Analog & Digital Plug-in Timers

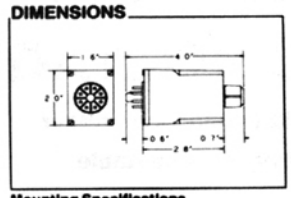
Analog Plug-In Timers

ICM's Analog Plug-In Timers provide heavy-duty 10 amp switching capability in standard 8 or 11-pin base configurations. A choice of five control methods are available featuring factory fixed or adjustable time delays covering .1–600 seconds. Analog Plug-in timers offer reliability and performance in a broad range of applications and are available in the following Modes of Operation: Delay on Make (featured), Delay on Break, Single Shot, Repeat Cycle, and Interval Delay.

FEATURES

- ☐ Heavy-duty 10 amp output contacts
- ☐ Built-in transient protection
- ☐ Fast Reset and Initiate times
- ☐ Reset during timing without false output
- ☐ ± 2% Repeat Accuracy

DIMENSIONS



Mounting Specifications
- ☐ Mounting: Plug-in
- ☐ Termination: Standard 8 or 11 pin
- ☐ Weight: 5 ounces (142 grams)

SPECIFICATIONS

Time Delay
- ☐ Type: Adjustment integral to the unit, factory fixed, field fixed by resistor selection, or remote adjustment
- ☐ Range: 0.1 to 600 seconds (consult factory for longer delays)
- ☐ Repeat Accuracy: ± 2% under fixed conditions
- ☐ Fixed Time Tolerance and Dial Setting Accuracy: ± 5%, ± 10%, or ± 20%
- ☐ Time Delay vs Temperature and Voltage: ± 5% maximum over the specified range of input voltage and temperature

Reset Time
- ☐ During and After Timing: 75 milliseconds
- ☐ May be reset during the timing period without false output

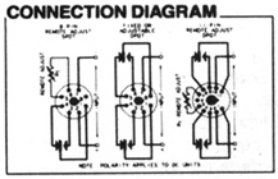
Input
- ☐ Nominal Voltage: 24 to 240 volts
- ☐ Tolerance: ± 15% of nominal
- ☐ Frequency: 50 or 60 Hz
- ☐ Maximum Allowable DC Ripple Voltage: 20% peak-to-peak
- ☐ Power Consumption: During timing 0.5 watts maximum, after timing 2.0 watts maximum

Output
- ☐ Type: Electromechanical relay
- ☐ Form: DPDT
- ☐ Rating Max: 10 AMP resistive @ 240 volts
- ☐ Life: Mechanical: 10,000,000 cycles, Full Load 1,000,000 cycles

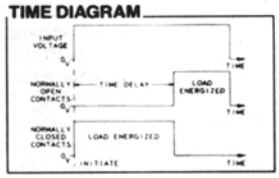
Protection
- ☐ Transient: ± 1,400 V for 100 microseconds
- ☐ Polarity: DC units are inverse voltage protected
- ☐ Dielectric Breakdown: 1,500 volts RMS minimum at 60 Hz between input and output terminals
- ☐ Insulation Resistance: 100 megohms minimum

Environmental Specifications
- ☐ Operating Temperature: – 40°C to + 65°C
- ☐ Storage Temperature: – 40°C to + 80°C

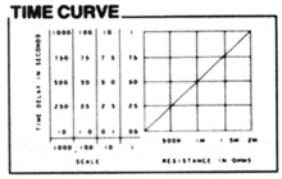
CONNECTION DIAGRAM



TIME DIAGRAM



TIME CURVE



MODE OF OPERATION

The MDR time delay period initiates when power is applied to the input terminals. At the end of the delay period, the output contacts transfer. Reset is accomplished by removing the input power. The MDR may be reset any time during the time delay period without false output operations.

