48511 Warm Springs Blvd., Suite 206, Fremont, CA 94539, USA
Tel: +1-510-490-8024 Fax: +1-510-623-7268
Web: http://www.actisys.com E-mail: irda-info@actisys.com

ACT-IR100SD

IrDA IrReady Intelligent Embedded RS232 Adapter

User's Manual

January 9, 2007
Ver. 1.4

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REVISION HISTORY

Revision History		
Revision	**Date**	**Comment**
1.0	05/31/2004	Initial release
1.1	10/01/2004	Modified chapter 5 mainly
1.2	10/26/2004	Revised by Dr. Wang
1.3	11/10/2004	Added Comset_IR100SD program description on Chapter 5
1.3.1	01/21/2005	Changed supply power on Features
1.3.2	01/25/2005	Added Chapter 6 for default setting
1.3.3	04/25/2006	Overall reformatted and revised Chapter 8 Characteristics & Specification
1.3.4	11/23/2006	Added Chapter 6 for LED Behavior
1.4	1/09/2007	Extracted technical sections

PRECAUTIONS

To ensure trouble-free operation, please observe the following precautions:
Optical communications are easily affected by external light sources, weak batteries, transfer distance, transfer angle, etc.
Any of these conditions may cause a data transfer failure, incomplete or missing data. Make sure that the wireless interface is away from direct sunlight and other strong light source.

- Do not terminate arbitrarily during file transfer process between ACT-IR100SD and computers until finished. Otherwise ACT-IR100SD internal data integrity may be damaged, which is due to the violation of ACT-IR100SD's.
- Do not expose the unit to moisture, as this will damage the internal circuitry.
- Do not expose the unit to extreme temperatures. It should not be placed in direct sunlight or in a closed vehicle, neither should it be placed near heaters nor other heat sources.
- Do not store the unit in a humid or dusty place.
- Use a soft, dry cloth to clean the unit. Do not use a wet cloth or any solvent.
- Do not drop the unit or handle the unit carelessly.

CAUTION:

- Never touch the pins of computer connection terminal. The internal circuits can be damaged by an Electro Static Discharge. If this device requires any servicing, use only an ACTiSYS service dealer, an ACTiSYS approved service facility, or an ACTiSYS repair service.
- When exchanging data with host computer, be sure the appropriate serial communication port is available and is not in conflict with other peripheral device or software.

1. FEATURES

- Supports mandatory IrDA layer: IrPHY, IrLAP, IrLMP and IAS.
- Supports upper layers TinyTP, IrCOMM, IrLPT, and OBEX transport.
- Supports host baud rate from 1.2 kbps to 115.2 kbps, which is changeable by PC utility; IrDA baud rate from 9.6 kbps to 115.2 kbps, which is flexible setting by IrDA devices.
- Supports both IrDA Primary and Secondary mode, changeable via PC utility.
- No driver is needed.
- IR frame and Host buffer are 2048 bytes respectively.
- Supply voltage: 6.0 V to 12V.
- Power consumption: 40 mA standby, 50 mA active.
- Supports 3 wires host interface (Tx, Rx and GND).
- Interface to Host:
  - Full duplex asynchronous serial (TXD, RXD)
  - Hardware flow control (RTS, CTS)
  - Optional line status for link control (DTR, DSR)
  - Other unused inputs (RI, CD)
- Internal PCBA available (Model # **ACT-IR100SDi**)

