

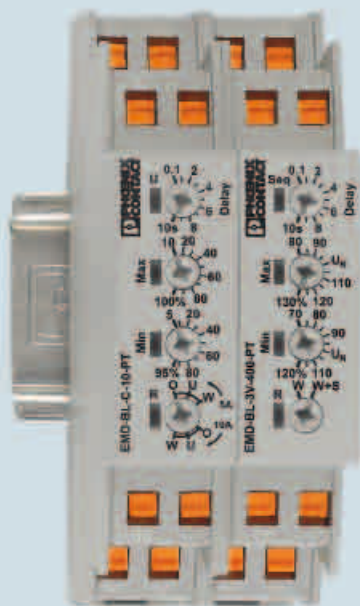
Monitoring and timer relays

Efficient system monitoring

Monitoring and timer relays – efficient system monitoring

For high system availability

The EMD monitoring relays can be used to detect deviations in important system parameters at an early stage. These can be indicated or system parts can be shut down selectively.

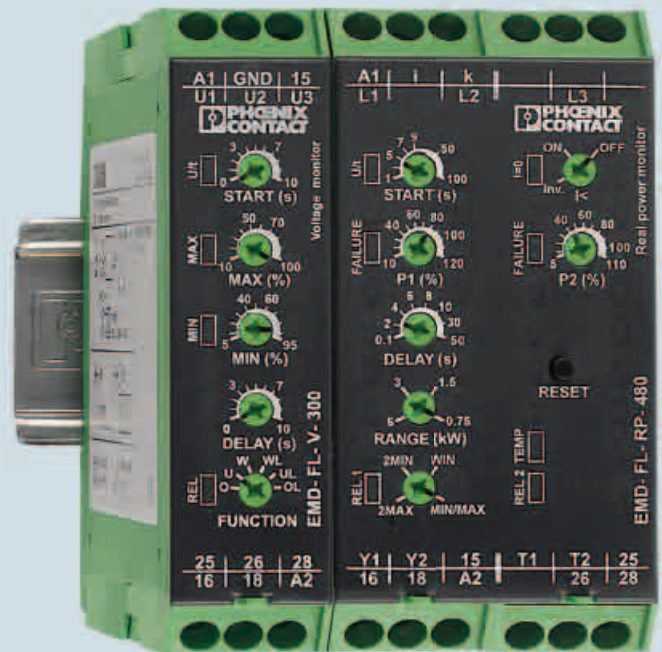


Compact monitoring relays

Space-saving and wired quickly

The EMD-BL compact monitoring relays are ideal for simple monitoring tasks. The devices are particularly suitable for use in building installation and in series production of machines and systems.

More information from page 4 onwards.



Multifunctional monitoring relays

Extremely versatile

The multifunctional EMD monitoring relays monitor electrical as well as physical system parameters – these can be used in a variable manner, by means of a wide function spectrum, extended setting options, and different supply voltage ranges.

More information from page 6 onwards.

Perfect timing

ETD timer relays ensure optimum time sequences. They are the cost-effective alternative to a PLC: with easy configuration and fast wiring.



Ultra-narrow timer relays

Narrow and precise

The extra narrow ETD-BL timer relays are the space-saving and cost-efficient solution for extremely simple time control applications – with one adjustable time and one fixed, predefined function.

More information from page 12 onwards.



Multifunctional timer relays

For universal use

The multifunctional ETD timer relays can be used universally, thanks to a wide range of functions and selectable time ranges. Available in just three versions, they cover all applications associated with conventional time control.

More information from page 14 onwards.

Compact monitoring relays – space-saving and wired quickly

The EMD-BL compact monitoring relays are ideal for simple monitoring tasks. The devices are particularly suitable for use in building installation and in series production of machines and systems.