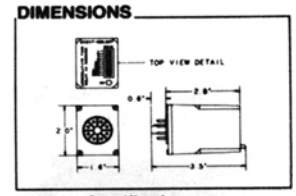
Digital Plug-In Timers

ICM's Digital Plug-In Timers incorporate a fast, accurate switch-settable method of adjustment in standard 8 or 11-pin base configurations. Utilizing stable C/MOS circuitry, these digital timers provide high-precision timing over a broad range of voltages and offer three time delay ranges covering .1–10,230 seconds. Easy to use, versatile and ideal for applications requiring highly accurate time delays, Digital Plug-in Timers are available in the following Modes of Operation: Delay on Make (featured), Delay on Break, Single Shot, Repeat Cycle and Interval Delay.

FEATURES

- ☐ C-MOS Digital circuitry for highly accurate time delays.
- ☐ Easy, Switch-settable time delays cover .1–10,230 sec.
- ☐ Heavy-duty 10 amp output contacts.
- ☐ LED indication during timing.
- ☐ Standard 8 or 11-pin base configurations.
- ☐ 0.5% Repeat Accuracy.

DIMENSIONS



Mounting Specifications
- ☐ Mounting: Plug-in
- ☐ Termination: Standard 8 or 11 pin
- ☐ Weight: 5 ounces (142 grams)

SPECIFICATIONS

Time Delay
- ☐ Type: Switch-settable
- ☐ Range: 3 ranges (see ordering information) from 0.1 sec to 10,230 sec
- ☐ Repeat accuracy: ± 0.5%
- ☐ Fixed Delay Accuracy: ± 5%
- ☐ Time Delay vs Voltage: ± 2%
- ☐ Time Delay vs Temperature: ± 2%

Reset Time
- ☐ During and After Timing: 75 milliseconds
- ☐ May be reset during the timing period without false output

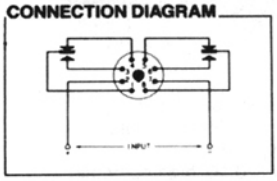
Input
- ☐ 24, 120, or 240 VAC or 12, 24 or 110 VDC
- ☐ Tolerance: ± 20%
- ☐ Frequency: 50 or 60 Hz
- ☐ Power Consumption: 2.5 Watts max

Output
- ☐ Type: Relay
- ☐ Form: SPDT, DPDT
- ☐ Rating: 10 amps resistive at 115 VAC, 1/6 HP at 115 VAC, 1/3 HP at 230 VAC
- ☐ Life: Mechanical 10,000,000 cycles; full load 1,000,000 cycles

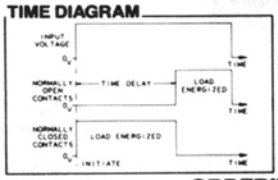
Protection
- ☐ Transient: 1400 Volts for 100 Microseconds
- ☐ Polarity: Reverse polarity protected
- ☐ Dielectric Breakdown: 1,500 V RMS min @ 60 Hz between input and output terminals
- ☐ Insulation Resistance: 100 Megohms min

Environmental Specifications
- ☐ Operating Temperature: – 40°C to + 85°C
- ☐ Storage Temperature: – 40°C to + 85°C

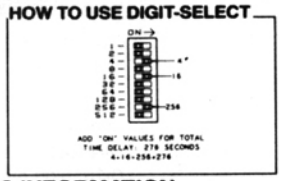
CONNECTION DIAGRAM



TIME DIAGRAM



HOW TO USE DIGIT-SELECT



MODE OF OPERATION

The TMDR time delay period initiates when power is applied to the input terminals. At the end of the delay period the output contacts transfer. Reset is accomplished by removing the input power. The TMDR may be reset any time during the time delay period without false output operations.

ORDERING INFORMATION

ANALOG PLUG-IN TIMERS
Sample Part Number

BDR	115A	2	1	X	120

Type
Delay On Make = MDR
Delay On Break = BDR
Interval Delay = IDR
Single Shot = SDR
*Repeat Cycle = FDR

Voltage Rating
24D = 24 VDC
28D = 28 VDC
110D = 110 VDC
24A = 24 VAC
115A = 115 VAC
230A = 230 VAC

Control Method
1 = Fixed
2 = Knob-adjustable
3 = Lock shaft on top (screw driver adjust)
4 = Remote with potentiometer & knob (SPST, octal)
5 = Remote without potentiometer (SPST, octal)
6 = Remote with potentiometer & knob (DPDT, 11-pin)
7 = Remote without potentiometer (DPDT, 11-pin)

