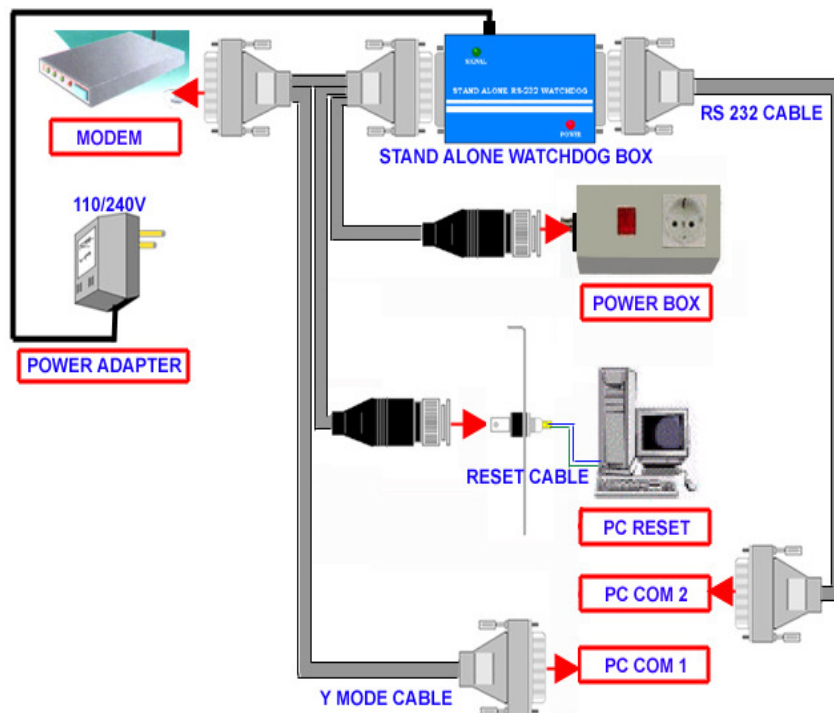


CHAPTER 1

INTRODUCTION

The standalone RS232 watchdog box is your systems and peripheral applications protector! RS232 Watchdog box provides user selectable refresh timer to be used inside your PC, which prevents the computer to hang by automatically resetting the system of your computer, it is also monitoring RS232 control lines and detecting ring indicator signal from MODEM, which prevents the computer and peripheral to hang by automatically resetting your computer and peripherals.



The RS232 watchdog box is an external device that connect between your computer and MODEM, when the RS232 watchdog box is enable, the system software, application program or MODEM must refresh watchdog before selected time slice is reached, otherwise the computer will be reset, and the power of power control box that connects to peripheral devices will also be reset. To refresh watchdog timer, there are three modes can be selected, one is command check mode which requires application program to use command to refresh watchdog timer; Second is communication check mode which refresh watchdog timer automatically while Transmit Data(TxD), Data Terminal Ready(DTR), and Request To Send(RTS) signals are activated; Another is ring check mode which reset system automatically if ring no answer is detected after preset ring count.

In the distribution diskette, we provide software for MS/DOS, Linux, Unix, Windows/95, Windows/98, Windows/NT4.0 workstation, and Windows/2000 operating systems.

The features of the stand alone RS232 watchdog box are:

- Plug and play features for easy installing.
- User can monitoring communication signals without write any program.
- Provides user selectable refresh timer.
- Monitoring the RS232 control lines (TxD, DTR, RTS) activity. The system will be reset if no RS232 signals activity during preset refresh time.
- Monitoring the Ring Indicator (RI) signal. The system will be reset if ring no answer is detected after preset ring count.
- When the application program or computer system does not generate refresh signal, the computer will be reset

automatically.

- Provides command check mode to control watchdog from computer side.
- Provides user selectable power on delay timer to let computer start monitor system until complete booted.
- The maximum distance of RG59 cable from watchdog box to power control box is up to 5m.
- Available with 110V and 240V (10A) Plug type UK, Europe, USA and Austria type selectable for extension power control box.
- Suitable for MS/DOS, Linux, Unix, Windows/95, Windows/98, Windows/NT, Windows/2000 operating systems.

1.1 Applications

On industrial application, lots of computers are automatically operating itself once the power turns on. In case the application got hang surely the computer and its operation hang also. If you don't boot your computer again it will not go back to its regular operation, but not with the watchdog! Because once the watchdog was not refresh, it will reset the computer automatically!