Monitor the following efficiently and reliably:

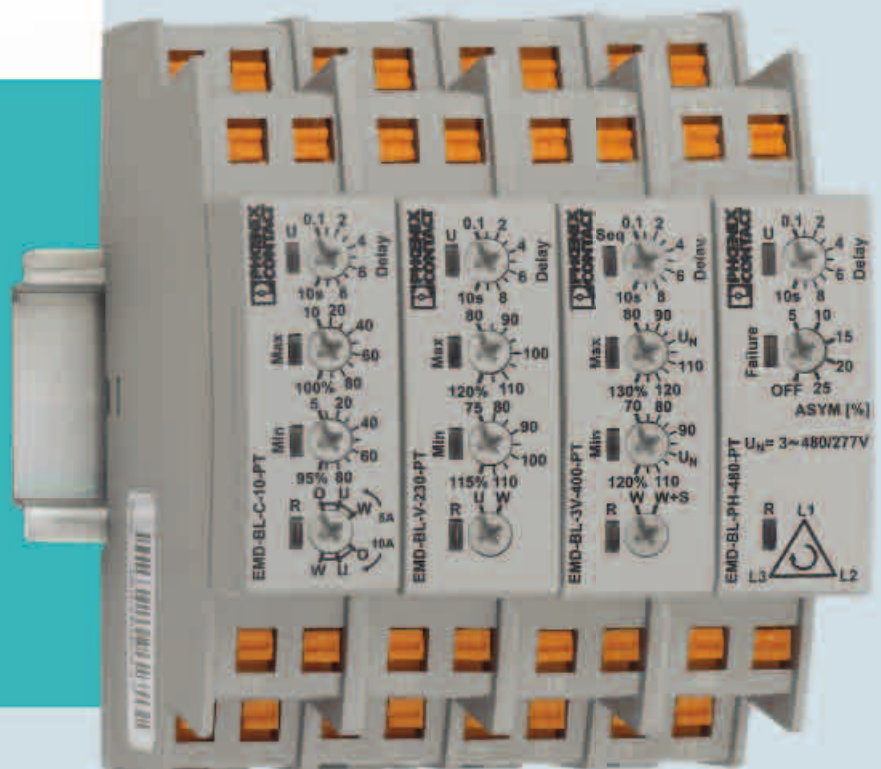
- Currents
- Voltages, 1- and 3-phase
- Phase sequence

Push-in Technology





Designed by PHOENIX CONTACT

Your advantages

- Space-saving, thanks to compact installation housing
- Fast and tool-free wiring, thanks to Push-in Technology
- User-friendly handling – parameters can be set conveniently on the front of the housing using rotary switches
- Clear diagnostics with status LED
- Ideal for series production – reasonably-priced solution for numerous monitoring functions
- Quick installation of the module versions with supply from the measuring circuit



Product overview of compact monitoring relays

				
	Current monitoring, single-phase	Voltage monitoring, single-phase	Voltage monitoring, 3-phase	Phase monitoring
Screw connection	EMD-BL-C-10	EMD-BL-V-230	EMD-BL-3V-400	EMD-BL-PH-480
Order No.	2903521	2903523	2903525	2903527
Push-in connection	EMD-BL-C-10-PT	EMD-BL-V-230-PT	EMD-BL-3V-400-PT	EMD-BL-PH-480-PT
Order No.	2903522	2903524	2903526	2903528
Monitoring range	5 A	U1/24 V DC	3~400/230 AC	3~208 V/120 V
	10 A	U2/24 V AC		Up to 480 V/277 V
		U3/230 V AC		
Functions				
Undervoltage		•		
Undercurrent	•			
Overcurrent	•			
Window function	•	•	•	
Phase sequence			•	•
Phase failure				•
Asymmetry				•
Overload	13 A	$U_N + 20\%$	$U_N \pm 30\%$	$U_N \pm 10\%$
Configuration				
Threshold value	•	•	•	•
Hysteresis	•	•	•	•
Response delay	0.1 ... 10 s	0.1 ... 10 s	0.1 ... 10 s	0.1 ... 10 s
Signaling	1 floating PDT contact	1 floating PDT contact	1 floating PDT contact	1 floating PDT contact
Switching capacity	1250 VA (5 A/230V AC)	1250 VA (5 A/230V AC)	1250 VA (5 A/230V AC)	1250 VA (5 A/230V AC)
Switching threshold				
In relation to max.	10 ... 100% of I_N	80 ... 120% of U_N	80 ... 130% of U_N	5 ... 25% OFF, asym.
In relation to min.	5 ... 95% of I_N	75 ... 115% of U_N	70 ... 120% of U_N	5 ... 25% OFF, asym.
Supply				
Supply voltage range	230 V AC $\pm 15\%$	Measuring voltage -25 ... +20% of U_N	Measuring voltage $\pm 30\%$ of U_N	Measuring voltage $\pm 10\%$ of U_N
Frequency range	48 ... 63 Hz	48 ... 63 Hz	48 ... 63 Hz	48 ... 63 Hz