Termination (Applies to Series BDR & SDR Only)
1 = 8-pin
2 = 11-pin

Time Delay Tolerance (Fixed or Adjustable)
X = ± 20%
Y = ± 10%
Z = ± 5%

Time Delay In Seconds
5 = 0.1–5
30 = 0.6–30
120 = 1.2–120
600 = 4.8–600

*Consult Relay Specialties for Repeat Cycle Series FDR & TFDR54 ordering information

DIGITAL PLUG-IN TIMERS
Sample Part Number

TBDR54	42	D	D8	S	A

Type
Delay On Make = TMDR54
Delay On Break = TBDR54
Interval Delay = TIDR54
Single Shot = TSDR54
*Repeat Cycle = TFDR54

Voltage Rating
22 = 24 VAC RMS
42 = 120 VAC RMS
52 = 240 VAC RMS
10 = 12 VDC
20 = 24–28 VDC
30 = 48 VDC
40 = 110 VDC

Control Method
D = Switch-settable

Time Delay Range (in seconds)
D7 = .1–102.3
D8 = 1–1,023
D9 = 10–10,230

Standard

Timing Sequence (Applies to Series TFDR54 Only)
A = OFF/ON
B = ON/OFF

Termination (Applies to Series TBDR54 & TBDR54 Only)
1 = 8-pin
2 = 11-pin

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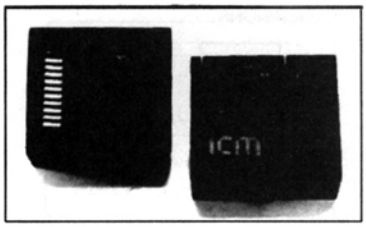
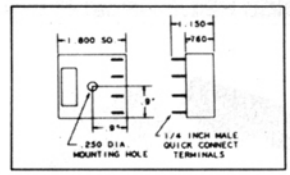
Uni-Set Timers



Uni-Set timers are a highly versatile group of digital timers featuring universal AC voltage operation and easy-to-set time delays covering .1–10,230 seconds. Available with either switch-settable or knob-adjustable time delays, Uni-Set timers utilize digital C/MOS circuitry to ensure high-precision timing over broad voltage ranges. Six Standard Modes of Operation are available: Delay on Make, Delay on Break, Single Shot, Repeat Cycle, Interval Delay and 3-Wire Delay on Make.



FEATURES

- ☐ Solid State reliability.
- ☐ Universal AC voltage operation: 19–288 VAC.
- ☐ Time delay ranges cover .1–10,230 seconds.
- ☐ Switch-settable or knob-adjustable delays.
- ☐ One model replaces many in field.

MOUNTING SPECIFICATIONS

- ☐ Mounting: Surface mount with #8 or #10 screw.
- ☐ Hole center: .25"
- ☐ Termination: .25" male quick-connect terminals
- ☐ Weight: 6 ounces

SPECIFICATIONS

Time Delay
- ☐ Type: Switch-settable or knob-adjustable
- ☐ 3 Ranges:
  .1–102.3 sec. (.1 sec. increments)
  1-1,023 sec. (1 sec. increments)
  10–10,230 sec. (10 sec. increments)
- ☐ Repeat accuracy: 0.5% under fixed conditions
- ☐ Time Delay vs. Temperature: ± 1% max
- ☐ Time Delay vs. Voltage: ± 1%

Reset & Initiate Time:
- ☐ Reset time: During & after timing: 150 ms typical
- ☐ Initiate Time: 32 ms
- ☐ Reset during timing without false output

Input
- ☐ Voltage: 19–288 VAC RMS
  DC units polarity independent
- ☐ Frequency: 50/60 Hz
- ☐ Power consumption: .5 watt max

Protection
- ☐ Transient: ± 1500 V for 100 ms
- ☐ Polarity: DC units are reverse bias protected

Environmental
- ☐ Operating Temperature: – 50°C to + 85°C
- ☐ Storage Temperature: – 65°C to + 85°C

Output
- ☐ Type: Solid State, non-isolated
- ☐ Form: SPST, normally open
- ☐ Ratings:
  max—1 amp RMS steady state
  min—20 milliamps
  inrush—10 amps
- ☐ Life: 100,000,000 operations
- ☐ Voltage Drop: 2.5 V at 1 amp
- ☐ Polarity: DC applications switch negative or positive voltage.