2. OVERVIEW

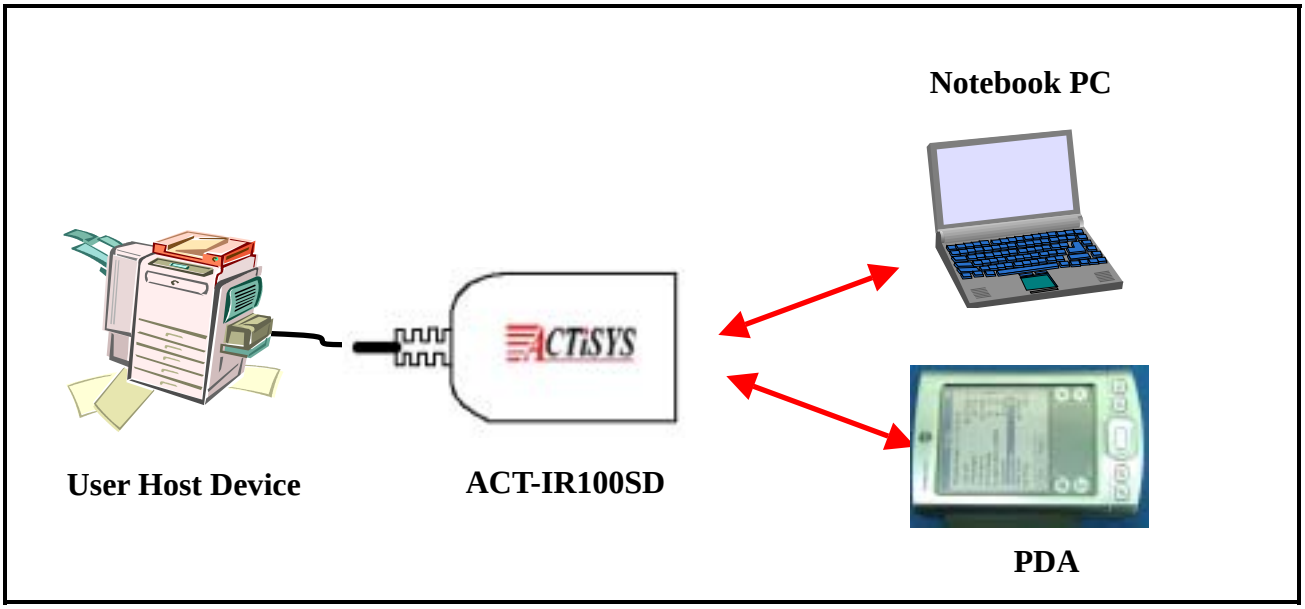
ACT-IR100SD is a highly integrated IrDA Intelligent dongle. It provides a serial interface to a host device that intends to have Infrared communication capability. The host device can be any equipment or device that needs to communicate with IrDA enabled devices via IrDA protocol with only a wired serial interface. ACT-IR100SD handles all the details regarding IrDA protocols. It sends and receives user data to and from the host device via the serial interface with hardware flow control.

IrDA has two modes: Primary and Secondary. The difference between them is that Primary initiates discovery, connection sequence and negotiates IrDA protocol parameters with Secondary; while Secondary always passively waits for commands from Primary. Both modes can run different protocols, and both may send or receive user data.

ACT-IR100SD supports both modes. When ACT-IR100SD is set to Primary, user can choose IrCOMM, IrLPT or OBEX PUT/GET server to be Primary protocol via a simple PC utility.

Fig.1 shows its system diagram.

Fig.1 System Diagram for Using ACT-IR100SD as a Communication Media



3. OPERATING ACT-IR100SD

3.1. Connecting ACT-IR100SD With Host

ACT-IR100SD uses a standard RS232 DTE port (DB9 Male) to connect with the host. If the host has a DB9 Female RS232 port, then it is DCE port and can be direct connected. Otherwise you need a null modem with DB9 Female on both sides for conversion.

DSR is an input signal for ACT-IR100SD. All the operating procedures of ACT-IR100SD are triggered by DSR from HOST except DSR is ignored by PC utility. See section 3.2 for configuration and parameter settings. When DSR is pulled high level (RS232 level) by HOST, ACT-IR100SD will send out discovery frames to outside and try to find some other IrDA devices if it is set to Primary. Or it will be ready to receive discovery frame from another Primary device if ACT-IR100SD is set to Secondary. It depends on what mode you set in ACT-IR100SD.

When ACT-IR100SD is connecting to another IrDA device successfully via IR, it will pull DSR signal to high (RS232 level), which also means that Host can send and receive data frame to and from another IrDA device. When DSR is pulled to low, it means that IR link is now not established anymore.

3.2. Configuration & Parameter Settings

Since ACT-IR100SD supports Primary, Secondary and several parameters, we provide an application, **Comset_IR100SD.exe**, with the dongle for you to configure yourself.

