Sample kit feature list

Introduction

The following kit provides a sample of enhanced Philips UART (Universal Asynchronous Receiver Transmitter) devices. These products can provide all your system needs for asynchronous serial communications, which offer faster time to market. They offer a competitive pricing advantage, and with its own fabs, Philips can meet your demands in a short time. The table in the back provides a comparison between the Philips Industrial UARTs and Philips SC16CxxxB devices, allowing the designer to choose the most suitable solution for a given application.

SC16C550B

- Single channel UART
- 5V / 3.3 V/ 2.5 V operation
- 3 / 2 / 1 / Mbps at 5V / 3.3 V / 2.5 V operations
- 16 Bytes FIFO on both directions (transmit and receive)
- 5V Tolerance Inputs
- Industrial temperature range: -40 to +85°C at commercial pricing
- 0-80 MHz Clock Frequency
- Available in LQFP 48 leads; body 7 x 7 x 1.4 mm; lead-free
- Available in LQFP 48, PLCC 44 and DIL 40
- Drop in to ST16C450, TL16C450, ST16C550, TL16C550, and PC16C550

SC16C752B

- Dual channel UART drop in to TL16C752
- 5V / 3.3 V/ 2.5 V operation
- 5 / 5 /3 / Mbps at 5V / 3.3 V / 2.5 V operations
- 64 Bytes FIFO on both directions (transmit and receive)
- Programmable interrupt trigger levels on transmit and receive
- Auto hardware and software flow control
- 5V Tolerance inputs
- Industrial temperature range: -40 to +85°C at commercial pricing
- 0-80 MHz Clock Frequency
- Sleep Mode (sleep current = 50µA)
- Available in LQFP 48 leads; body 7 x 7 x 1.4 mm; lead-free
- Available in HVQFN 32 leads; body 5 x 5 x 0.85 mm; lead-free

SC16C652B

- Dual channel UART
- 5V / 3.3 V/ 2.5 V operation
- 5 / 5 /3 / Mbps at 5V / 3.3 V / 2.5 V operations
- 32 Bytes FIFO on both directions (transmit and receive)
- IrDA encoder/decoder interface
- Four interrupt trigger levels on transmit and receive
- Auto hardware and software flow control
- Sleep mode (sleep current = 50µA)
- 5V Tolerance Inputs
- 0-80 MHz Clock Frequency
- Industrial temperature range: -40 to +85°C at commercial pricing
- Available in LQFP 48 leads; body 7 x 7 x 1.4 mm; lead-free
- Available in HVQFN 32 leads; body 5 x 5 x 0.85 mm; lead-free

SC28L202

- Dual channel UART
- 5V / 3.3 V operation
- 256 Bytes FIFO for each receiver/transmitter
- Power-saving options
- Two full-duplex independent asynchronous receiver/transmitters
- Baud rates up to 3.125 Mbps in 27 std rates for each receiver/transmitter
- 16 programmable I/O ports (8 for each UART)
- Versatile arbitrating interrupt system
- Bit-by-Bit real-time transmission error checking for high data integrity
- Industrial temperature range: -40 to +85°C at commercial pricing
- Available in TSSOP 56 leads; body 14 x 6.1 x 0.95mm

UART Applications

Any place where two or more systems (computer systems, alarm systems, engine control systems. etc.) must communicate

Telecom/Networking communication

- Base Stations, PABX systems
- Serial to Fiber Optic Converter
- ADSL
- Blue-tooth based Phones
- Hub & Switches
- WLAN, 802.11 GPRS
- Smart Phone, Navigation systems

Industrial/Automotive

- Industrial control, Elevators
- Car Control Box
- Security
- Medical Equipment
- Data exchanges via Serial Ports
- Lighting/Gas metering
- GPS

Computing

- PC, Server & POS, Storage
- PDA & Internet Appliances
- Printer, Scanner, Smart card readers

Consumer

- MP3
- DTV
- STB
- Gaming, Slot Machines
- Projectors
- Digital Picture Accessory

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Differences between Philips Industrial UARTs*
and Philips SC16CxxxB devices

Feature	Industrial	SC16CxxxB
Supply Voltage	3.3 V and 5.0 V	2.5 V, 3.3 V and 5.0 V
Temperature Range	-40 to +85°C[1]	-40 to +85°C[1]
Channels	1, 2, 4, and 8	1, 2, and 4
Synchronous Bus Interface	Yes[2]	No
Independent Transmit & Receive Baud Rates	Yes	No
Maximum FIFO Depth	up to 256 Bytes	64 Bytes
Transmit and Receive FIFOs	Yes[3]	Yes[3]
In-Band (Software) Flow Control (Xon / Xoff)	Yes	Yes
Out-of-Band (Hardware) Flow Control (RTS / CTS)	Yes	Yes
Multi-Drop Mode	Auto	Software Required
Character Recognition (Also Used for Xon / Xoff)	Yes	Yes
Bus Cycle Time (Read Strobe + Read Cycle Delay)	40 ns – 125 ns	43 ns
Bus Interface	Intel, Motorola or Both	Intel, Motorola or Both
Interrupt Priority	Programmable	Fixed
Programmable Interrupt Vector Format	Yes	No
IACKN and DACKN Signal Pins	Yes	No
Transmitter and Receiver Software Reset	Yes	No
Independent Transmitter and Receiver Enable / Disable	Yes	No
Maximum Baud Rate	3.125 Mbps	5 Mbps
Receiver Watch Dog Timer	Yes	No
Programmable Data Format	5 to 8 Data Bits	5 to 8 Data Bits
Parity Format	Odd, Even, Forced, None	Odd, Even, Forced, None
Number of Stop Bits	1, 1-1/2, or 2	1, 1-1/2, or 2
Baud Rate Selection	Programmable	Programmable
Parity, Framing & Overrun Detection	Yes	Yes
Line Break Detection & Generation	Yes	Yes
Automatic Echo of Received Character	Yes	No
Local Loop Back	Yes	Yes
Remote Loop Back	Yes	No
Loop Back Error Check	Yes	No
Programmable I/O Port Pins	Yes	No
Infrared IrDA Interface	No	Yes
Change-of-State Detection	CD, RI, CTS, DSR, and all I/O pins	CD, RI, CTS, DSR
Power Down Mode	Yes[4]	Yes[4]
Clock Frequency Using On-Chip Oscillator and External Crystal	Up to 16.2 MHz	Up to 24 MHz
TTL Input Levels	Yes	Yes
Software	Similar structures but different low level routines	
Receiver Time-out Mode	Yes	Yes

* Note: UART Products falling into Industrial Category are: SCCxxx, SCNxxx, SC28xxx, SC26xxx, SC28Lxxx
[1] Industrial temperature at commercial price
[2] Synchronous use requires a clock from host
[3] FIFO depth varies depending on UART
[4] Clock is shut off, but register contents remain

Useful Links
• Application notes: www.semiconductors.philips.com/logic/support/appnotes/datacom
• Send technical questions to e-mail box: datacom.tech-support@philips.com
• Brochures/Datasheets/Literature / FAQ: www.semiconductors.philips.com/logic/datacom

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