CONNECTION DIA.	TIME DIAGRAMS	MODE OF OPERATION	ORDERING INFORMATION (Part No./Time Range in seconds)
TMKS7198		**Delay On Make** The TMKS time delay period initiates when power is applied to the input terminals. At the end of the time delay period the load is energized as long as power is applied. Reset is accomplished by removal of power during or after the time delay period. The timer may be reset during the time delay period wit no false output. Note: The Series TMKS7198 features universal AC and DC voltage operation (19–288 VAC/VDC).	Switch-Settable: TMKS7198DD7A—.1–102.3 TMKS7198DD8A—1–1,023 TMKS7198DD9A—10–10,230 Knob-Adjustable: TMKS00C2X10—.1–10 TMKS00C2X100—1–100 TMKS00C2X1000—10–1000 TMKS00C2X10000—100–10,000
TBKS7198		**Delay On Break** Power must be applied to the input terminals of the delay on break before and during the time delay period. When the initiate contact closes the load energizes. The load remains energized as long as the initiate contact is closed. The time delay period begins when the initiate contact opens. At the end of the time delay period the load remains energized and the time delay is reset to zero. Removal of input power during the time delay period turns off the load and resets the time delay period to zero.	Switch-Settable: TBKS7198DD7A—.1–102.3 TBKS7198DD8A—1–1,023 TBKS7198DD9A—10–10,230 Knob-Adjustable: TBKS00C2X10—.1–10 TBKS00C2X100—1–100 TBKS00C2X1000—10–1000 TBKS00C2X10000—100–10,000
TSKS7198		**Single Shot** Power must be applied to the input terminals of TSKS before and during the delay period. When the initiate contact closes, the output contacts transfer immediately and the time delay begins. The output contacts return to their original position when the delay period is complete. Note: The initiate contact closure can be momentary or maintained. To reset TSKS during the time delay period, remove the input power.	Switch-Settable: TSKS7198DD7A—.1–102.3 TSKS7198DD8A—1–1,023 TSKS7198DD9A—10–10,230 Knob-Adjustable: TSKS00C2X10—.1–10 TSKS00C2X100—1–100 TSKS00C2X1000—10–1000 TSKS00C2X10000—100–10,000
TFKS7198		**Repeat Cycle** Upon application of power to the input terminals the load is immediately energized and the on time delay initiated. At the end of the on delay period the load is deenergized and the off delay initiated. At the end of the off delay period the load is again energized and the on/off cycle repeats. Removal of power during any portion of the cycle will result in deenergization of the delay functions. Note: When ordering, please specify desired time delay sequence. A = OFF/ON (as in part numbers featured at right) or B = ON/OFF.	Switch-Settable: TFKS7198DAD7A—.1–102.3 TFKS7198DAD8A—1–1,023 TFKS7198DAD9A—10–10,230 Knob-Adjustable: TFKS00C2XA10—.1–10 TFKS00C2XA100—1–100 TFKS00C2XA1000—10–1000 TFKS00C2XA10000—100–10,000
TIKS7198		**Interval Delay** Applying power to the input terminals of TIKS energizes the load and initiates the time delay period. When the preselected time delay period is complete, the load deenergizes. To repeat the cycle, remove and reapply the input power. To reset the timing function during the time delay period, remove the input power.	Switch-Settable: TIKS7198DD7A—.1–102.3 TIKS7198DD8A—1–1,023 TIKS7198DD9A—10–10,230 Knob-Adjustable: TIKS00C2X10—.1–10 TIKS00C2X100—1–100 TIKS00C2X1000—10–1000 TIKS00C2X10000—100–10,000
TWKS7198		**3-Wire Delay on Make** The TWKS time delay period initiates when power is applied to the input terminals. At the end of the time delay period the load is energized as long as power is applied. Reset is accomplished by removal of power during or after the time delay period. The timer may be reset during the time delay period with no false output.	Switch-Settable: TWKS7198DD7A—.1–102.3 TWKS7198DD8A—1–1,023 TWKS7198DD9A—10–10,230 Knob-Adjustable: TWKS00C2X10—.1–10 TWKS00C2X100—1–100 TWKS00C2X1000—10–1000 TWKS00C2X10000—100–10,000

