Watchdog Timer Modules

P8-WDT24/PLC

Sourcing Logic^{T} Input
24VDC

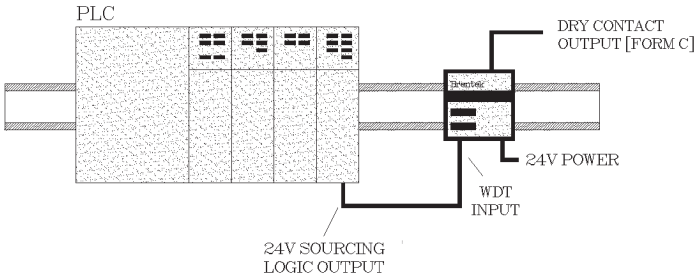
Product Features

- *System Fail-Safe**
- *"Loss of Control" Detection*
- *Fail-Safe FORM C Output (5 Amp)*
- *Fits Standard 8 Pin Octal Socket*
- *Power-up Timer Reset*
- *High Reliability*
- *Edge-Triggered Input*
- *LED Output Indicator*
- *Operating Temp -40°C to +85°C*
- *3 Year Limited warranty***
- *Encapsulated Design*
- ❖ *Adjustable Time-out Option (-A..)*
- ❖ *Opto-isolated Input Options (-ISO)*
- ❖ *Input Indicator Option (-INI)*

I/O Compatibility

8-Pin Octal

P8-WDT24/PLC
Watchdog Timer



Overview

P8-WDT24/PLC Watchdog Timers are designed to monitor control system integrity as a "System Watchdog" in PLC (Programmable Logic Controller), SBC (Single-board Controller) and other OEM control applications. Control system integrity is monitored by an edge-triggered Watchdog input. While the internal timer is reset by controller activity, a FORM C DRY Contact output is maintained (energized). Upon time-out or loss of power, the output relay de-energizes, indicating "loss of control" which can by configured to ALARM, SHUTDOWN or RESET the system. The Low Profile packaging is a direct plug-in to an industry standard 8-pin octal socket, such as Brentek p/n DIN8 which can be either DIN rail or panel mounted. P8-WDT24/PLC types are available with adjustable timeout range or fixed timeout ranging from 0.1 Seconds (100 milliseconds) to 60 seconds. Input options include optical-isolation and Input state indicator. *The base model# is P8-WDT24/PLC is 24VDC operation, 2 second fixed timeout, FORM C (5 Amp rated) DRY Contact output (see output ratings), and internal WDI input pull-down for direct connect to PLC 24V sourcing logic^{T}.*

Recommended Operating Parameters

SYMBOL	PARAMETER	LIMITS			UNIT	CONDITION
		MIN	TYP	MAX		
Vcc	Supply Voltage	20.0		28.0	Vdc	Pins 2(+) & 7(-)
Icc	Supply Current		21	25	mAdc	K1 Energized @28V
TA	Ambient Temp.	-40		+85	°C	Operating
fmax	RESET (WDI) Toggle Frequency	1/timeout		50	KHz	Non-Isolated (NI)
Tin	RESET (WDI) Period	20		T	µSec	Edge to Edge (NI)
T	Standard Timeout	1.73	2	2.30	Sec	
VIL	Input Logic Voltage Low			5	V	Vsupply=24V
VIH	Input Logic Voltage High	21			V	Vsupply=24V
TPUI	Power-up Initialization			0.5	Sec	
VIN	Input Voltage Limits	-32		+32	V	NON-ISO, Pin 5

*** Output relay de-energizes for all fault conditions.**
**** Refer to warranty section for limited warranty details.**
Optically-Isolated models may be driven by sourcing or sinking logic (pins 5 & 6).

P8-WDT24/PLC

Sourcing Logic* Input

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*Absolute Maximum Ratings

Supply Voltage (pins 2 & 7) ..... ± 35 Vdc
RESET (WDI) Input (pin 5) ..... See operating parameters
Contact Voltage (pins 1, 3 & 4) ..... 250 Vac / 125 Vdc
Contact Switching/Inrush Current ..... 10 Amps @ 250 Vac
5 Amps @ 30 Vdc
0.15A @ 125 Vdc
Ambient Operating Temperature ..... –40° to +85°C

*NOTE: STRESSES ABOVE THOSE LISTED UNDER ABSOLUTE MAXIMUM RATINGS MAY CAUSE PERMANENT DEVICE DAMAGE. OPERATION AT THESE RATINGS FOR EXTENDED PERIODS MAY AFFECT RELIABILITY.

