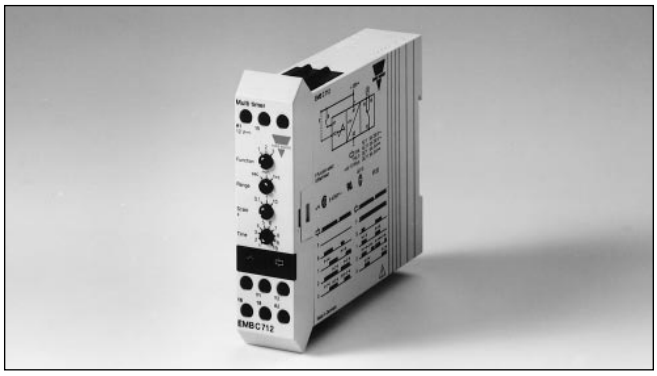
Timers
Multi-function
Type EMB



- **Microprocessor-based quartz timer**
- **Time range 0.1 s to 100 h**
- **Automatic start or pulse start**
- **Knob selection of function and time range**
- **Knob-adjustable time setting**
- **Repeatability deviation: ≤ 0.5%**
- **Output: 5 A SPDT**
- **For mounting on DIN-rail in accordance with DIN/EN 50 022**
- **22.5 mm Euronorm housing**
- **LED-indication for power supply ON (flashing when timing)**

Product Description

Microprocessor-based multi-function timer with 6 selectable modes of operation and time range from 0.1 s to 100 h.

Extensive applications due to the combination and variety of voltages, functions and time ranges.

Ordering Key

EMB C T23

Housing
Function
Type
Output
Power supply

Type Selection

Mounting	Output	Supply: 12 VDC	Supply: 24 VAC/DC & 115-230 VAC
For DIN-rail	SPDT	**EMB C 712**	**EMB C T23**

Time Specifications

Time ranges	
Selectable by rotary switches	0.1 - 1 s 1 - 10 s 10 - 100 s 0.1 - 1 m 1 - 10 m 10 - 100 m 0.1 - 1 h 1 - 10 h 10 - 100 h
Accuracy	
Time accuracy	≤ 5%
Repeatability deviation	≤ 0.5%
Time variation	
Within rated ambient temperature	≤ 0.05%/°C
Reset	
Time and relay	Intercon. pins A1 & Y1 max. voltage = rated operational voltage, 5 mA
Reaction time	≤ 100 ms
Pulse duration	≥ 30 ms
Repetition time	≤ 250 ms

Output Specifications

Output		SPDT relay
Rated insulation voltage		250 VAC (contact/elect.)
Contact ratings (AgCdO)		µ (micro gap)
Resistive loads	AC 1	5 A, 250 VAC
	DC 1	5 A, 24 VDC
Small inductive loads	AC 15	2 A, 250 VAC
	DC 13	3 A, 24 VDC
Mechanical life		≥ 40 x 10^6 operations
Electrical life		≥ 10^5 operations (at max. load)
Operating frequency		≤ 7200 operations/h
Dielectric strength		
Dielectric voltage		2 kVAC (rms)
Rated impulse withstand volt.		4 kV (1.2/50 µs)

Supply Specifications

Power supply AC types		Overvoltage cat. III (IEC 664)
Rated operational voltage		(IEC 38)
through term. A1 & A2	T23	115-230 VAC, -10/+15%
frequency		50/60 Hz, -5/+5 Hz
through term. A1 & A3	T23	24 VAC/DC, -10/+15%
frequency		50/60 Hz, -5/+5 Hz
Voltage interruption		≤ 40 ms
Dielectric voltage		None
Rated impulse withstand voltage	A1 & A2	4 kV (1.2/50 µs)
	A2 & A3	800 V (1.2/50 µs)
Power supply DC types		
Rated operational voltage through term. A1 & A3		12 VDC, -10/+15%
Voltage interruption		≤ 40 ms
Dielectric voltage		None
Rated impulse withstand voltage	A1 & A2	800 V (1.2/50 µs)
Rated operational current		50 mA @ 12 VDC 25 mA @ 24 VDC 40 mA @ 24 VAC 30 mA @ 115 VAC 60 mA @ 230 VAC

General Specifications

EMC	Electromagnetic Compatibility
Immunity	Acc. to IEC 801-4 Acc. to IEC 801-5
Power ON delay	≤ 300 ms
Power OFF delay	≥ 200 ms
Indication for	
Power supply ON (flashing when timing)	LED, green
Output ON	LED, yellow
Environment	
Degree of protection	IP 20
Pollution degree	3
Operating temperature	-10° to +50°C (-14° to +122°F)
Storage temperature	-50° to +85°C (-58° to +185°F)
Weight	200 g
Screw terminals	
Tightening torque	Max. 0.5 Nm acc. to IEC 947
Approvals	UL, CSA, SEV

Mode of Operation

A1 & Y2 not connected (F)

Function switch in position 1 (delay on operate, pulse start)
The delay period begins when power supply is applied and A1 & Y1 are initiated by a contact.

At the end of the set delay the relay operates and will not release until power supply is interrupted for at least 200 ms. A new time period can be obtained by disconnecting and subsequently reconnecting A1 & Y1.