While using your computer, unexpectedly your modem got hang. One way of connecting it again is to switch off then turn on your modem to continue on working. But now, it's the new way around, RS232 watchdog box will be automatically reset the modem power or computer system. It will protect your application software system.

If your RS232 device hang, RS232 watchdog box will automatically reset the device. It let your device alive again.

1.2 The Difference between Watch Dog Adapter and Stand Alone RS232 Watch Dog Box

The advantage of standalone RS232 watchdog box over the watchdog I and II is that the standalone watchdog box has an RS232 control lines monitor features, it also provides command check mode to let user program can control RS232 watchdog box directly.


User can also reset the power of power control box by RS232 watchdog box directly, without reset whole the computer system.

When you set to communication check mode or ring check mode for standalone RS232 watchdog box, you need not write any program, just plug and play it.



CHAPTER 2

UNPACKING INFORMATION

 **Check that your watchdog package includes following items:**

- Standalone RS232 watchdog box.
- Watchdog expansion power control box.
- AC to DC power adapter.
- User manual.
- Y mode RS232 cable with reset line and power control line.
- Reset line.
- RS232 cable.
- General converter (option).
- Utility software.



CHAPTER 3

HARDWARE INSTALLATION

The steps for installation are shown as follows:

1. Set the DIP switches of RS232 watchdog box.
2. Turn off the Power of your PC, connect RS232 cable between RS232 watchdog box and computer if necessary.
3. Connect the J1 to the reset switch of motherboard.
4. Connect the J2 to the reset switch of PC panel.
5. Connect RG59AU connector to expansion power control box, and then connect the power control box to the power plug. Also connect peripheral power to power control box if necessary.
6. Connect Y mode RS232 cable among RS232 watchdog box computer, and MODEM.
7. Connect power adapter to RS232 watchdog box and power plug.
8. Turn on the power of your PC.

CHAPTER 4

HARDWARE CONFIGURATION

4.1 Jumper Settings

Be sure to connect J1 and J2 at reset signal of main board and to reset push button, then set the jumpers.

1. Mode Selection

MODE	SWITCH
Communication Check Mode	SW1 ON
Command Check Mode	SW2 ON
Ring Check Mode	SW3 ON

The SW1, SW2, and SW3 are used to select control modes that watchdog box will entering. To select control mode, user can switch corresponding switch to ON state. The watchdog box supports multiple modes together, it means you can select more than one switch to ON state.

1.1 Communication Check Mode

When SW1 is ON, the watchdog box enter to communication check mode, it will monitor TxD, DTR, and RTS signals that connect to RS232 port of the computer. Any activity of one of these lines will refresh watchdog timer. The system will be reset if no RS232 signals activity during preset refresh time. Under this mode, it need not write any program to control computer, just plug and play to monitor your computer signals.

1.2 Command Check Mode

When SW2 is ON, the watchdog box enter to command check mode, it will accept commands from computer. The system software or application program must refresh watchdog timer by using command before selected time slice is reached, otherwise the computer will be reset.

1.3 Ring Check Mode

When SW3 is ON, the watchdog box enter to ring check mode, it will monitor RI signal that connect to MODEM. If the number of rings is exceeded a preset number, the system will be reset. Under this mode, it need not write any program to control computer, just plug and play to monitor RI signal.

2. Power On Delay

DELAY TIMER	SWITCH
Wait 3 mins	SW4 OFF
Wait until complete booted	SW4 ON

The SW4 is used to set delay time when watchdog start to work. When SW4 is OFF, the watchdog wait 3 minutes to allow computer boot, after 3 minutes, the watchdog will start monitoring the whole system. When SW4 is ON, the watchdog will start monitoring until computer booted. Carefully to make sure your computer boot time, otherwise your watchdog will reset the system continuously. We highly recommended you set this switch to ON state.

3. Refresh Timer and Ring Count

SW5	SW6	SW7	Refresh Timer	Ring Count
ON	ON	ON	15 Secs	2
ON	ON	OFF	30 Secs	3
ON	OFF	ON	1 Min	4
ON	OFF	OFF	10 Mins	5
OFF	ON	ON	30 Mins	6
OFF	ON	OFF	1 Hr	7
OFF	OFF	ON	2 Hrs	8
OFF	OFF	OFF	3 Hrs	9

The SW5 to SW7 are used to select refresh timer and ring count. When communication check mode or command check mode is selected, these switches are used to set watchdog refresh timer, otherwise it selects ring count under ring check mode.

