

|                             | PC   | UART  | CAN  | USB   |
|-----------------------------|--|---|--|---|
| Full name                   | Inter-IC bus   | Universal Asynchronous Receiver / Transmitter   | Controller Area Network (bus)  | Universal Serial Bus  |
| Typical use                 | Transfer serial data between ICs of all kinds  | Transfer data streams from an MCU to other parts of the system  | Link MCUs and nodes together in a robust, intelligent network (automotive, industrial)   | Link peripherals to host devices (PC to monitor/keyboard/ mouse, camera to printer, mobile phone to MP3 player, etc.)                               |
| Data rate                   | Three versions:<br>100 kbps (standard)<br>400 kbps (fast)<br>3.4 Mbps (high)   | 3 to 5 Mbps   | Up to 1 Mbps over distances up to 40 m, up to 5 Kbps for distances up to 1 km  | Three versions:<br>1.5 Mbps (low speed)<br>12 Mbps (full speed)<br>480 Mbps (high speed)  |
| Range                       | Up to 100 m  | Up to 1 km  | Up to 1 km   | Up to 5 m   |
| Basic technology            | Simple two-wire structure with master device addressing slave device. Easy to add or remove devices without impacting rest of network.   | Offloads MCU by managing communications channel with built-in error checking. Uses FIFO to buffer data before and after transmission / reception. | Simple two-wire differential bus system with multi-master capability. Broadcast technology (all nodes "hear" all transmissions; message identifier lets each know who should respond, with what priority). | Four-wire cable interface. No separate power cord needed (cable carries power). USB OTG requires no host.   |
| Why so popular              | Easy to design with, simple to debug, fast to test/assemble, smaller PCB with fewer trace lines  | Simple to use/operate, universal standard, long life, multi-channel flexibility through programming options                                       | Highly fault-tolerant, powerful error detection and handling, very long distances possible   | Fast enough for streaming media, easy enough for consumers to use, simple to network (daisy chain up to 127 devices), OTG version makes it portable |
| In widespread use since     | 1980s  | 1960s   | 1980s  | Mid-1990s   |
| Philips functions supported | A/D converters, bus controllers, bus repeaters/ hubs/ extenders, EEPROM-based DIP switches, LED dimmers/ blinkers, general-purpose I/O (quasi and true), multiplexers, switches, serial EEPROMs, temperature and voltage sensors, and voltage level translators. | Standalone UARTs for industrial and commercial applications<br><br>(Philips UART-enabled MCUs aren't included here as a part of connectivity)     | Standalone controllers, CAN-enabled MCUs, fault-tolerant CAN transceivers, high-speed CAN transceivers   | USB, Hi-Speed USB, and USB OTG host controllers, hub controllers, peripheral controllers, and transceivers.   |
| Philips product numbers     | PCA85xx, PCA95xx, PCF85xx, NE16xx, LM75A, SE9x, GTL2xxx  | SC28Lxx (industrial range, high end, fully featured)<br>SC16CxxxB (commercial range at industrial temperature, high speed)                        | SJA1000, P8xC59x, P8xCE598, XA-C3, LPC2xx, PCA82C52, TJA10xx, PCA82C25x  | ISPxxxx and PDIUSBD12   |
| Packages available          | DIP, SO, SSOP, TSSOP, HVQFN  | DIP, PLCC, LQFP, HVQFN  | SO   | SO, TSSOP, LQFP, HVQFN, HBCC, TFBGA   |

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Connecting with PhilipsWired Connectivity  
Your connection to I²C, UART, CAN, and USB



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Connecting with Philips  
Wired Connectivity

Connectivity, or the ability to transmit and receive data, is an essential part of nearly every electronics system imaginable. Today's connectivity options cover a wide range of technologies, each with their own particular characteristics and capabilities.

We've made it easy.  
Now it's your turn – get connected with wired connectivity today.



Why choose Philips?

Connectivity is at the very heart of what we do, so it's no surprise that we hold a leading position in each of the four technologies highlighted in this launchpack. Building on a history of innovation, we offer one of the widest portfolios in the industry.

- I<sup>2</sup>C
- Invented what is now a worldwide standard
  - 20+ years in the market
  - Extremely broad, leading-edge portfolio
  - Extensive customer support resources

- UART
- #1 in industrial UARTS
  - 15+ years in the market
  - Higher-performing drop-in replacements (speed, depth of FIFOs)
  - Focus on miniaturization: smaller packaging
  - In-house manufacturing and assembly
  - Direct customer support

- CAN
- PCA82C250/1 is one of the most widely used CAN transceivers in the world (250 million units shipped)
  - 10+ years in the market
  - Features beyond the baseline standard

- USB
- Driving standards and expanding the market
  - ISP1362 was the benchmark for USB OTG
  - Complete USB portfolio
  - Dedicated customer support
  - Mature, proven USB software that works with many popular OSs
  - Full Microsoft and USB certification on eligible products



Selection of available literature

|                       |  |                |   |
|-----------------------|--|----------------|---|
| <b>I<sup>2</sup>C</b> |  | <b>CAN</b>     |   |
| 9397 750 10198        | 2, 4, 8 and 16-bit I <sup>2</sup> C and SMBus LED Dimmers with reset | 9397 750 11956 | UJA1023T  |
| 9397 750 12799        | I <sup>2</sup> C bus repeaters and hubs                              | 9397 750 13039 | FT Tx's   |
| 9397 750 12744        | I <sup>2</sup> C bus solutions and product summary                   | 9397 750 13046 | TJA1020   |
| 9397 750 13239        | I <sup>2</sup> C selection guide                                     | 9397 750 13126 | Hi speed Tx's                                     |
| 9397 750 12801        | PCA954x  |                |   |
| <b>UARTs</b>          |  | <b>USB</b>     |   |
| 9397 750 12803        | Sample kit feature list  | 9397 750 10417 | ISP1362   |
| 9397 750 13484        | Industrial UART Line Card  | 9397 750 11327 | ISP1760, ISP1761                                  |
| 9397 750 13488        | Continuous innovation in UARTs                                       | 9397 750 11475 | ISP1183   |
| 9397 750 13984        | One/Two/Four Channel Low Power, Low Voltage 16C UARTs                | 9397 750 11478 | ISP1582/83  |
|                       |  | 9397 750 12949 | ISP1504, ISP1505 and ISP1506                      |
|                       |  | 9397 750 14717 | USB linecard (March 2005)                         |
|                       |  | 9397 750 14718 | USB evaluation kits and reference tools selection |

Contact your distributor or local Philips sales contact for available product literature