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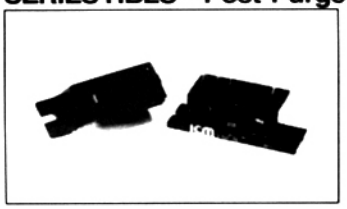
Special Purpose HVAC/R Controls

SERIES HBLS—Post-Purge Fan Delay Timer

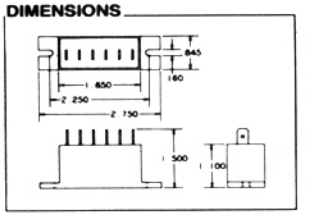


The HBLS was specifically designed to control the circulating fan in HVAC/R systems. Featuring a factory fixed or field adjustable OFF delay timing function, the HBLS continues to run the circulating fan at the end of the heating/cooling cycle. This delayed fan operation purges ducts of residual air, increasing the system's overall energy efficiency.

FEATURES

- Solid state reliability
- Epoxy-encapsulated circuitry
- Fixed or adjustable OFF delay range: .2–6.5 minutes (12–390 seconds)
- Standard 1 sec. initiate delay
- Replaces thermal delays
- Increases energy efficiency
- Rugged and compact housing
- Low cost, high performance
- recognized component

DIMENSIONS



SPECIFICATIONS

Time Delay
- Type: Fixed, local or remote adjustment.
- Range: .2–6.5 min. (12–390 sec.)
- Tolerance: ± 5% under fixed conditions
- Time Delay vs. Temperature: ± 10% max
- Time Delay vs. Voltage: + 5%

Reset & Initiate Time
- Reset time: During & after timing: 100 ms
- Initiate Time: 32 ms
- Reset during timing without false output

Protection
- Transient: ± 1400 V for 100μ

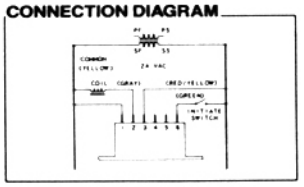
Environmental
- Operating Temperature: – 40°C to + 65°C
- Storage Temperature: – 40°C to + 85°C

Input
- Nominal Voltage: 24 VAC
- Tolerance: ± 15% of nominal
- Frequency: 50/60 Hz
- Power Consumption: 1 Watt max.

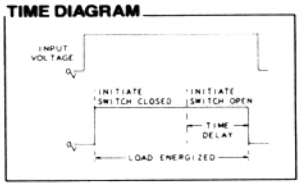
Output
- Type: Solid State
- Form: SPST, Normally open
- Ratings: max–.25 amp; min–20 milliamps; inrush–5 amps
- Life: 100,000,000 operations
- Leakage Current: 5 ma max

Mounting Specifications
- Mounting: Surface mount with 2 #8 self-tapping screws.
- Center to center: 2.2–2.26
- Termination: .25" male quick connect terminals.
- Weight: 1.74 ounces (50 grams)

CONNECTION DIAGRAM



TIME DIAGRAM



MODE OF OPERATION

Power must be applied to the input terminals of the delay on break before and during the time delay period. When the initiate contact closes the load energizes, and remains energized as long as the initiate contact is closed. When the initiate contact opens, the time delay period begins. At the end of the time delay, the load is turned off. If the initiate contact recloses during timing, the load remains energized and the time delay is reset to zero. Removal of the input power during timing turns off the load and resets the time delay period to zero.