4. Communication Parameters

Communication Parameters	SWITCH
9600, N, 8, 1	SW8 ON
2400, N, 8, 1	SW8 OFF

The SW8 is used to set communication parameters of RS232 port. When set switch to ON, it will set 9600 baud rate, none parity, 8 data bits, and 1 stop bit. Otherwise set 2400 baud rate, none parity, 8 data bits, and 1 stop bit.

4.2 Connector

1. J1 and J2

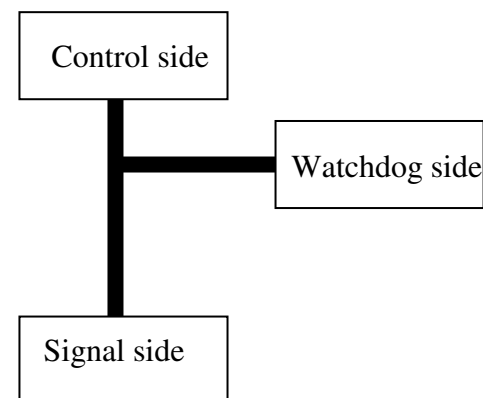
If necessary, please connect J1 to reset connector of your CPU main board, and connect J2 to reset push button on the front panel of your PC.

2. RG59AU Connector

The RG59AU connector of watchdog is used to connect to expansion power control box.

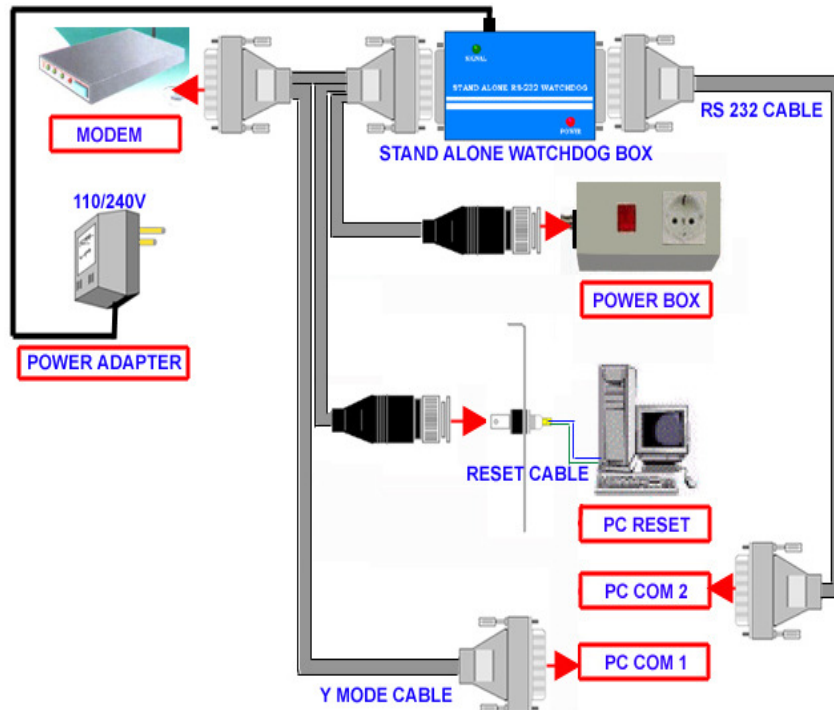
3. Y Mode RS232 Cable

The Y mode RS232 cable contains three connectors, first is control side, second is signal side, third is watchdog side. The signal side is connected to the device or computer that is used to detect its signals, the watchdog side is connected to watchdog box, and the control side is connected to device or computer that communicates with signal side connector.



4. RS232 Cable

The RS232 cable is used to connect between computer and watchdog box. Under command check mode, user can send command from computer to watchdog box. If you select command check mode, you must connect this cable, and write application program to refresh timer.



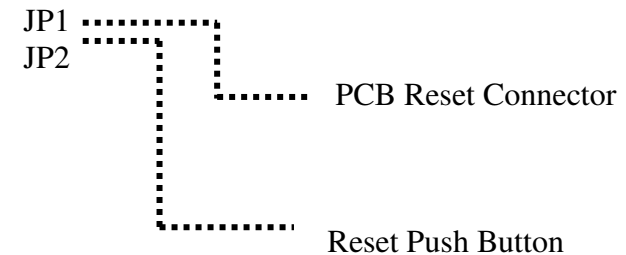
4.3 LED

There are two LEDs in the watchdog dog box, one is power on LED, and another is status LED. When watchdog is activation, the power on LED will light. The status LED will show the status of watchdog, in the normal condition, the LED will flash at low speed (about 0.5

sec flash one time); when the communication signals is activation, the LED will flash at medium speed; when the watchdog reset condition is detected, the LED will flash at high speed.

