

Agilent IrDA Protocol Stack

Product Brief

Introduction

IrDA communication protocol is one of the proven technologies in the wireless world. The implementation of IrDA protocol is easy, as its internal architecture is simple and well defined. In general, the base protocol consists of three layers, TinyTP, LM-MUX and IrLAP. Different application profiles can be implemented on the base protocol stack, such as IrOBEX, IrCOMM, IrTranP etc.

Agilent's IrDA Base Protocol Stack, when combined with the different application profile, provides a very fast and efficient way to implement an IrDA compliant interface in an embedded device. The software, when combined with Agilent's range of

IrDA transceivers, forms a complete solution, which instantly allows a designer to enable an IrDA compliant infrared communication in the target device. Agilent's long history with IrDA, active participation in the standards body and extensive customer base guarantees reliability and complete interoperability of the solution.

The protocol stack has been ported and verified on the following platforms:

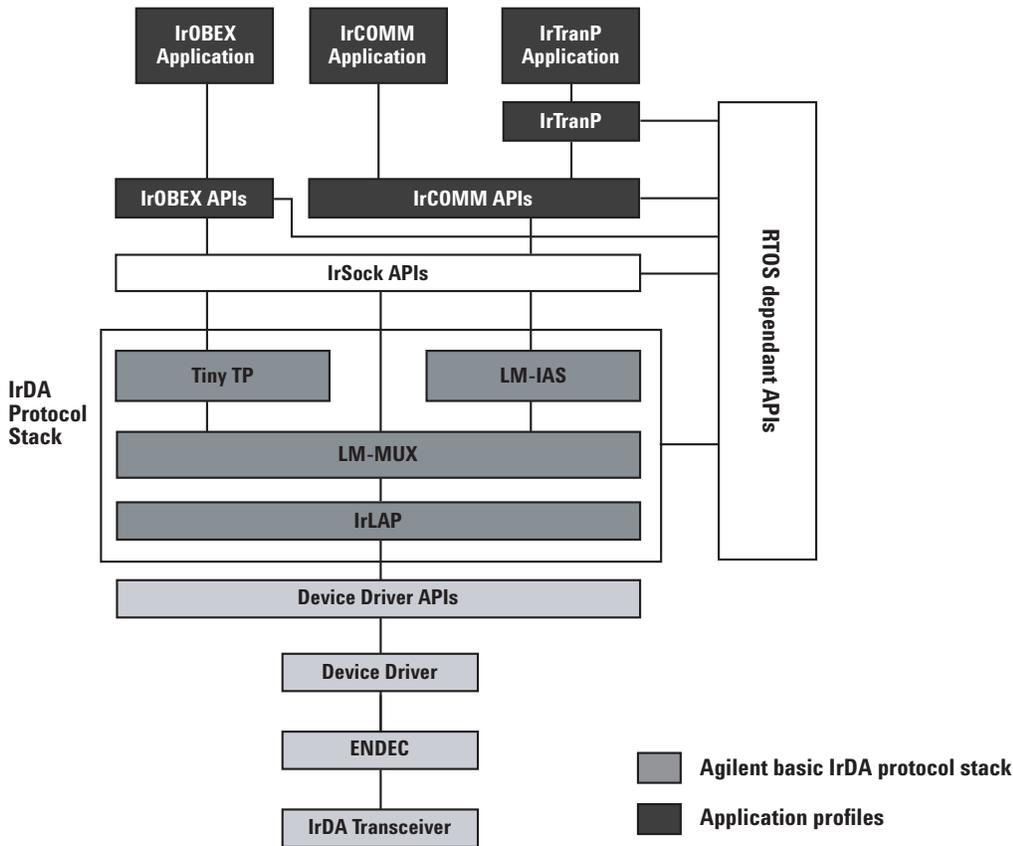
Operating System	CPU
Windows 2000	X86
No OS	8051
µC/OS-II	ARM 7TDMI

Features

- **The Agilent IrDA Base Protocol Stack with IrLAP, LM-MUX, LM-IAS and Tiny TP**
- **Optional add-in products: IrCOMM, IrOBEX, IrTran-P**
- **Data rate up to 4 Mbit/s (FIR)**
- **Primary and secondary device capable**
- **Maximum window size of 7 for maximum throughput**
- **Portable architecture; easy to port to any platform supporting ANSI-C language**
- **Ideal for all types of embedded devices: cell phones, PDAs, digital cameras, dongles, portable office equipment, medical equipment, industrial automation and more**



Architecture Overview



Note: Agilent Technologies also offers both IrDA Transceivers and ENDEC.

