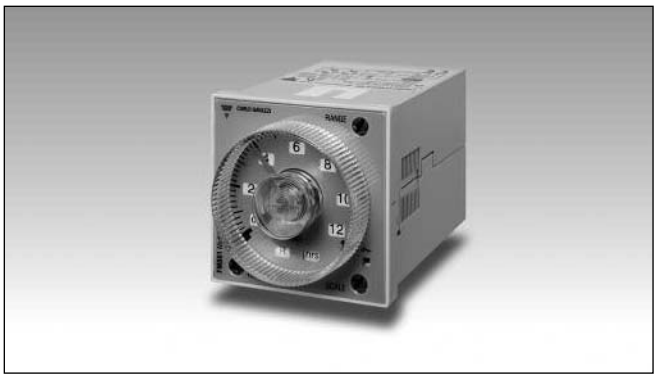
Timers
Multifunction
Type FMB01



- **Time range 0.05 s to 300 h**
- **Knob selection of time range**
- **Knob adjustable time setting**
- **Knob selection of operating mode (7 functions):**
  - **Op - delay on operate**
  - **Rb - symmetrical recycler OFF first**
  - **R - symmetrical recycler ON first**
  - **Id - double interval**
  - **Dr - delay on release**
  - **In - interval**
  - **Io - interval on trigger open**
- **Manual start**
- **Gate and reset inputs**
- **Repeatability: ±0.2% on full scale**
- **Output: 8 A DPDT relay**
- **48 x 48 mm housing for front panel mounting**
- **11 pin socket**
- **LED indication for relay status and power supply ON**

Product Description

Multifunction timer with 7 functions and selectable time range from 0.05 seconds to 300 hours. 48 x 48 mm for front panel mounting and on 11-pin socket.

Ordering Key

FMB 01 D W24 B002

- **Housing**
- **Function**
- **Type**
- **Item number**
- **Output**
- **Power supply**

Type Selection

Mounting	Output	Plug	Supply: 12 to 240 VAC/DC
Front or socket	DPDT	11-pin	**FMB01DW24**

Time Specifications

Time ranges				
Knob selectable				
	Full scale 12	0.02	to	1.2s
		0.2	to	12s
		2	to	120s
		0.2	to	12min
		2	to	120min
		0.2	to	12h
		2	to	120h
	Full scale 30	0.05	to	3s
		0.5	to	30s
		5	to	300s
		0.5	to	30min
		5	to	300min
		0.5	to	30h
		5	to	300h
Setting accuracy	± 5% on full scale ±50 ms			
Repeatability	± 0.2% on full scale or ± 200 ms			
Time variation				
Within rated power supply	≤ 0.05%/V			
Within ambient temperature	≤ 0.2%/°C			
Reset				
Power supply interruption	>100 ms			
Pulse width	> 50 ms			

Output Specifications

Output		DPDT relay
Rated insulation voltage		250 VAC
Contact ratings ($AgSnO_2$)		µ
Resistive loads	AC 1	8 A @ 250 VAC
	DC 12	5 A @ 24 VDC
Small inductive loads	AC 15	2.5 A @ 250 VAC
	DC 13	2.5 A @ 24 VDC
Mechanical life		≥ 30 x 10^6 operations
Electrical life		≥ 10^5 operations (at 8 A, 250 V, cos φ = 1)
Operating frequency		≤ 3600 operations/h
Dielectric strength		
Dielectric voltage		≥ 2 kVAC (rms)
Rated impulse withstand volt.		4 kV (1.2/50 µs)

Supply Specifications

Power Supply		Overvoltage cat II (IEC 60947-1)
Rated operational voltage throuhgt terminals:	2, 10	12 to 240 VDC + 10% - 15% 12 to 240 VAC + 10% -15%, 45 to 65 Hz
Power consuption		
Rated operational power		
	AC	3 VA
	DC	1.5 W