Multifunctional monitoring relays – extremely versatile

With the multifunctional EMD monitoring relays, you can monitor electrical as well as physical system parameters. Benefit from a wide function spectrum, extended setting options, and various supply voltage ranges.

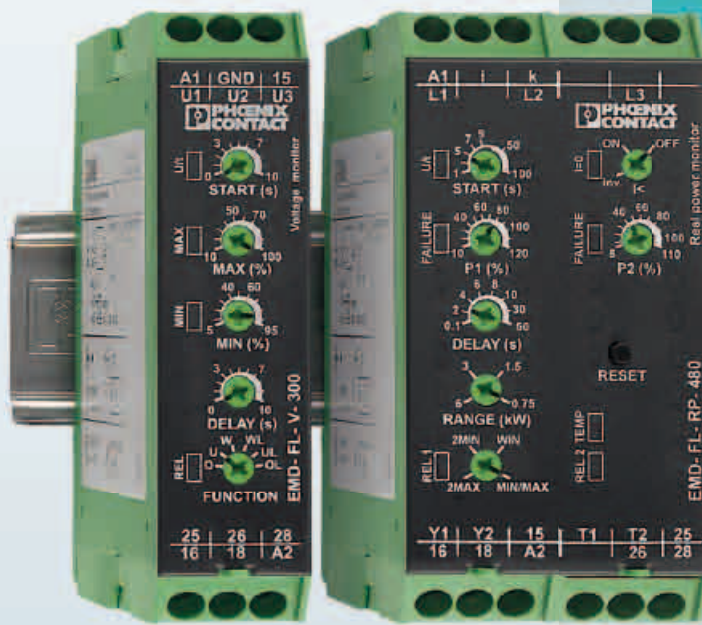
With the EMD range, you can monitor:

- Currents
- Voltages, 1- and 3-phase
- Phase sequences
- Real powers
- Loads, $\cos \varphi$
- Motor winding temperatures
- Fill levels



Worldwide use – without additional power supply unit

Two versions are available to you: with integrated wide-range power supply unit for voltages from 24 to 240 V or with plug-in transformer for different voltage ranges between 24 and 500 V.



Your advantages

- Universal use, thanks to wide range of functions
- Worldwide use, thanks to wide-range power supply unit or plug-in transformer
- User-friendly handling – parameters can be set conveniently on the front of the housing using rotary switches
- Space saving – with two PDT outputs in a narrow 22.5 mm housing
- Clear diagnostics, thanks to color status LED
- Fast error detection, thanks to fine tuning and short response times
- Safe operation with electrically isolated measuring and supply circuits

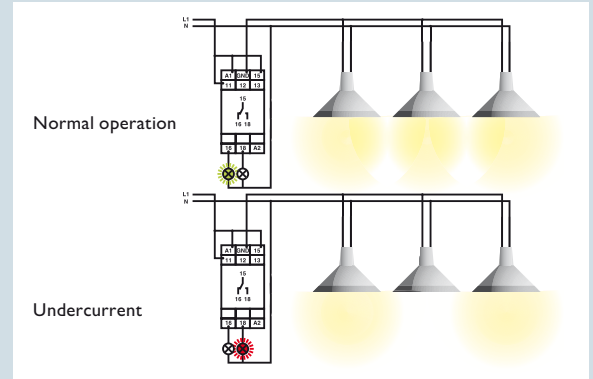
Application examples

Current monitoring

With undercurrent monitoring, you can monitor electrical loads for functionality or open circuits. Overcurrent monitoring enables you to prevent overload situations or blockages.