4.4 Hardware Configurations

JP1 and JP2 Connection for watchdog



4.5 Applications for Difference Hardware Configuration

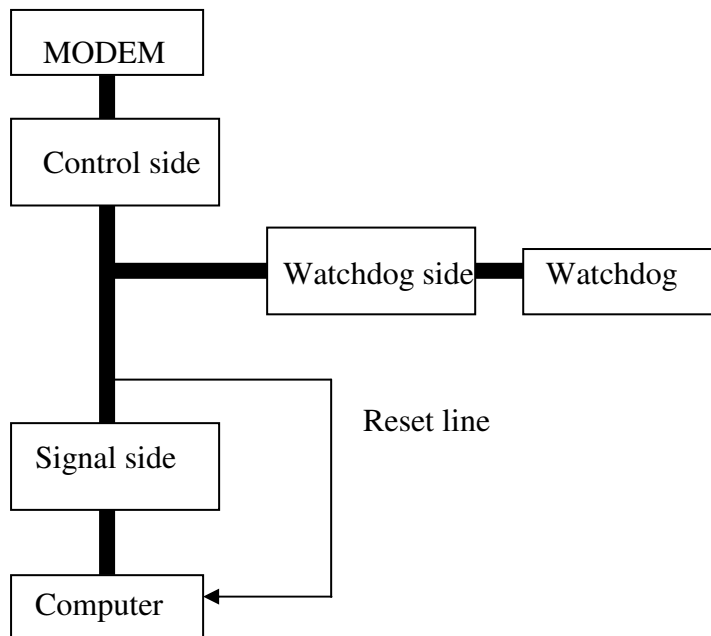
There are many watchdog applications. In the following, we describe some applications for difference hardware configurations, however, you can set up more applications by yourself.

1. Monitoring computer communication parameters

User can set watchdog to monitor computer signals such as TxD, DTR, RTS, and RI. Under this configuration, three difference configurations are set.

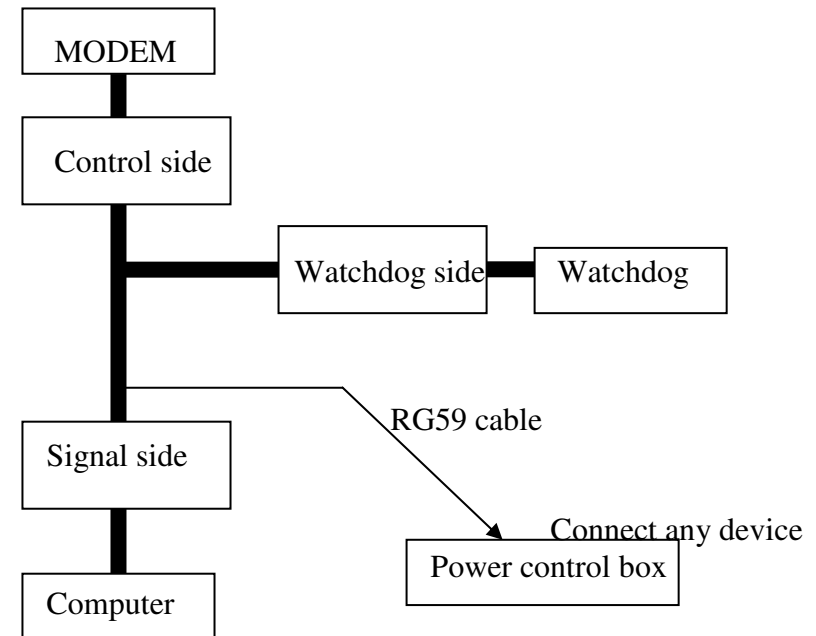
a. Reset computer

When time out is detected, the computer will be reboot.