General Specifications

Indication for	
Power supply On	LED, green
Output relays ON	LED, yellow (flashing when timing)
Environment	
Degree of protection	IP 50 (front panel)
Operating temperature	-10 to +55 °C, R.H. < 85%
Storage temperature	-10 to +55 °C, R.H. < 85%
Housing	
Dimesions	48 x 48 mm
Material	PA66

Weight	Approx. 95 g
Approvals	UL, CSA
CE marking	Yes
EMC	Electromagnetic Compatibillity
Immunity	According to EN 61000-6-2
Emission	According to EN 61000-6-3
Timer specifications	According to EN 61812-1

Mode of Operation

Function Op
Delay on operate
The time period begins as soon as the trigger contact is closed. At the end of the set delay time the relay operates and doesn't release until the power supply is disconnected.
The trigger contact is invalid while the timer is in operation.

Function Rb
Symmetrical recycler (OFF first)
The time period begins as soon as the input contact is closed. The relay is OFF during the set delay period, after this time it operates for the same time period. This sequence continues with equal OFF- and ON- time periods until power supply is interrupted.

Function R
Symmetrical recycler (ON first)
The relay operates and the time period begins as soon as the input contact is closed. After the set delay period the relay releases for the same time period. This sequence continues with equal ON- and OFF- time periods until power supply is interrupted.

Function Id
Double interval
The relay operates and the time period begins as soon as the trigger contact is closed. The relay releases at the end of this period or when the power supply is disconnected. When the trigger contact is opened the relay operates again for the set delay period. If the trigger contact is opened before the end of the first time period the second one begins; if the trigger contact is closed before the end of the second time period the relay keeps ON and the first time period begins again.

Function Dr
Delay on release
The relay operates as soon as the trigger contact is closed. The time period begins when the trigger contact is opened. The relay releases at the end of the set delay time or when the power supply is disconnected. The relay operates again when the input conctact is closed again. If it is opened before the end of the delay time the relay keeps ON, a new time period begins as soon as the contact is closed again.

Function In
Inteval
The relay operates and the time period begins as soon as the trigger contact is closed. The relay releases at the end of this period or when the power supply is disconnected. The relay operates again when the trigger contact is closed again. If the trigger conctact is closed before the end of the delay time, the device resets and a new time period starts.

Function Io
Inteval on trigger open
The relay operates and the time period begins as soon as the trigger contact is opened. The relay releases at the end of this period or when the power supply is disconnected. The relay operates again when the trigger contact is opened again. If the trigger conctact is opened before the end of the delay time, the device resets and a new time period starts.

Function and Time Setting

Lower left knob:
Setting of function
Op - delay on operate
Rb - symmetrical recycler (OFF first)
R - simmetrical recycler (On first)
Id - double interval
Dr - delay on release
In - interval
Io - interval on trigger open

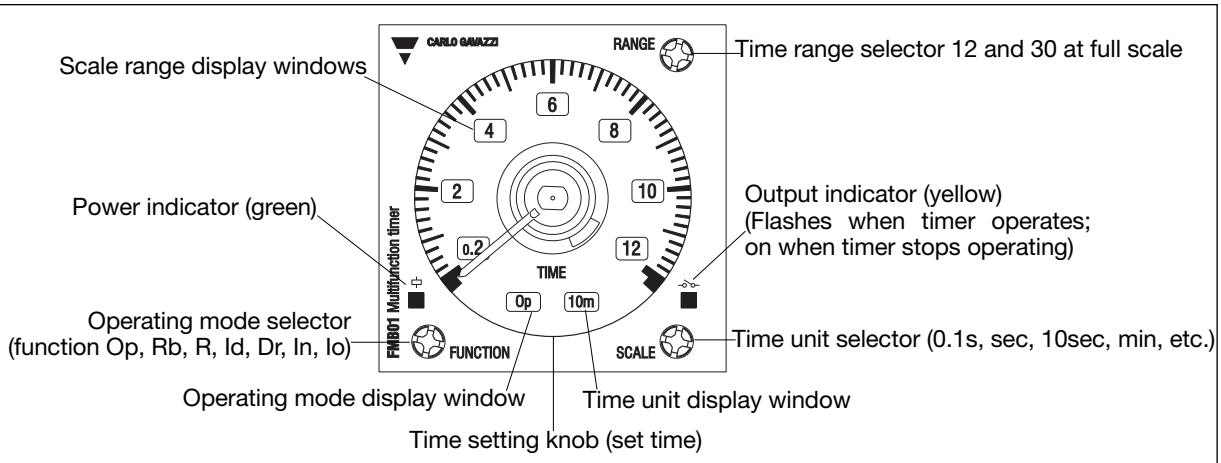
Lower right knob:
Time unit selector
0.1s (0.1 seconds)
sec (seconds)
10sec (10 seconds)
min (minutes)
10m (10 minutes)
hrs (hours)
10h (10 hours)