Examples:

- Current consumption of motors
- Monitoring of lighting systems and heating circuits
- Overload situations for lifting and transport equipment
- Monitoring of locking devices, driving up to end stops
- Electromechanical brake mechanisms
- Monitoring of ventilation systems



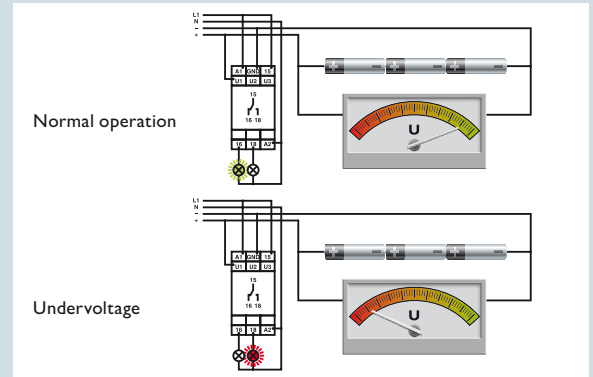
Undercurrent monitoring of lighting systems

Voltage monitoring

Overvoltages or undervoltages often have damaging effects and can shut down parts of your system. Protect your machines and systems by monitoring voltages.

Examples:

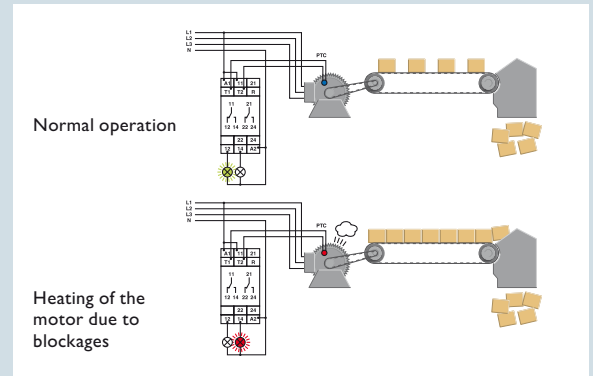
- Undervoltage monitoring for batteries
- Rotation speed monitoring for DC motors
- Limit value monitoring for machines and systems
- Power supply monitoring for machines and systems
- Protection against damage to loads due to unstable power supply networks



Undervoltage monitoring for batteries

Motor winding temperature monitoring

To monitor the temperature of motor windings, temperature-dependent resistors are often built into the motor windings. These PTC resistors become highly resistant as temperatures increase and thereby act as sensors. They detect a temperature rise at the motor and activate the relay to process the message further.

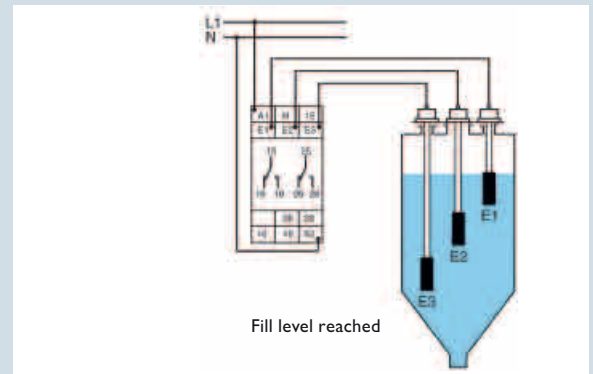


Motor winding temperature monitoring in conveyor belts

Level monitoring




Level monitoring relays indicate the level of conductive liquids or changes in electrical resistance.

In the case of conductive level monitoring, the wetting of probe rods is evaluated. If the probes are wetted when immersed in the medium, the resistance changes.