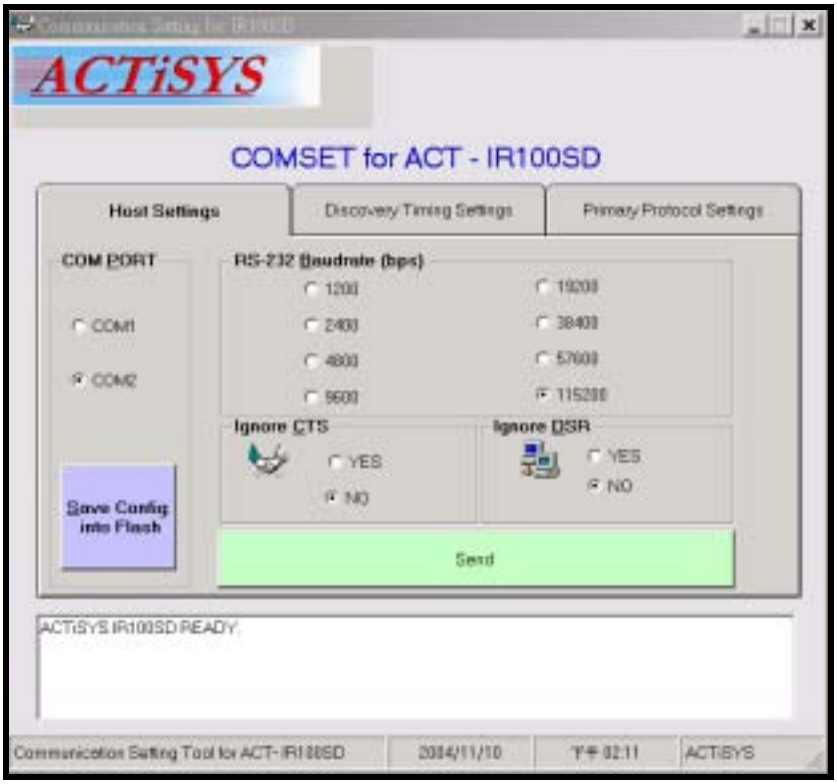
3.2.1. Please attach ACT-IR100SD dongle in PC.

3.2.2. Then open Comset_IR100SD.exe in Windows system. It will show three tabs of parameters for setting.

3.2.3. After any parameter has been changed, you have to click "**Send**" button on the tab you changed first. Then click "**Save Config into Flash**" so that parameters can be configured successfully.

3.3. The First Tab: Host Settings

It is to set the host baud rate and the hardware flow control.



3.4. Flow Control Note

Ignore CTS: If host device has no hardware flow control signals, only Tx, Rx and GND, then you have to select "YES" option. ACT-IR100SD will then pass the incoming data to host and not care the status of CTS (it will Ignore CTS). Note: ACT-IR100SD is a buffer limited adapter (2K bytes for host and 2K bytes for IrDA). If this option has been selected to "YES", then it may cause data loss because of no flow control. Whereas data loss can be solved if user can send data segment by segment and every segment not exceeding 2K bytes. But normally we recommend to select "NO" option on this field..

Ignore DSR: If host system has no DSR signals, then this option should be set to "YES" to ignore DSR signal. This is what we recommend **only** when host device is Secondary.