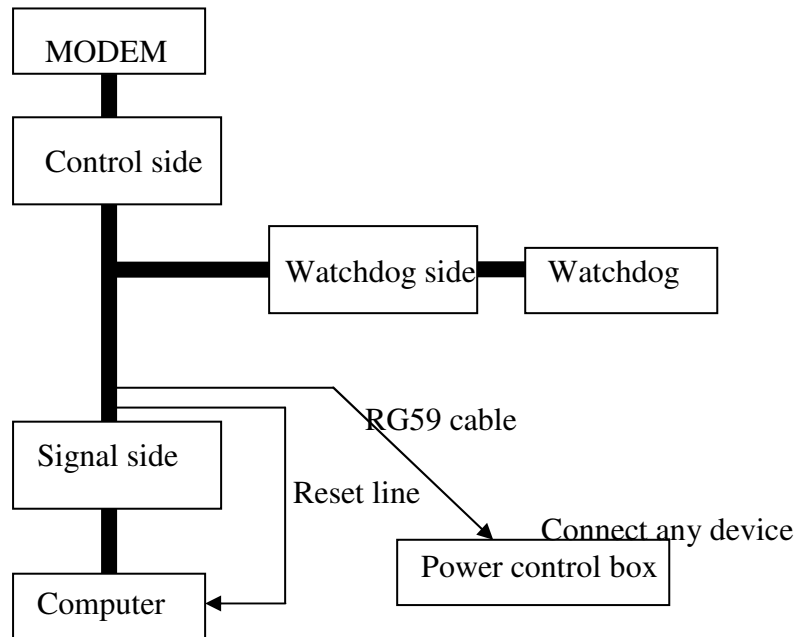
b. Reset power control box

When time out is detected, the power control box will be reset.

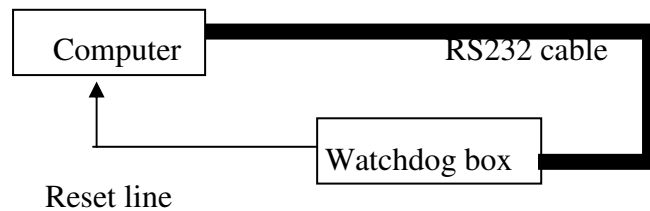
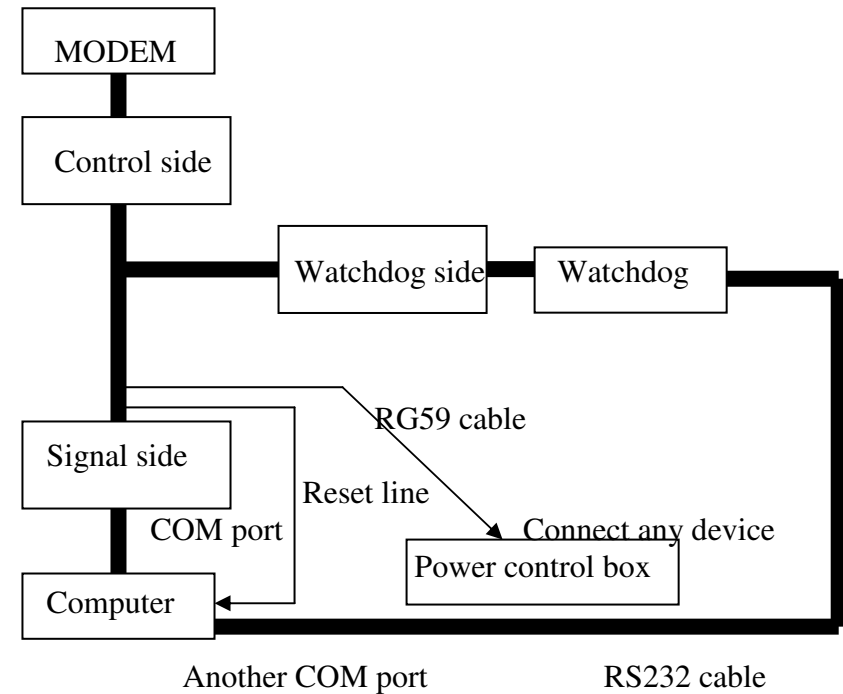


c. Reset both computer and power control box

When time out is detected, the computer will be reboot, and the power control box will be reset.