Level monitoring of conductive liquids

Product overview of multifunctional monitoring relays






			
	Undervoltage and overvoltage monitoring, single-phase	Undervoltage monitoring, single-phase	Undervoltage and phase monitoring, 3-phase
Screw connection	EMD-FL-V-300	EMD-SL-V-UV-300	EMD-FL-3V-230
Order No.	2866048	2866035	2885773
Monitoring range	3 ... 300 V AC/DC	3 ... 300 V AC/DC	3 x 160 ... 300 V AC
Functions			
Window function	•		•
Undervoltage	•	•	•
Overvoltage	•		
Phase sequence			•
Phase failure			•
Asymmetry			5 ... 25%/off
Configuration			
Threshold value	•	•	•
Hysteresis	•	•	•
Startup delay	0 ... 10 s		
Response delay	0.1 ... 10 s	0.2 ... 10 s	0.1 ... 10 s
Signaling	2 PDTs	1 PDT	2 PDTs
Switching threshold			
In relation to max.	10 ... 100%	10 ... 100%	-20 ... +30%
In relation to min.	5 ... 95%	5 ... 95%	-30 ... +20%
Supply			
Supply voltage range	24 ... 264 V AC/DC	variable ranges ¹⁾	24 ... 264 V AC/DC
Frequency range	48 ... 400 Hz	48 ... 63 Hz	48 ... 400 Hz

¹⁾ With EMD-PS-... power module (20 ... 30 V DC; 20.2 ... 26.4 V AC; 88 ... 121 V AC; 108 ... 132 V AC; 195 ... 264 V AC)




²⁾ With EMD-PS45-... power module (88 ... 121 V AC; 108 ... 132 V AC; 195 ... 264 V AC; 400 V AC; 500 V AC)

³⁾ With neutral conductor

Product overview of multifunctional monitoring relays

				
Undervoltage and phase monitoring, 3-phase	Undervoltage and phase monitoring, 3-phase	Undervoltage and phase monitoring, 3-phase	Window voltage monitoring, 3-phase	Phase monitoring, 3-phase
EMD-FL-3V-400	EMD-FL-3V-500	EMD-FL-3V-690	EMD-SL-3V-400/ EMD-SL-3V-400-N ³⁾	EMD-SL-PH-400
2866064	2867979	2885249	2866051/2885278	2866077
3 x 280 ... 520 V AC	3 x 350 ... 650 V AC	3 x 483 ... 897 V AC	3 x 280 ... 520 V AC	3 (N) 342 ... 477 V AC
•	•	•	•	
•	•	•		
•	•	•		•
•	•	•		•
5 ... 25%/off	5 ... 25%/off	5 ... 25%/off		30% defined
•	•	•	•	
•	•	•	•	Defined
0.1 ... 10 s	0.1 ... 10 s	0.1 ... 10 s	0.2 ... 10 s	
2 PDTs	2 PDTs	2 PDTs	1 PDT	2 PDTs
-20 ... +30%	-20 ... +30%	-20 ... +30%	-20 ... +30%	
-30 ... +20%	-30 ... +20%	-30 ... +20%	-30 ... +20%	
24 ... 264 V AC/DC	variable ranges ²⁾	variable ranges ²⁾	variable ranges ¹⁾	Measuring voltage
48 ... 400 Hz	48 ... 63 Hz	48 ... 63 Hz	48 ... 63 Hz	48 ... 63 Hz


Product overview of multifunctional monitoring relays

			
	Undercurrent and overcurrent monitoring, single-phase	Undercurrent monitoring, single-phase	Overcurrent monitoring, single-phase
Screw connection	EMD-FL-C-10	EMD-SL-C-UC-10	EMD-SL-C-OC-10
Order No.	2866022	2867937	2866019
Monitoring range	10 mA... 10 A AC/DC	10 mA... 10 A AC/DC	10 mA... 10 A AC/DC
Functions			
Overcurrent	•		•
Undercurrent	•	•	
Window function	•		
Configuration			
Threshold value	•	•	•
Hysteresis	•	•	•
Startup delay	0 ... 10 s		
Response delay	0.1 ... 10 s	0.2 ... 10 s	0.2 ... 10 s
Signaling	2 PDTs	1 PDT	1 PDT
Switching threshold			
In relation to max.	10 ... 100%	10 ... 100%	10 ... 100%
In relation to min.	5 ... 95%	5 ... 95%	5 ... 95%
Supply			
Supply voltage range	24 ... 264 V AC/DC	variable ranges ¹⁾	variable ranges ¹⁾
Frequency range	48 ... 400 Hz	48 ... 63 Hz	48 ... 63 Hz





¹⁾ With EMD-PS-... power module (20 ... 30 V DC; 20.2 ... 26.4 V AC; 88 ... 121 V AC; 108 ... 132 V AC; 195 ... 264 V AC)