Upper right knob:
Time range selector
12 or **30**

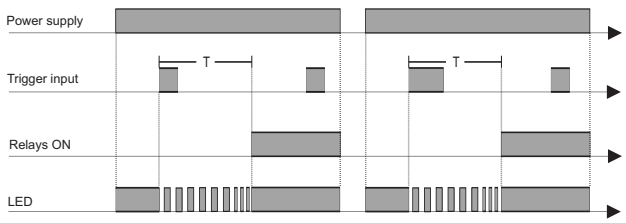
Centre knob:
Time setting on absolute scale

Specifications are subject to change without notice (21.03.08)

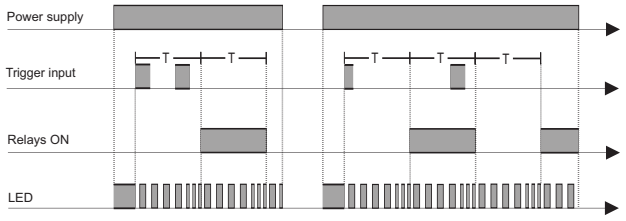
Range and operation mode selection



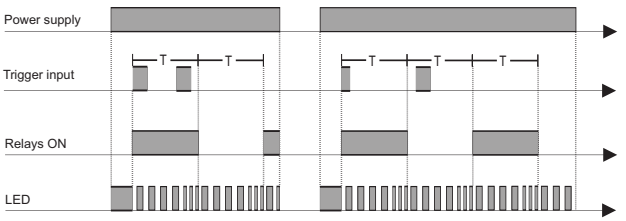
Operating Diagrams



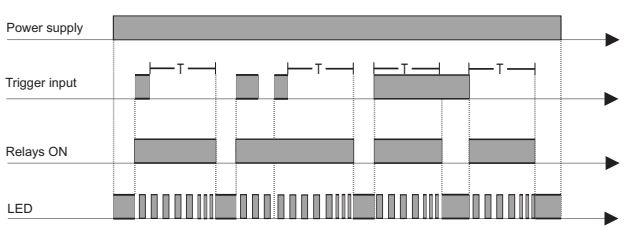
Function Op - Delay ON Operate
Reset and Gate inputs working mode
If Reset contact is closed the relay is released and timing is reset. Nothing else happens until Reset is released.
If Gate contact is closed the timing operation is freezed. When it is released, if timing was in progress, it goes on from the point reached at the moment of closing the Gate.



Function Rb - Symmetrical Recycler OFF first
Reset and Gate inputs working mode
If Reset contact is closed the function is interrupted, the relay is released and timing is reset. Nothing else happens until Reset is released.
If Gate contact is closed while recycling, the timing operation is freezed and the output is kept at the state it was when Gate has been closed. When it is released, timing goes on from the point reached at the moment of closing the Gate.