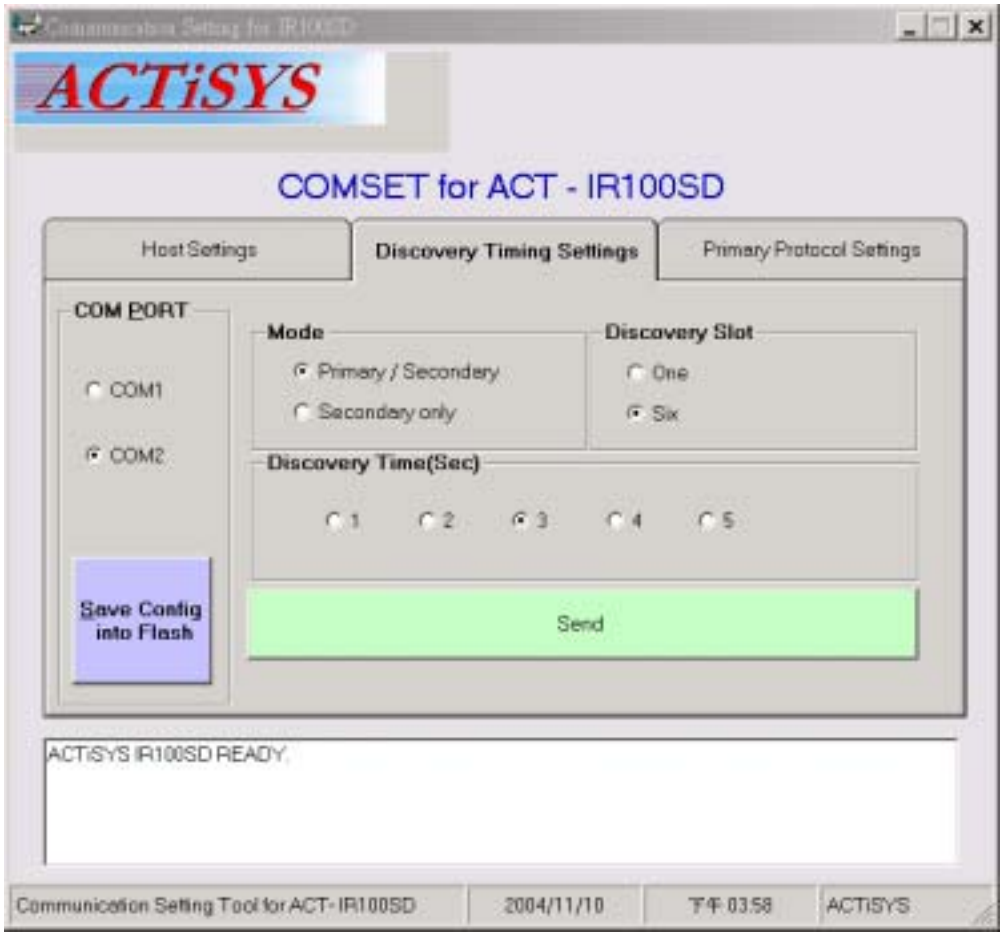
But since DSR signal will trigger ACT-IR100SD into Primary, if you select "Primary/Secondary" on "Mode" option (on the 2nd tab) and set option to "Ignore DSR", it will always be in Primary mode and no way to disconnect IrDA link once power on.

In other words, once you set option "Ignore DSR" to "YES", you will not be able to control ACT-IR100SD at all until power off and set it to "NO".

So normally we recommend to select "NO" on this option.

3.5. The Second Tab: Discovery Timing Settings

It is to set time interval of discovery, the slot number of discovery and the mode of ACT-IR100SD.



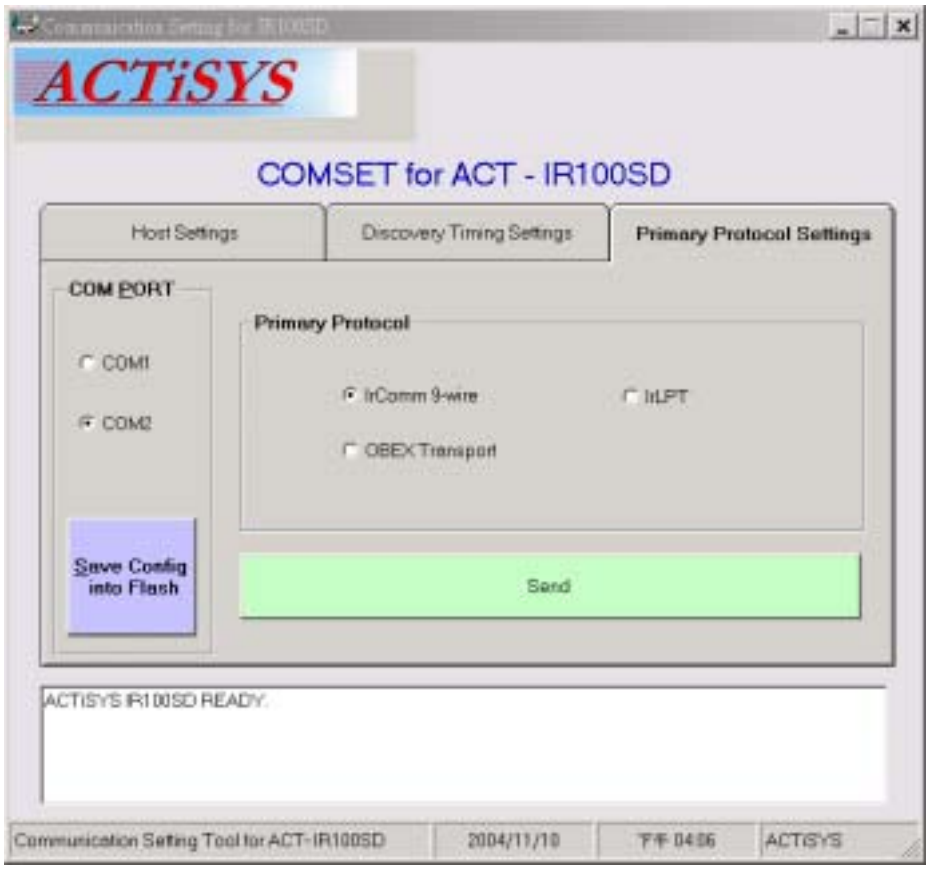
3.5.1. ACT-IR100SD supports both Primary and Secondary. It allows customer to change it.

