Timer Relay Functions — On-Delay, Off-Delay, Single-Shot, Flasher and Star-Delta Explained

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What each timing function actually does to the output contact, how multifunction units like Zelio RE22 and SIRIUS 3RP25 replace a drawer of single-function spares, the true-off-delay trap (timing without auxiliary supply), and the dedicated star-delta timer's transfer gap — with stocked examples.

Five functions cover almost every panel

Function | Behaviour | Classic use |

On-delay (A) | Supply on !’ output waits the set time, then closes | Staggered starts, alarm suppression during start-up |

Off-delay | Trigger removed !’ output holds for the set time, then opens | Fan run-on, lubrication after-run |

Single-shot / interval | One fixed-length pulse per trigger | Ejectors, stamping, horn pulses |

Flasher (symmetric) | Output cycles on/off at the set period | Beacon and indicator flashing |

Star-delta | Star time, then a fixed ~50 ms dead gap, then delta | Reduced-inrush motor starting |

The star-delta version is its own species: the dead gap between the star contactor dropping and the delta contactor pulling in is built into the device — the Zelio Time RE7TP11BU carries both timed outputs in one 22.5 mm housing. Get the gap wrong with two generic timers and the supply sees a phase-to-phase short through the motor windings; the contactor trio itself is sized in the contactor guide.

Multifunction units ended the spares drawer

A modern multifunction timer selects its function and range by dials: a Zelio RE22R2AMR (2 C/O) or RE22R1AMR covers ten-plus functions across 24–240 V AC/DC supply — one spare on the shelf stands in for nearly any failed single-function unit. Siemens' equivalent is the SIRIUS 3RP25 family (3RP2505-1AB30, 3RP2505-2AW30), and wide-supply multifunction units exist across brands (a 24 V DC / 24–240 V AC 2 C/O example). Two checks before substituting:

True off-delay needs no control trigger wire — it times from supply removal and stores its own energy. Most multifunction units instead do off-delay with a separate trigger input while the supply stays live; wiring decides which one a retrofit needs.

Output technology: relay contacts switch anything small; solid-state outputs handle high cycle rates (flashers) but mind polarity and minimum load.

Close to 1,900 timing-relay line items are in the catalogue — about a hundred Zelio Time units alone, plus the SIRIUS 3RP range and panel-builder staples. The plug-in relays these timers often drive, and their bases, are covered in the relay and socket pairing chart; quote the failed unit's full reference and function letter and a current equivalent is confirmed within 24 hours.

Frequently asked questions
What is the difference between on-delay and off-delay timing?On-delay waits after power arrives before closing the output; off-delay closes immediately and holds the output for the set time after the trigger or supply disappears — fan run-on being the textbook case.Why does a star-delta starter need its own timer type?Because the changeover needs a guaranteed dead gap (around 50 ms) between star dropping out and delta pulling in — a dedicated star-delta timer provides both outputs with that interlock built in.Can one multifunction timer replace any old timing relay?Nearly — if the supply voltage band covers the panel's control voltage, the function list includes the old unit's letter, and the off-delay variant matches the wiring (true off-delay versus triggered off-delay are wired differently).What does 2 C/O mean on a timer relay?Two changeover output contacts — each with common, NO and NC — switching together; it is the contact count, the same convention plug-in relays use.How long should the star time be set?Long enough for the motor to approach rated speed in star — typically a few seconds, set by watching the current fall — because switching to delta while current is still high defeats the purpose of the reduced-inrush start.

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