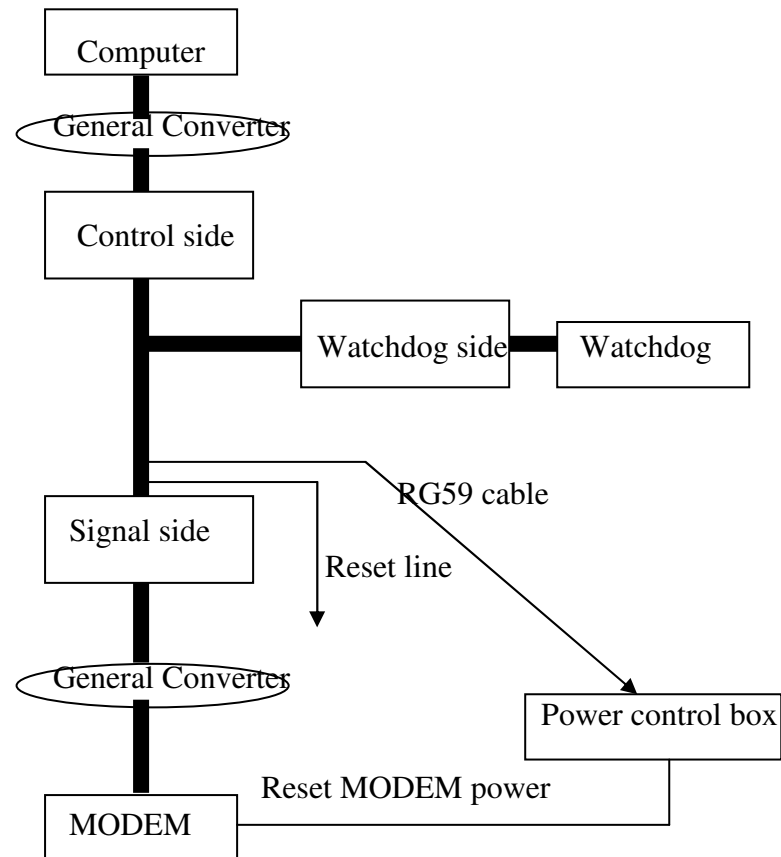
**2. Monitoring application program of computer**

To write application program to refresh timer.

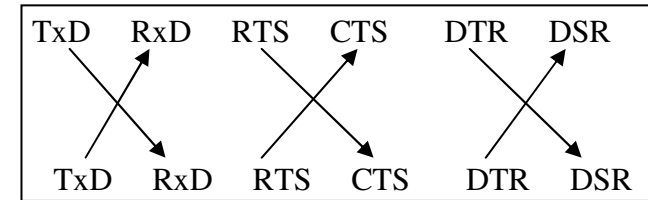
**3. Monitoring communication parameters and application program of computer**

4. Monitoring MODEM

User can set watchdog to monitor MODEM signals. In the previous mode, the watchdog is used to monitor computer signals, however under this mode, it can be used to monitor MODEM signals. Under this mode, the hardware configuration is shown in the follow. Two general converters must be connected at both control side and signal side. User can select communication mode to reset computer or reset power control box, or select command check mode to refresh timer from computer.

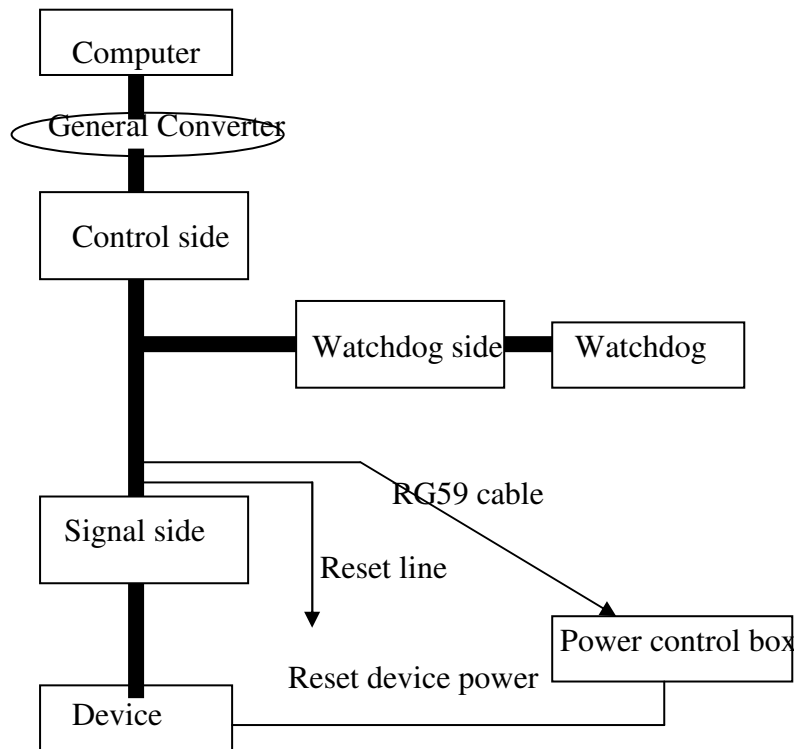


The signal configuration of general converter is:



5. Monitoring device

User can set watchdog to monitor device signals. Under this mode, it can be used to monitor device signals, the hardware configuration is shown in the follow. The general converter must be connected at control side. User can select communication mode to reset computer or reset power control box, or select command check mode to refresh timer from computer.