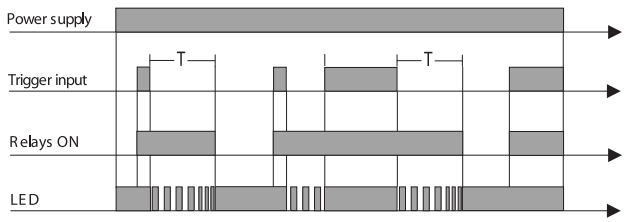


Function R - Symmetrical Recycler ON first
Reset and Gate inputs working mode
If Reset contact is closed the function interrupted, the relay is released and timing is reset. Nothing else happens until Reset is released.
If Gate contact is closed while recycling, the timing operation is freezed and the output is kept at the state it was when Gate has been closed. When it is released, timing goes on from the point reached at the moment of closing the Gate.

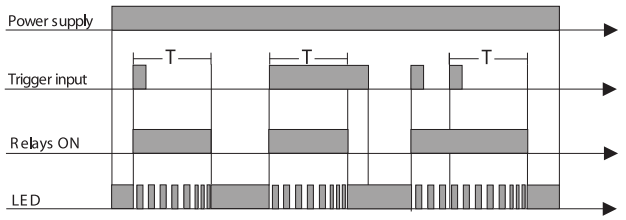


Function Id - Double interval
Reset and Gate inputs working mode
If Reset contact is closed the relay is released and timing is reset. Nothing else happens until Reset is released.
If Gate contact is closed the timing operation is freezed. When it is released, if timing was in progress, it goes on from the point reached at the moment of closing the Gate.

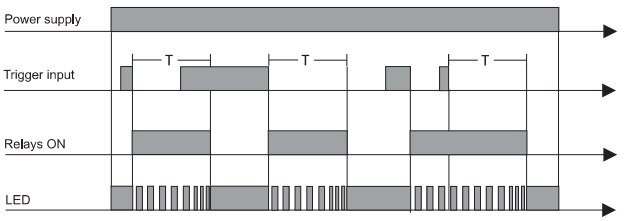
Operating Diagrams (cont.)



Function Dr - Delay ON Release
Reset and Gate inputs working mode
If Reset contact is closed the relay is released and timing is reset. Nothing else happens until Reset is released.
If Gate contact is closed the timing operation is freezed. When it is released, if timing was in progress, it goes on from the point reached at the moment of closing the Gate.

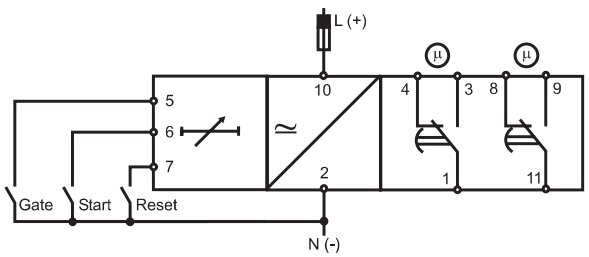
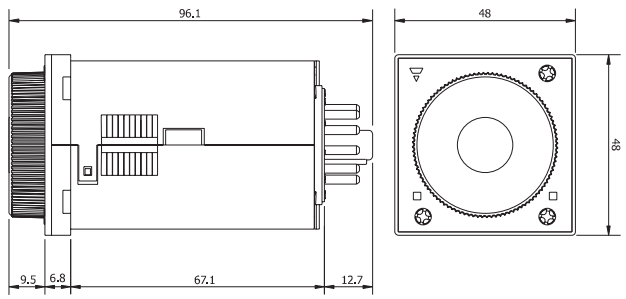


Function In - Interval
Reset and Gate inputs working mode
If Reset contact is closed the relay is released and timing is reset. Nothing else happens until Reset is released.
If Gate contact is closed the timing operation is freezed. When it is released, if timing was in progress, it goes on from the point reached at the moment of closing the Gate.



Function Io - Interval on trigger open
Reset and Gate inputs working mode
If Reset contact is closed the relay is released and timing is reset. Nothing else happens until Reset is released.
If Gate contact is closed the timing operation is freezed. When it is released, if timing was in progress, it goes on from the point reached at the moment of closing the Gate.

Wiring Diagrams



Dimensions