Output Contact Ratings

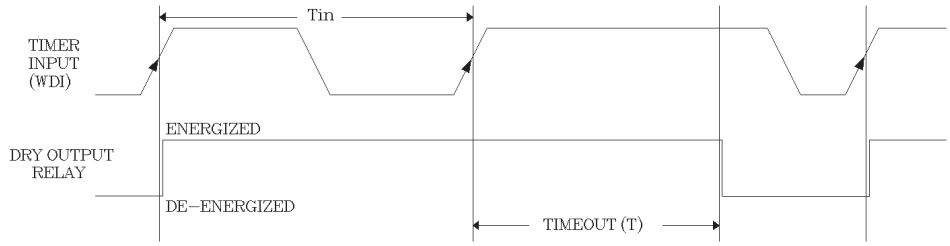
SYMBOL	PARAMETER	LIMITS MIN	LIMITS TYP	LIMITS MAX	UNIT	CONDITION
Vsw	Switching Voltage AC DC			250 30	Vac Vdc	@Rated Load Isw derated for 125VDC
Isw	Switching Current (AC Resistive) (DC Resistive) (@125VDC)	0.01		 8 5 0.15	Amps	Resistive load 2000 VA,150W, See Note 2.
Life	Service Life (Electrical) Mechanical)		$1x10^5$ $10x10^6$		Operations Operations	@Rated Load
Viso	Isolation Voltage	3000 1000	4000		Vac	coil-contact contact-contact

NOTE(S): 1. AC INRUSH SWITCHING CURRENT IS 10A @ 250VAC.
2. INDUCTIVE SWITCHING CURRENT RATING IS 5 AMPS/AC OR 3 AMPS/DC. BACK-EMF SUPPRESSION IS RECOMMENDED FOR INDUCTIVE LOADS (I.E. - DIODE, MOV, ETC).

Notes:

1. AC Inrush switching current is 10A @ 250VAC.
2. Inductive switching current is 5 Amps AC / 3 Amps DC. Inductive loads should be suppressed to eliminate "inductive-kick" by using an appropriate method. (i.e. - MOV, diode, RC snubber, etc.) For application assistance, please contact Brentek International Technical Support. *1-800-BRENTEK*.

Timing Diagram



Positive Edge-triggered

Operation

When power is first applied to the P8-WDT24/PLC Watchdog Timer, the output contact initializes to a "fail" state for approximately 500 milliseconds, regardless of the WDI input state. A sourcing or positive-going edge applied to the WDI input (pin 5) resets the internal timer and energizes the FORM C output contact. Continuously toggling the WDI input within the timeout period will maintain the output contact. Timeout will only occur after the last positive-going edge of the WDI input is detected, de-energizing the output contact to the "fail" state. "Loss of control" is detected when the WDI signal stops on or off. "Loss of power" is also indicated as a "fail" condition, providing a high level of control system integrity. *Power* Indicator is lit when power is applied. *Output* indicator is lit when the output is energized (timer is timing). *Input* indicator is lit when an input signal (WDI) is active -ON.

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P8-WDT24/PLC
Sourcing Logic* Input

Part Numbering

P8-WDT24/PLC- *(OPTIONs)*

Case Type

Logic Voltage

[Blank] - 24V Logic w/pull-down

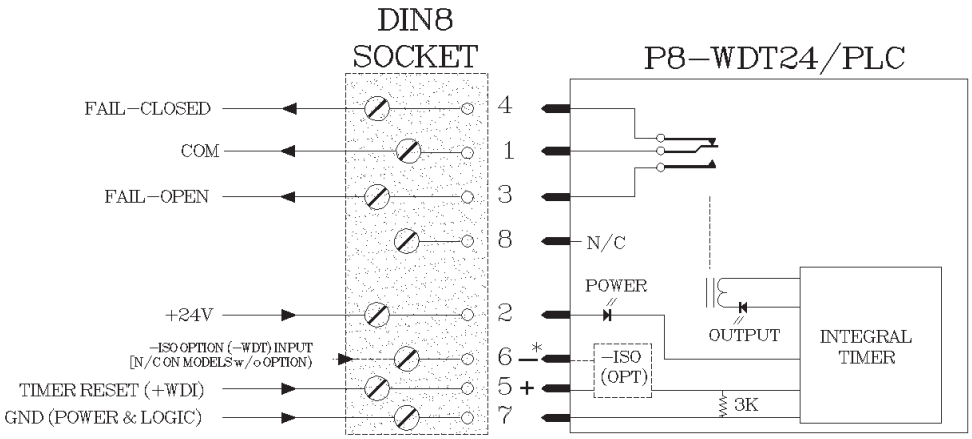
Input Option
-ISO - Opto-isolated (24V)
-ISO5 - Opto-isolated (5V)
-INI - Input State Indicator†

[Blank] - 2 Second

Timeout Option
Fixed (±15%)
-Tx.x - Specify x.x 0.1 to 60 Seconds
Adjustable (Range ±20%)
-A1-5 - Adjustable 1 to 5 Sec
-A2-10 - Adjustable 2 to 10 Sec
-A5-15 - Adjustable 5 to 15 Sec
-A10-30 - Adjustable 10 to 30 Sec
-M75-5 - Adjustable 75mS to 5 Sec

† INI and ISO options may be combined simultaneously.

