

# NARROWCOMM

System Watchdog Timer

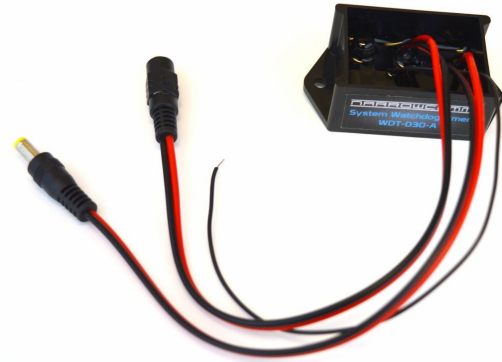
WDT-D30-A

## Applications

Remote reboot of embedded systems  
IoT Cellular Gateway monitoring

## Description

The System Watchdog Timer monitors activity from an embedded device such as a gateway for Internet of Things (IoT) devices. If the device stops providing stimulus to the watchdog, it disconnects the power to the device briefly, then reconnects it, forcing the device to reboot. Stimulus is provided via a single digital signal that must change at least once every  $T_{ON}$  minutes.



## Usage

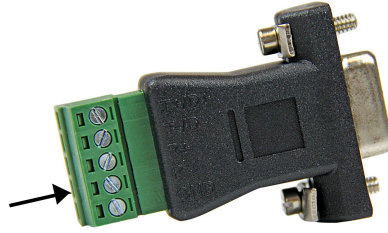
Install the System Watchdog Timer between the embedded device and the DC power supply using the barrel connectors on the red and black wires of the Watchdog. The female connector accepts power from a wall power adapter, 7-24 VAC or 9-28 VDC, and provides the power to the embedded device through the male barrel connector.

The control wire accepts a digital control signal to clear the timer in the Watchdog. The digital control signal must be set to a level above 4.8 V for a “high” level and below 3.5 V for a “low” level. The control signal must change at least every 30 minutes, otherwise the Watchdog will disconnect the power to the embedded device for 10 seconds to reset it. A reasonable interval for control line state changes is 5-10 minutes. This signal may be provided by a flow control line (RTS or DTR) from a serial port or other digital control line.

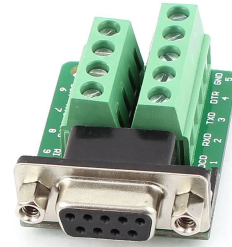
A DB9 to Terminal Block adapter (not included) simplifies the connection process. With the StarTech.com adapter (available from Amazon and other distributors) the control wire connects to the “R-” terminal, corresponding to Pin 4 of the DB9 connector (DTR).



StarTech.com DB9  
Female Adapter



DTR Connection



Uxcell RS232  
D-SUB DB9 adapter

With the Uxcell RS232 D-SUB DB9 Female adapter, the control wire connects to pin 4 (DTR), as labeled on the adapter.

## Software Control Algorithm

As with any watchdog mechanism, it is critical that the control line only change state if the system is operating correctly. For example, if a cellular gateway is being monitored, code running in the gateway should ensure that the cellular connection is operating, perhaps by pinging the cloud server, and only changing the state of the control line if the ping is successful, verifying that the Internet connection is working and the code in the gateway is operating.



Cellular Gateway without Watchdog



Watchdog installed on Cellular Gateway