CHAPTER 5

COMMAND CHECK MODE FUNCTIONS

Under the command check mode, the computer can send command from RS232 port to watchdog box to control watchdog. Any command was sent to watchdog box, it will refresh watchdog timer. In the following, we will introduce command format and functions.

5.1 Command Format

The command is a 6 bytes format, its format is

[0x01] [command code] [p1] [p2] [p3] [0x02]

1. The first byte is [0x01], to let watchdog interpretes next byte.
2. [command code] will be described in the next section.
3. [p1] [p2] [p3] are parameters for extend purpose. In this version, only send 0 to these parameters.
4. The end of command is [0x02].

When watchdog box receives command, it will reply one or more bytes to computer depends on what command is issued, its format is

[response data]

[response data] can be

- [0x01] is the ACK response, it means OK.
- [0x07] is invalid command.
- Others, return code depending on command.



5.2 Command Functions

There are 8 functions that watchdog box can accept.

COMMAND	DESCRIPTION
0x20	ACK
0x21	Version number
0x22	Enable watchdog
0x23	Disable watchdog
0x24	Reset PC now
0x25	Reset PC in 10 secs
0x26	Turn of power control bocx
0x27	Turn on power control box

1. ACK 0x20

Send ACK to the watchdog. It will reset watchdog timer.

Watchdog reply: [0x01]

2. Version number 0x21

This command will return version of watchdog firmware.

Watchdog reply: [version number] [0x01]

3. Enable watchdog 0x22

This command will enable the watchdog.

Watchdog reply: [0x01]

4. Disable watchdog 0x23

This command will disable the watchdog.

Watchdog reply: [0x01]



5. Reset PC now 0x24

This command will reset PC and power control box after watchdog receives command.

Watchdog reply: [0x01]

6. Reset PC in 10 secs 0x25

This command will reset PC and power control box after 10 secs when watchdog receives command.

Watchdog reply: [0x01]

7. Turn on power module 0x26

This command will turn on power control box.

Watchdog reply: [0x01]

8. Turn off power module 0x27

This command will turn off power control box.

Watchdog reply: [0x01]



CHAPTER 6

SOFTWARE

In the distribution diskette, we support the sample programs for MS/DOS, Windows/95, Windows/98, Windows/2000, Linux, Unix and Windows/NT to access watchdog.

6.1 Diagnostic under DOS

After configuring the necessary settings, on the DOS prompt type QCSWD then press ENTER, to run the DOS test program. As you run the test program it has the following control that need to be identified, to manage the QCSWD DOS test program properly.

SP (Space Bar) – this keys need to be press first to display the test program navigation output.

0 (zero) – press zero (0) to start monitoring the Watchdog.

1 (one) – press to override the timer functions by turning ON and OFF the watchdog manually.

2 (two) – press to reset the Watchdog operation.

3 (three) – press to reset the Watchdog in 10 seconds. To update the reading or value on the screen, press SP (space bar)

4 (four) – press to hold or stop the checking progress, to continue checking press SP.

5 (five) – press to swap the type of connection between COM1 or



COM2 .

8 (eight) – press to trigger RTS and DTR modes.

9 (nine) – press to trigger transmit / receive modes.



CHAPTER 7

EXTENSION POWER CONTROL BOX

7.1 Features

1. Miniature high power designed for mounting on P.C. Board.
2. High contact rating (10 - 30A), high shock / vibration resistance.
3. High reliability and long life.
4. High temperature design, "F" class + 155 degree C is available.

7.2 Specification

COIL RATING

RATE VOLTAGE (VDC)	COI RESISTANCE	RATED CURRENT
--------------------------	-------------------	------------------

5	27	185
6	40	93
12	155	77
18	380	47
24	660	36
46	2300	21
110	13400	

CONTINUATION OF THE CHART:

RATE VOLTAGE (VDC)	MUST OPERATIVE VOLTAGE	MUST DROPOUT VOLTAGE	MAX. VOLT	POWER COMSUMPTION (W)
% OF RATE VOLTAGE (A1 + 20C) (20C)				