Function switch in position 2 (pulse-controlled interval timer)
Power supply must be constantly applied.

When A1 & Y1 are initiated by a contact, the relay operates. The time period starts when A1 & Y1 are disconnected. When interconnecting A1 & Y1 before the delay has expired, the time is reset to zero. The time period restarts when the interconnection between A1 & Y1 is interrupted again. A new time period can be obtained by disconnecting and subsequently reconnecting A1 & Y1.

Function switch in position 3 (pulse controlled delay on operate/delay on release)
Power supply must be constantly applied.

The delay period begins when A1 & Y1 are interconnected. At the end of the delay period the relay operates.If A1 & Y1 are disconnected before the time delay has expired, the relay operates immediately, and a new delay period starts. After this delay the relay releases.

When A1 & Y1 are disconnected, a new delay period starts and when this delay period has expired, the relay releases.

If A1 & Y1 are interconnected before the delay period has expired, the relay releases immediately, the time is reset to zero and a new delay period must expire before the relay operates.

A1 & Y2 connected (F)

Function switch in position 1 (pulse-started interval timer, leading edge)
The relay operates and the time period starts when power supply is applied and A1 & Y1 are initiated by an impulse or a contact.

At the end of the set delay the relay releases. A new time period can be obtained by disconnecting and subsequently reconnecting A1 & Y1.

Function switch in position 2 (pulse-started symmetrical recycler, ON-time first)
The relay operates and the time period starts when power supply is applied and A1 & Y1 are initiated by an impulse or a contact.

At the end of the first time period the relay releases. When the second time period (equal to the first) has expired, the relay operates.

This sequence continues with equal ON- & OFF-time periods until power supply is interrupted.

By applying a new impulse when the sequence is running, the sequence will restart.

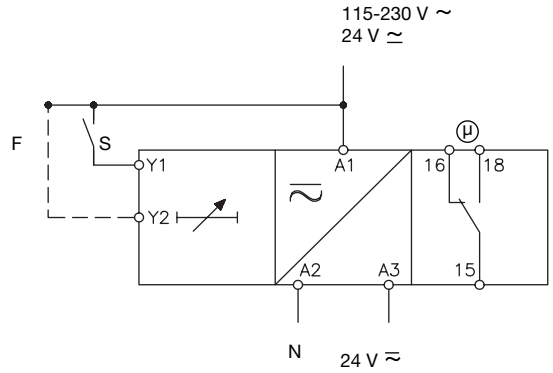
Function switch in position 3 (pulse-started interval timer, trailing edge)
When power supply is applied and A1 & Y1 are interconnected, the relay operates when A1 & Y1 are disconnected (triggered on trailing edge) and the delay period starts.

When the delay period expires, the relay releases and will not operate again before A1 & Y1 have been interconnected and then disconnected.

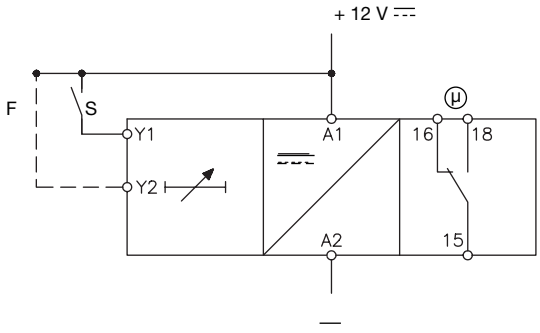
If A1 & Y1 are interconnected before the delay period has expired, the relay releases. When A1 & Y1 are then disconnected again, the relay operates, and a new delay period must expire before the relay releases again.

Wiring Diagrams

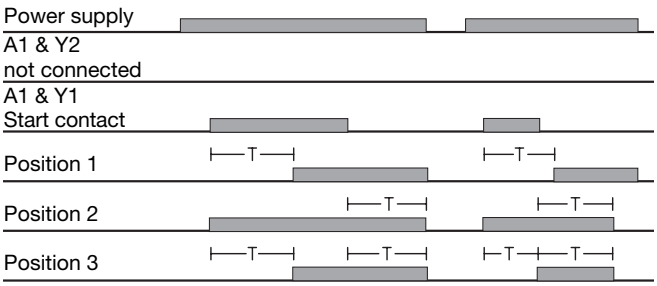
EMB CT23: 24 VAC/DC C 115 - 230 VAC

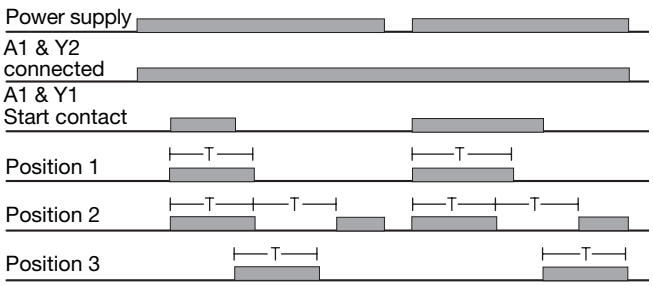


EMB C712: 12 VDC



Operation Diagrams





Time Setting

Upper knob:
Setting of function.

2nd upper knob:
Range selection
(second, minute, hour).

2nd lower knob:
Time multiplier.

Lower knob:
Time setting on relative scale 1-10.