYΔ, the output relay changes over to the Delta configuration and remains in this state until power is disconnected from the timer.

TYPICAL APPLICATION

- Star-delta starters
## SUITABLE PRODUCTS

<table>
<thead>
<tr>
<th>Housing</th>
<th>Supply</th>
<th>Output</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.5 mm DIN</td>
<td>24-240 V AC/DC</td>
<td>1 C/O</td>
<td>DAC-51-C-M24</td>
</tr>
<tr>
<td>22.5 mm DIN</td>
<td>24-240 V AC/DC</td>
<td>1 C/O</td>
<td>DAC-01-C-M24</td>
</tr>
<tr>
<td>22.5 mm DIN</td>
<td>380-415 V AC</td>
<td>1 C/O</td>
<td>DAC-01-C-M40</td>
</tr>
</tbody>
</table>

**DAC51, DAC01**

![Diagram of DAC51, DAC01 connections](image-url)