3.5.2. Discovery time should be 3 seconds in general. You can change it if you want the discovery process faster.

3.5.3. Discovery slot can also make discovery process faster..

3.6. The Third Tab: Primary Protocol Settings

It is to set the IrDA protocols when ACT-IR100SD is in Primary.



4. LED BEHAVIOR

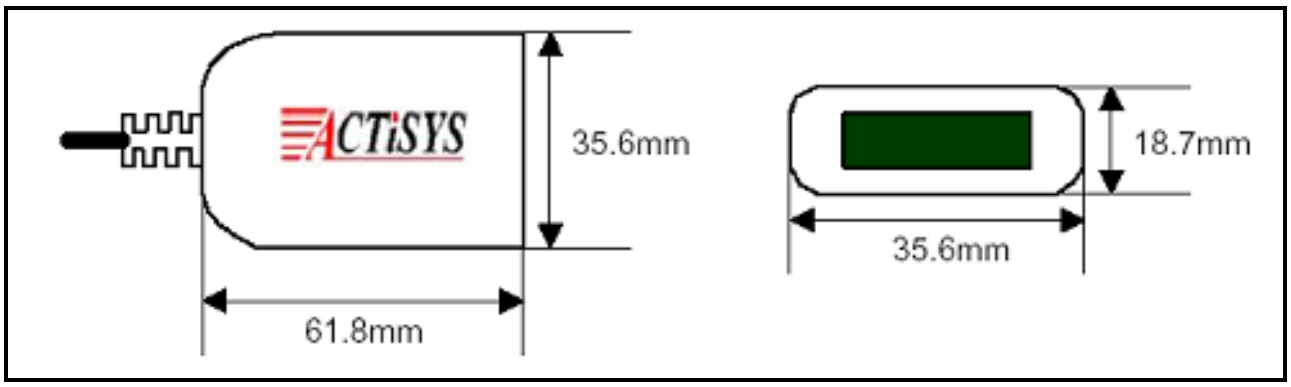
Activities	LED Behavior	Remark
Power Turned On	LED blinks rapidly one time & then off	
Set Dongle to Primary mode & DSR activated	LED blinks every 3 seconds	Discovering any other IrDA device.
Set Dongle to Secondary mode & DSR activated	LED stays off	It's in stand by status.
Dongle is connected to another IrDA device	LED blinks rapidly.	The blinking speed is based on how fast both devices send and reply frames to each other.