5	75 Max	10 Min	120 Max	0.9 Approx.
6				
12				
18				
24				
46				
110				

7.3 Characteristics

Contact Arrangement	SPST(1 Form A), SPDT(1 Form 0)
Contact Material	AGODO
Contact Resistance	50 m ohm Max
Switching Voltage	DC 125V Max. AC 250 V Max.
Operate Time	<= 10 ms.
Release Time	<= 8 ms.
Insulation Resistance	1000M ohm min (500V DC)
Dielectric Strength	1400 VAC 60 Hz, 1 min. between open contact 2800 VAC 50 Hz, 1 min. between coil and contact. "H" type 2500 VAC
Shock Resistance	10g Approx
Vibration Resistance	1.65 mm, excursions from 10 - 55Hz. 10 - 55 Hz
Ambient Temperature	Storage: -55°C to + 130°C Operating: -55°C to + 85°C
Humidity	220 to 85% R.H
Operation Life	Mechanical: 10 ⁷ Electrical: 10 ⁵ (at rated load)
Weight	22 gr. Approx(Open Type) 28 gr. Approx(Sealed Type)

Note: Specifications are subject to change without notice

UL/CSA RATING TYPE:

	Form A	Form B	Form C	
	50/60 Hz	50/60 Hz	50/60 Hz	
	NO	NC	NO	NC
Resistive	10A, 240V AC	5A, 240 V AC	10A, 240V AC	5A, 240V AC
Tungsten	5A, 240V AC	3A, 240V AC	5A, 240V AC	3A, 240V AC
HP	1HP, 125V AC, 2HP, 240V AC		1/2HP, 125V AC, 1HP, 240 VAC	
Coil Rating: 5-120V DC				

	Form A	Form B	Form C		Cycles
	50/60 Hz	50/60 Hz	50/60 Hz		
	NO	NC	NO	NC	
Resi stive	30 A, 14 VDC / 240V AC	20 A, 14VDC / 240VAC	30A, 14VDC / 240 VAC	30A, 14VDC , 20A / 240VA C	100k
HP	1 HP/ 16 FLLA/ 120V	30 LRA / 10FLA/12 0V 30	1hp/ 16FLA/ 120V	30LRA / 10FLA/ 120V	
	2 HP/ 12 FLA 240V	LRA/ 10FLA/24 0V	2hp/ 12FLA/ 240V	30LRA / 10FLA/ 240V	
Coil Ratings: 5 – 120VDC					



APPENDIX A

WARRANTY INFORMATION

A.1 Copyright

Copyright 2001, 2002 DECISION COMPUTER INTERNATIONAL CO., LTD. All rights reserved. No part of WATCH DOG software and manual may be reproduced, transmitted, transcribed, or translated into any language or computer language, in any form or by any means, electronic, mechanical, magnetic, optical, chemical, manual, or otherwise, without the prior written permission of DECISION COMPUTER INTERNATIONAL CO., LTD.

Each piece of WATCH DOG package permits user to use WATCH DOG only on a single computer, a registered user may use the program on a different computer, but may not use the program on more than one computer at the same time.

Corporate licensing agreements allow duplication and distribution of specific number of copies within the licensed institution. Duplication of multiple copies is not allowed except through execution of a licensing agreement. Welcome call for details.

A.2 Warranty Information

DECISION warrants that for a period of one year from the date of purchase (unless otherwise specified in the warranty card) that the goods supplied will perform according to the specifications defined in the user manual. Furthermore that the WATCH DOG product will be supplied free from defects in materials and workmanship and be fully functional under normal usage.



In the event of the failure of a WATCH DOG product within the specified warranty period, DECISION will, at its option, replace or repair the item at no additional charge. This limited warranty does not cover damage resulting from incorrect use, electrical interference, accident, or modification of the product.

All goods returned for warranty repair must have the serial number intact. Goods without serial numbers attached will not be covered by the warranty.

Transportation costs for goods returned must be paid by the purchaser. Repaired goods will be dispatched at the expense of WATCH DOG.

To ensure that your WATCH DOG product is covered by the warranty provisions, it is necessary that you return the Warranty card.

Under this Limited Warranty, DECISION's obligations will be limited to repair or replacement only, of goods found to be defective as specified above during the warranty period. DECISION is not liable to the purchaser for any damages or losses of any kind, through the use of, or inability to use, the WATCH DOG product.

DECISION reserves the right to determine what constitutes warranty repair or replacement.

Return Authorization: It is necessary that any returned goods are clearly marked with an RA number that has been issued by DECISION. Goods returned without this authorization will not be attended to.