Connection Diagram



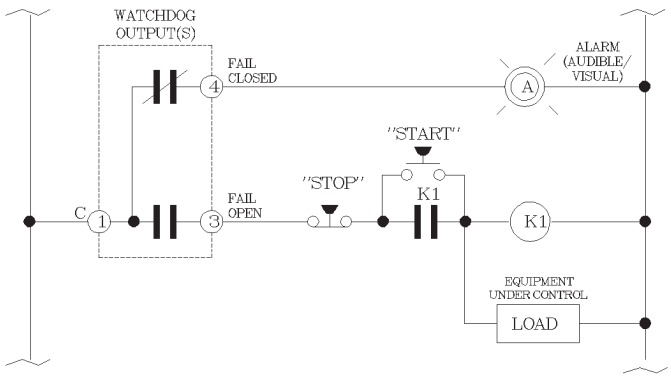
*Pin 6 is N/C on models w/o –ISO option.

Typical Application(s)

— WATCHDOG —

"ALARM "

"PERMISSIVE START"
AND
"SHUTDOWN"



P8-WDT24/PLC

Sourcing Logic* Input

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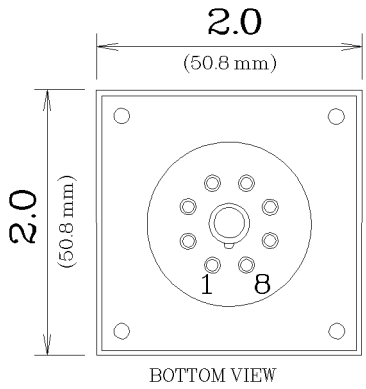
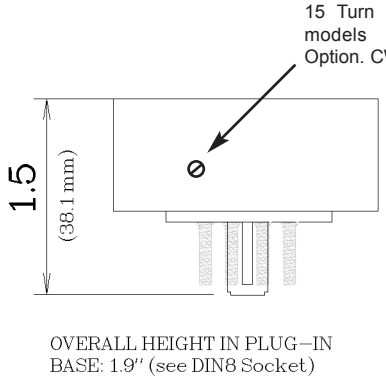
Dimensions

Units are in inches
unless noted otherwise.



BOTTOM VIEW



OVERALL HEIGHT IN PLUG–IN
BASE: 1.9" (see DIN8 Socket)

Operating Parameters — *Opto Isolated Option(s)*

"-ISO", "-ISO5" Opto-isolated Input — Pin 5(+) and Pin 6(-)

SYMBOL	PARAMETER	LIMITS			UNIT	CONDITION
		MIN	TYP	MAX		
V_{ISO}	Isolation Voltage (Input)			5000	Vrms	60 Sec @25°C
$V_{ON-DIFF}$	Input Voltage (-ISO5 Opt) (-ISO Opt)	4 21				Pins 5(+) & 6(-) WDI Trigger Thres.
V_{IN}	Input Voltage Limit (-ISO5) (-ISO)	-0.5 -0.5		+7 +32	Vdc Vdc	Pins 5(+) & 6(-)
I_{IN}	Input Curent			18	mAdc	
Tin	RESET (WDI) Period	200		T	µSec	5 KHz max-Note 1

Upward Compatibility Brentek ***P8-Series*** (P8-WDT24/PLC types) modules are upgradable. The NEW digital ***P8E-Series*** (P8E-WDT24/PLC) and ***P8D-Series*** (***P8D-WDT*** & ***P8D-ISM*** types) offer downward/upward compatibility and many new features, including:

STANDARD FEATURES

- Inductive Back-EMF masking
- Wide operating Voltages (5-28VDC)
- Wide Input Trigger voltage (3-30VDC) (sourcing/sinking)
- Precise digital timing

OPTIONAL FEATURES

- Extended Timeouts
- AC Input (WDI)
- User defined Adjustable timing ranges
- Power Supply monitoring
- Fault Latching
- OEM User-Configurable (w/ optional ***Configurator***™) see P8D-ISM