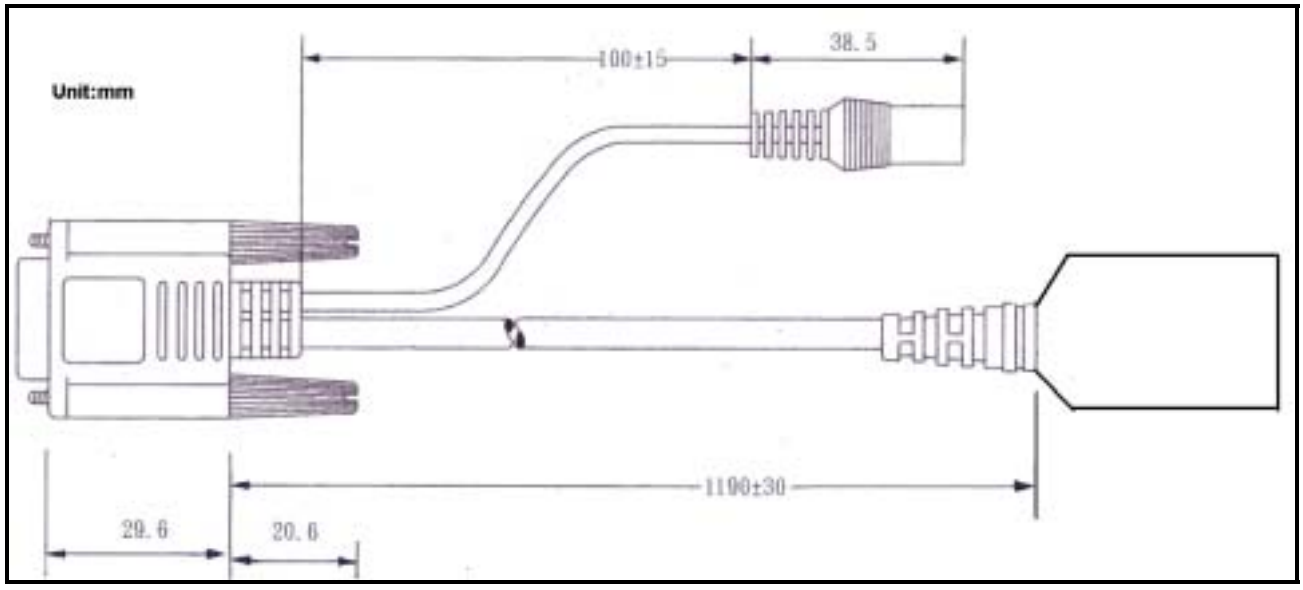
5. DEFAULT SETTINGS

The default settings of ACT-IR100SD are configured as the followings.

Configuration Parameter	Default Setting Value
Host baud rate and data format	115.2Kbps, 8N1
DSR/CTS	Not ignored.
Device role mode	Primary/Secondary both
Discovery period	3 seconds
Discovery slots	6
Primary protocol	IrCOMM 9 wire

6. ACT-IR100SD DONGLE DIMENSIONS





7. WARRANTY INFORMATION

ACTiSYS Corporation warrants the first end-user purchaser, for a period of 1 year from the date of purchase, that this wireless interface (The Product) will be free from defective workmanship and materials, and agrees that it will, at its option, either repair the defect or replace the defective Product or part thereof at no charge to the purchaser for parts or for labor.

This warranty does not apply to any appearance items of the Product, any consumable items such as paper, ink ribbon, or batteries supplied with the Product, or to any equipment or any hardware, software, firmware, or peripheral other than the Product. This warranty does not apply to any Product the exterior of which has been damaged or defected, which has been subjected to misuse, abnormal service or handling, or which has been altered or modified in design, construction or interfacing. Tampering with Label Voids Warranty.

In order to enforce the rights under this limited warranty, the purchaser should mail, ship or carry the Product, together with proof of purchase, to ACTiSYS.

The limited warranty described above is in addition to whatever implied warranties may be granted to purchasers by law. To the extent permitted by applicable law, ALL IMPLIED WARRANTIES INCLUDE THE WARRANTIES OF MERCHANT ABILITY AND FITNESS FOR USER ARE LIMITED TO A PERIOD OF 1 YEAR FROM THE DATE OF PURCHASE. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

Neither the sales personnel of the seller not any other person is authorized to make any warranties other than those described above, or to extend the duration of any warranties beyond the time period described above on behalf of ACTiSYS. Corporation.

The warranties described above shall be the sole and exclusive remedy available to the purchaser. Correction of defects, in the manner and for the period of time described above, shall constitute full satisfaction of all claims, whether based on contract, negligence, strict liability or otherwise. In no event shall ACTiSYS Corporation be liable or in any way responsible, for any damages or defects in the Product which were caused by repair or attempted repairs performed by anyone other than ACTiSYS technician. Nor shall ACTiSYS Corporation be liable or in any way responsible for any incidental or consequential economic or property damage. Some states do not allow the exclusion of incidental or consequential damages, so the above exclusion may not apply to you.

FOR YOU RECORDS

For your assistance in reporting this product in case of loss or theft, please record below the model number and serial, which are located on the bottom of the case. Please retain this information.

Model Number:	**Serial Number:**	**Date of Purchase:**

8. CONTACT INFORMATION

ACTiSYS Corporation
48511 Warm Springs Blvd, Suite 206
Fremont, CA 94539, USA
TEL:+1-510-490-8024, FAX:+1-510-623-7268
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