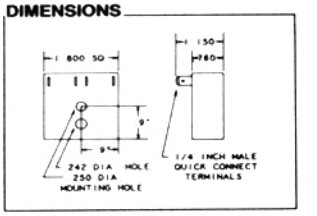
SERIES BLKS—Anti-Short Cycle With Lockout & Brownout

The BLKS is a rugged anti-short cycle timer featuring both lockout control and brownout protection in one compact unit. Ideal for HVAC/R applications, the lockout delay prevents the rapid short cycling of compressors while the brownout function prevents compressor startup due to low line voltage or power failure. All Solid State with epoxy-encapsulated circuitry, the BLKS was designed for reliability and performance in a broad range of HVAC/R applications.

FEATURES

- Solid State reliability
- Epoxy-encapsulated circuitry
- Fixed or locally adjustable time delays covering .1–600 seconds
- Industry standard wiring configuration
- Provides lockout control
- Offers brownout protection
- Rugged and compact housing
- High performance, low cost
- recognized component

DIMENSIONS



SPECIFICATIONS

Time Delay
- Type: Factory fixed or local adjust.
- Range: 0.–600 seconds
- Tolerance: ± 10% under fixed conditions
- Time Delay vs. Temperature: ± 10% max

Reset & Initiate Time
- Initiate Time: 32 ms

Protection
- Transient: ± 1400 V for 100μ

Environmental
- Operating Temperature: – 40°C to + 75°C
- Storage Temperature: – 40°C to + 85°C

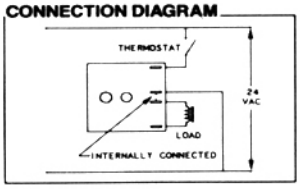
Input
- Nominal voltage: 18–30 VAC
- Frequency: 50/60 Hz
- Power Consumption: 2 Watts max.

Brownout
- Voltage: 18 V ± 1 V

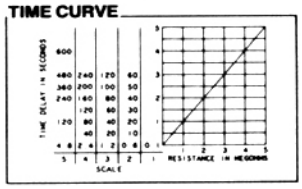
Output
- Type: Solid State
- Form: SPST, Normally open
- Ratings: max—1 amp; min—100 ma; inrush—10 amps
- Life: 100,000,000 operations
- Voltage Drop: 1.25 Volts
- Leakage Current: 70 ma max

Mounting Specifications
- Mounting: Surface mount with #8 or #10 screw.
- Hole center: .25"
- Termination: .25" male quick-connect terminals.
- Weight: 4 ounces (70 grams)

CONNECTION DIAGRAM



TIME CURVE



MODE OF OPERATION

When power is first applied through the thermostat (a pressure or other type of switch), the compressor contactor is energized. When the switch opens or when there is a loss of power (momentary or maintained–longer than the 32 millisecond initiate time) the lockout time delay is initiated. During the delay the anti-short cycle timer will not allow the compressor contactor to energize. At the end of the time delay period the compressor contactor is energized if the input power is present. The brownout function prevents compressor startup due to low line voltage or power failure.

ORDERING INFORMATION

Post-Purge Fan Delay Timer Series–HBLS

HBLS	24A	2	X	390
Type	Input Voltage 24A = 24 VAC	Control Method 1 = Factory fixed–external 2 = Local potentiometer adjustable 3 = Factory fixed–internal	Time Delay Tolerance X = ± 20%	Time Delay In Seconds Adjustable time range = .2–6.5 min. (12–390 sec.) For fixed delays, specify time in seconds.

NOTE: For remote and local adjust the following applies:
1. The time delay tolerance applies only to the maximum time delay setting
2. The short time shall be equal or less than the value specified

Anti-Short Cycle with Lockout & Brownout Series BLKS

BLKS	24A	1	X	600	A
Type	Input Voltage 24A = 24 VAC	Control Method 1 = Factory fixed—external 2 = Local potentiometer adjustable 3 = Factory fixed—internal	Time Delay Tolerance X = ± 20%	Time Delay In Seconds 600 = 180 – 600 For fixed delays, specify time in seconds	Mounting A = Surface Mount

NOTE: For remote and local adjust the following applies:
1. The time delay tolerance applies only to the maximum time delay setting
2. The short time shall be equal or less than the value specified

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