²⁾ With EMD-PS45-... power module (88 ... 121 V AC; 108 ... 132 V AC; 195 ... 264 V AC; 400 V AC; 500 V AC)


Accessories

Power module	Voltage range	Type	Order No.
 <p>Power module for adjusting the supply voltage, for monitoring relays with a housing width of 22.5 mm</p>	20 ... 30 V DC	EMD-SL-PS-24DC	2885359
	20.2 ... 26.4 V AC	EMD-SL-PS-24AC	2866103
	88 ... 121 V AC	EMD-SL-PS-110AC	2866116
	108 ... 132 V AC	EMD-SL-PS-120AC	2885731
	195 ... 264 V AC	EMD-SL-PS-230AC	2866129

Product overview of multifunctional monitoring relays

				
	Real power monitoring	Load monitoring cos φ	Temperature monitoring (motor winding)	Level monitoring
Type	EMD-FL-RP-480	EMD-FL-PF-400	EMD-SL-PTC	EMD-SL-LL-230/EMD-SL-LL-110
Order No.	2900177	2885809	2866093	2885906/2901137
Monitoring range	0.15 A ... 12 A	cos φ: 0.1 ... 1	< 1.8 ... ≥ 3.6 kΩ	0.25 ... 100 kΩ
Functions				
Window function	•	•		
Underload	•	•		
Overload	•	•		
Thermistor monitoring			•	
Pump up				•
Pump down				•
cos φ		•		
Configuration				
Threshold value	•	•		•
Hysteresis	•	•		
Test function/reset int./ext.			•	
Startup delay	1 ... 100 s	1 ... 100 s		
Response delay	0.1 ... 50 s	0.1 ... 40 s		0.5 ... 10 s
Signaling	2 PDTs	2 PDTs	2 PDTs	2 PDTs
Switching threshold				
In relation to max.	10 ... 120%	0.2 ... 1	≥ 3.6 kΩ operate value	0.25 – 100 kΩ
In relation to min.	5 ... 110%	0.1 ... 99	≤ 1.8 kΩ release value	
Supply				
Supply voltage range	variable ranges ²⁾	24 ... 264 V AC/DC	variable ranges ¹⁾	230 V AC ±15% 110 V AC -10% ... +15%
Frequency range	48 ... 63 Hz	10 ... 100 Hz		

Accessories

Power module	Voltage range	Type	Order No.
 <p>Power module for adjusting the supply voltage, for monitoring relays with a housing width of 45 mm</p>	88 ... 121 V AC	EMD-SL-PS45-110AC	2885281
	108 ... 132 V AC	EMD-SL-PS45-120AC	2885744
	195 ... 264 V AC	EMD-SL-PS45-230AC	2885294
	400 V AC	EMD-SL-PS45-400AC	2885304
	500 V AC	EMD-SL-PS45-500AC	2885317

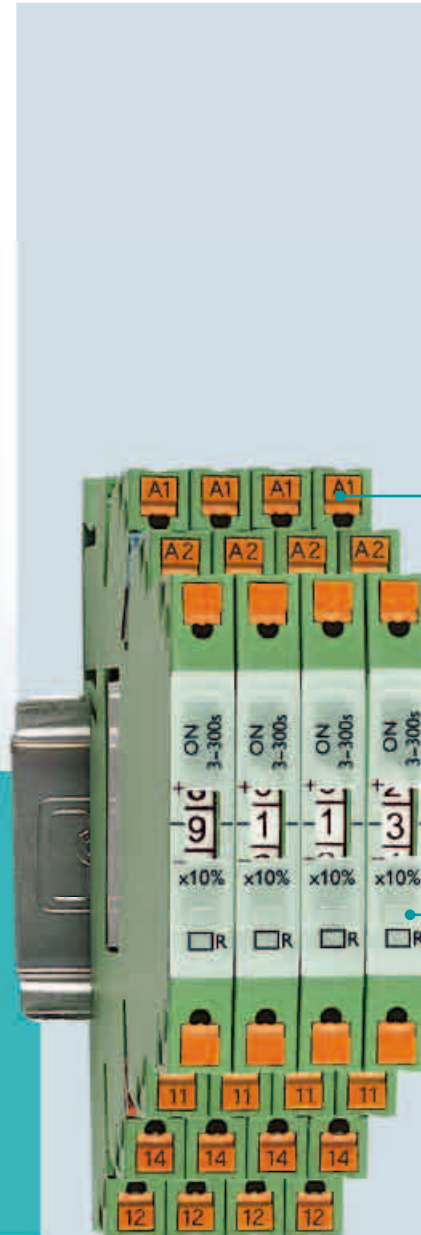
Ultra-narrow timer relays – narrow and precise

