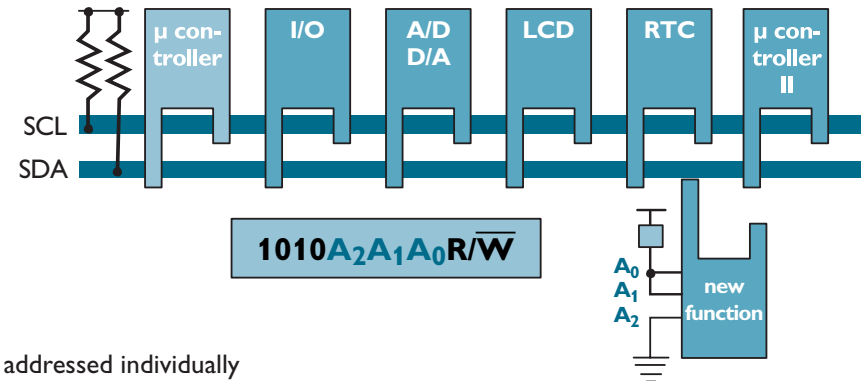


I²C Bus Solutions

I²C Bus Basics

This universal 2 wire bus, developed by Philips, is a de facto standard for controlling and monitoring applications in computing, communications and industrial segments.



- ✓ Easily expandable
- ✓ Support from many semiconductor companies
- ✓ More than 400 different devices
- ✓ Multi master capability e.g. for diagnostics
- ✓ Proven applications in *Telecom* market
- ✓ Proven in *Industrial* environment
- ✓ Used in *Consumer* applications
- ✓ Every year new additional products

- ✓ I²C-bus handbook, I²C Website: www.semiconductors.philips.com/i2c
- ✓ Application notes for GPIOs, RTCs, multiplexers, level shifters, LED blinkers/dimmers and bus controllers
- ✓ Training programs
- ✓ Application/design-in support
- ✓ Evaluation boards

Each device is addressed individually by software with a unique address that can be modified by hardware pins.

- Bus speed
 - ✓ 100 kHz
 - ✓ 400 kHz
 - ✓ 3.4 MHz
- V_{DD} range
 - ✓ 2.3-5.5 V
- Wiring overhead:
 - ✓ low
- Power consumption:
 - ✓ low

It is the only 2 wire bus where devices are addressed completely by software! This saves PC-board costs and design-in time.

New devices or functions can be easily clipped on to an existing bus!

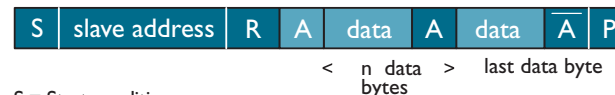
Data is transmitted between the master and slave at speeds of 100 kHz, 400 kHz or 3.4 MHz.

The master always sends the clock signal.

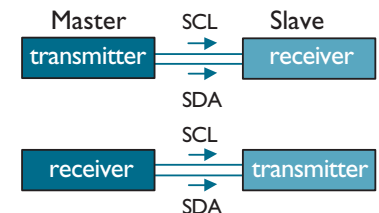
Write data



Read data



S = Start condition
 A = Acknowledge
 P = Stop condition
 $\overline{R/W}$ = read/write
 $\overline{A}$ = Not Acknowledge



Purchase of Philips I²C components conveys a license under the Philips' patent to use the components in the I²C system provided the system conforms to the I²C specification defined by Philips.