Ordering Information

Part Number	Description
HSDL-S100	IrDA Protocol Stack
HSDL-S100-001	IrDA Protocol Stack: Maintenance support
HSDL-S100-002	IrDA Protocol Stack: Training
HSDL-S100-003	IrDA Protocol Stack: Integration services (Porting)
HSDL-S101	IrDA application layer: IRObex
HSDL-S102	IrDA application layer: IRComm
HSDL-S103	IrDA application layer: IR TranP

Definitions and Acronyms

Device Driver	<p>A piece of software at the lowest layer, which is processing the IrDA data frame. The formatting of IrDA frame depends on the IrDA speed category (SIR, MIR or FIR). The mechanism of manipulating the raw IrDA data is different from hardware to another hardware. This device driver most likely will be replaced every time when there is a change of new hardware or an upgrade from lower speed to higher speed.</p> <p>The following sample physical device drivers are included in the package:</p> <ol style="list-style-type: none">Device Driver for HSDL-7001 ENDEC, supporting either External or Internal Clock operating mode.Device Driver for the HSDL-3000 IrDA Transceiver to shut down the transceiverDevice Driver for UART based on the Sharp LH79532 ARM7TDMI and ATMEL 80251 CPUs.Device Driver for Sharp LH79532 ARM7TDMI Pulse-Width-Modulator (PWM), to generate the 16XCLK for the HSDL-7001 ENDEC when operating in External Clock Mode.
Device Driver APIs	<p>A set of functions defined by the protocol layers to access the hardware via device driver. These functions configure the hardware, write data to and read data from the hardware. This set of functions will not change regardless of new replacement of hardware. Only the device driver, which ties to the hardware, will need to be replaced.</p>
IrLAP	<p>Provides a reliable and point-to-point connection between two IrDA devices. The supported features are:</p> <ul style="list-style-type: none">- data size ranges from 64 bytes to 2048 bytes (depends on hardware resources)- baud rate ranges from SIR, MIR, FIR- window size ranges from 1 to 7 (depends on hardware resources)
LM-IAS	<p>Maintains an information base for IrDA device to identify itself to other IrDA device on the services it offers and looks for another compliant IrDA device as well.</p>
LM-MUX	<p>Provides multiple data link over single IrLAP.</p>
TinyTP	<p>Employs flow control mechanism, segmentation and reassemble of data packets for each transport connection created.</p> <p>Note: The three basic protocol layers (IrLAP, LM-MUX and TinyTP) use RTOS dependant APIs such as Timer functions and Task Synchronization in its internal operation. These OS dependant APIs are placed at separate module so that they are easily being replaced when porting to other RTOS.</p>
IrSock APIs	<p>An interface to let application to access the underlying IrDA protocol stack. It covers the basic requirements for an application to use IrDA as a data communication protocol.</p>

Definitions and Acronyms, continued

IrOBEX APIs Provides generic Object Exchange services to application to support IrOBEX operations such as CONNECT, PUT, GET, SETPATH, ABORT and DISCONNECT. Application makes use of these services to implement their own customization. It supports both client and server implementation.

IrCOMM APIs Helps in setting up of virtual serial ports (or equivalent) on two devices and connecting these devices with IrDA to emulate a serial cable between the two devices. By making IrDA protocols accessible via these API, many existing applications including printing can run over an IrDA infrared link without significant change.

- Support IrLPT, 3-wire RAW services
- Support for 3-wire cooked, 9-wire cooked services
- Suitable for IrTA (Terminal Adapter) and IrModem implementation
- Serial Port Flow Control compatibility as defined in Serial Port Profile

IrTran-P IrTran-P (Infrared Transfer Picture) is an image transfer protocol for digital camera. Image is transfer in UPF (Uni Picture Format) format, which store compressed JPEG-baseline coded (ISO/IEC 10918-1) picture data.

www.agilent.com/semiconductors

For product information and a complete list of distributors, please go to our web site.

For technical assistance call:

Americas/Canada: +1 (800) 235-0312 or
(916) 788-6763

Europe: +49 (0) 6441 92460

China: 10800 650 0017

Hong Kong: (65) 6756 2394

India, Australia, New Zealand: (65) 6755 1939

Japan: (+81 3) 3335-8152(Domestic/International), or
0120-61-1280(Domestic Only)

Korea: (65) 6755 1989

Singapore, Malaysia, Vietnam, Thailand, Philippines,
Indonesia: (65) 6755 2044

Taiwan: (65) 6755 1843

Data subject to change.

Copyright © 2003 Agilent Technologies, Inc.

Obsoletes 5988-9423EN

May 28, 2003

5988-9685EN



Agilent Technologies