The ultra-narrow ETD-BL timer relays are the space-saving and cost-efficient solution for simple time control applications: with one adjustable time and one fixed, predefined function.

Connect the modules conveniently with the relays in the PLC series in the same housing. Plug-in bridges and system cabling save you time while doing so.

Your advantages

- Up to 70% of space saved in comparison to conventional timer relays, thanks to 6.2 mm design width
- Precise and convenient time setting using the illuminated thumbwheel
- Fast and tool-free wiring, thanks to Push-in Technology
- Fast installation, thanks to the use of plug-in bridges and system cabling







Particularly space-saving: the housing is only 6.2 mm wide.

Easy to read and well illuminated: you can set the desired time on the thumbwheel precisely and conveniently.

Push-in Technology

Designed by PHOENIX CONTACT

Product overview of ultra-narrow timer relays

					
		Switch-on delay, voltage controlled	Switch-on delay, with control contact	Switch-off delay, with control contact	Flash time function, beginning with pulse
Type		ETD-BL-1T-ON	ETD-BL-1T-ON-CC	ETD-BL-1T-OFF-CC	ETD-BL-1T-F
Setting range					
0.1 ... 10 s	Screw connection	ETD-BL-1T-ON-10S	ETD-BL-1T-ON-CC-10S	ETD-BL-1T-OFF-CC-10S	ETD-BL-1T-F-10S
	Order No.	2917379	2917418	2917450	2917492
	Push-in connection	ETD-BL-1T-ON-10S-PT	ETD-BL-1T-ON-CC-10S-PT	ETD-BL-1T-OFF-CC-10S-PT	ETD-BL-1T-F-10S-PT
	Order No.	2901476	2901480	2901485	2901489
3 ... 300 s	Screw connection	ETD-BL-1T-ON-300S	ETD-BL-1T-ON-CC-300S	ETD-BL-1T-OFF-CC-300S	ETD-BL-1T-F-300S
	Order No.	2917382	2917421	2917463	2917502
	Push-in connection	ETD-BL-1T-ON-300S-PT	ETD-BL-1T-ON-CC-300S-PT	ETD-BL-1T-OFF-CC-300S-PT	ETD-BL-1T-F-300S-PT
	Order No.	2901477	2901481	2901486	2901490
0.3 ... 30 min	Screw connection	ETD-BL-1T-ON-30MIN	ETD-BL-1T-ON-CC-30MIN	ETD-BL-1T-OFF-CC-30MIN	ETD-BL-1T-F-30MIN
	Order No.	2917395	2917434	2917467	2917515
	Push-in connection	ETD-BL-1T-ON-30MIN-PT	ETD-BL-1T-ON-CC-30MIN-PT	ETD-BL-1T-OFF-CC-30MIN-PT	ETD-BL-1T-F-30MIN-PT
	Order No.	2901478	2901483	2901487	2901491
3 ... 300 min	Screw connection	ETD-BL-1T-ON-300MIN	ETD-BL-1T-ON-CC-300MIN	ETD-BL-1T-OFF-CC-300MIN	ETD-BL-1T-F-300MIN
	Order No.	2917405	2917447	2917489	2917528
	Push-in connection	ETD-BL-1T-ON-300MIN-PT	ETD-BL-1T-ON-CC-300MIN-PT	ETD-BL-1T-OFF-CC-300MIN-PT	ETD-BL-1T-F-300MIN-PT
	Order No.	2901479	2901484	2901488	2901492
Functions					
With switch-on delay, voltage controlled		•			
With switch-on delay, and control contact			•		
With release delay and control contact				•	
Flashing beginning with pulse					•
Supply					
Supply voltage range		24 V DC, -20 ... 25 %	24 V DC, -20 ... 25 %	24 V DC, -20 ... 25 %	24 V DC, -20 ... 25 %

Multifunctional timer relays – for universal use

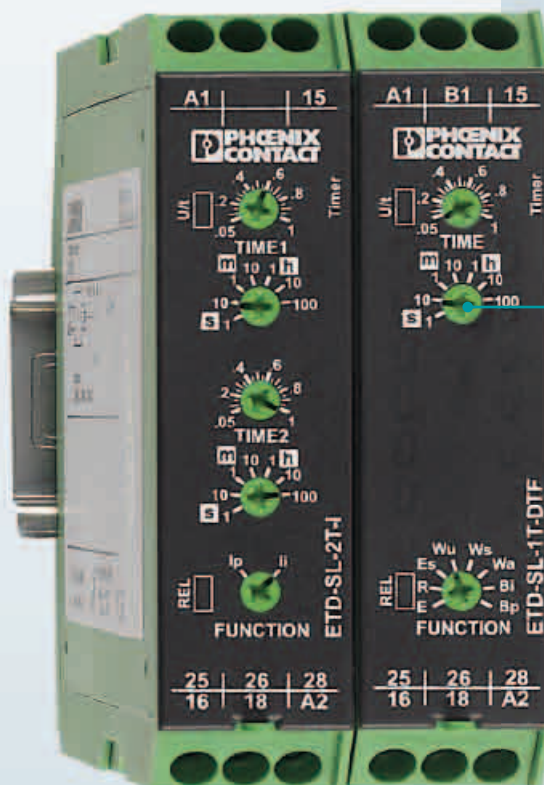
You can use multifunctional ETD timer relays universally with a wide range of functions and selectable time ranges. Available in just three versions, they take care of all applications associated with conventional time control.

Report the errors or switch off system parts in a targeted fashion: with a design width of just 22.5 mm, the multifunctional timer relays are equipped with two floating PDT outputs.



Error indication and selective shutdown

With two PDT outputs on a design width of just 22.5 mm






Easy handling: times and functions can be set easily using rotary switches on the front of the housing

Your advantages

- Universal use, thanks to wide range of functions
- Worldwide use, thanks to the voltage being supplied via a universal power supply unit
- User-friendly handling – parameters can be set conveniently on the front of the housing using rotary switches
- Space saving, with two PDT outputs on a design width of just 22.5 mm
- Optimum time control with setting ranges from milliseconds to several days

Product overview of multifunctional timer relays

			
	Multifunctional timer relay, two adjustable times	Multifunctional timer relay, one adjustable time	Impulse encoder, adjustable pulse and pause times
Screw connection	ETD-FL-2T-DTI	ETD-SL-1T-DTF	ETD-SL-2T-I
Order No.	2866187	2866161	2866174
Functions			
Switched-mode beginning with pause	•		•
Switched-mode beginning with pulse	•		•
Flashing beginning with pause		•	
Flashing beginning with pulse		•	
With switch-on delay		•	
With release delay and control contact		•	
With switch-on delay and control contact		•	
With switch-on and release delay with control contact	•		
With switch-on delay and passing make contact, voltage controlled	•		
With switch-on delay and passing make contact, with control contact	•		
With passing make and passing break contact with control contact	•		
With passing make contact, voltage controlled		•	
With passing make contact and control contact		•	
With passing break contact and control contact		•	
Pulse sequence evaluation (retriggerable release delay)	•		
Setting range	50 ms ... 10 h	50 ms ... 100 h	50 ms ... 100 h
Adjustable times	2	1	2
Time ranges	10	7	7
Supply			
Supply voltage range	24 ... 264 V AC/DC	24 ... 264 V AC/DC	24 ... 264 V AC/DC
Frequency range	48 ... 400 Hz	48 ... 63 Hz	48 ... 63 Hz



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PHOENIX CONTACT GmbH & Co. KG
 32825 Blomberg, Germany
 Phone: +49 (0) 52 35 3-00
 Fax: +49 (0) 52 35 3-4 12 00
phoenixcontact.net