www.philipslogic.com/i2c

PHILIPS

I²C Bus Solutions

I²C Product Summary

Data sheets can be downloaded at: www.philipslogic.com/i2c or www.semiconductors.philips.com/i2c	TYPE OF FUNCTION IN DEVICE										FEATURES																						
	I/O EXPANDER (bits)	LED BLINKER (bits)	MUX/LATCH/EEPROM (Bits-latched bits-registers)	MUX/SWITCH (In/Out channels)	REPEATER/HUB (In/Out segments)	BUS CONTROLLER	TEMPERATURE SENSOR	VOLTAGE MEASUREMENT	RAM/EEPROM (Kbits)	ANALOG/DIGITAL CONVERTER	# OF ADDRESSES	INTERRUPT (In/Out)	HARDWARE RESET	CURRENT (per bit/total mA)	Internal Pull Up Current Source/Resistor on I/O	V _{CC} RANGE (V)				FREQ. (kHz)		TEMP °C			PIN COUNT	PACKAGES							
																2.5	3.3	5	5 V TOLERANT	100	400	0 to 70	-40 to 85	-55 to 125		DIP	SO (narrow)	SO (wide)	SSOP	QSOP	TSSOP	HVQFN	
LM75A							2°C				8	0-1				2.8	•	•	•	•	•			•	8		D					DP	
NE1617A							3°C				9						•	•	•	•	•		0 to 125		16					DS			
NE1618							1°C				9						•	•	•	•	•		0 to 125		16					DS			
NE1619							3°C	•			2						•	•	•	•	•		0 to 125		16					DS			
P82B715					•						NA						•	•	•	•	•				8	PN	TD						
P82B96					•						NA						•	•	•	•	•				8	PN	TD				DP		
PCA24S08									8		1						•	•	•	•	•				8		D				DP		
PCA8550			4-1-1								1							•	•	•	•	•	•		16		D		DB		PW		
PCA8581C									1		8						•	•	•	•	•		-25 to 85		8	PN	TD						
PCA9500	8								2		2-8			25-100	•		•	•	•	•	•				16			D			PW	BS	
PCA9501	8								2		2-64	0-1		25-100	•		•	•	•	•	•				20			D			PW	BS	
PCA9510/11/11A/12/13/14					1-1						NA						•	•	•	•	•				8		D				DP		
PCA9515/15A					1-1						NA						•	•	•	•	•				8		D				DP		
PCA9516/16A					1-4						NA						•	•	•	•	•				16		D				PW		
PCA9517					1-1						NA						•	•	•	•	•				8		D				DP		
PCA9518					1-4xN						NA						•	•	•	•	•				20			D			PW		
PCA9530/50		2									2		•	25-50			•	•	•	•	•				8		D				DP		
PCA9531/51		8									8		•	25-100			•	•	•	•	•				16		D				PW	BS	
PCA9532/52		16									8		•	25-200			•	•	•	•	•				24			D			PW	BS	
PCA9533 & 53/01 & /02		4									1			25-100			•	•	•	•	•				8		D				DP		
PCA9534	8										8	0-1		25-100			•	•	•	•	•				16			D			PW	BS	
PCA9535	16										8	0-1		25-200			•	•	•	•	•				24			D			PW	BS	
PCA9536	4										1			25-100	•		•	•	•	•	•				8		D				DP		
PCA9537	4										1	0-1	•	25-100			•	•	•	•	•				8		D				DP		
PCA9538	8										8	0-1	•	25-100			•	•	•	•	•				16			D			PW	BS	
PCA9539	16										8	0-1	•	25-200			•	•	•	•	•				24			D			PW	BS	
PCA9540/40A				1-2							1						•	•	•	•	•				8		D				DP		
PCA9541/01, /02 & /03				2-1							16	1-2	•				•	•	•	•	•				20			D			PW	BS	
PCA9542/42A				1-2							8	2-1					•	•	•	•	•				14		D				PW		
PCA9543/43A				1-2							4	2-1	•				•	•	•	•	•				14		D				PW		
PCA9544/44A				1-4							8	4-1					•	•	•	•	•				20				D			PW	BS
PCA9545/45A				1-4							4	4-1	•				•	•	•	•	•				20				D			PW	BS
PCA9546/46A				1-4							8		•				•	•	•	•	•				16		D				PW	BS	
PCA9547					1-8						8		•				•	•	•	•	•				24			D			PW	BS	
PCA9548/48A					1-8						8		•				•	•	•	•	•				24			D			PW	BS	
PCA9554/54A	8					•					8	0-1		25-100	•		•	•	•	•	•				16			D		DB	PW	BS	
PCA9555	16										8	0-1		25-200	•		•	•	•	•	•				24			D		DB	PW	BS	
PCA9556	8										8		•	20-80			•	•	•	•	•				16						PW		
PCA9557	8										8		•	25-100			•	•	•	•	•				16		D				PW	BS	
PCA9558	8		5-1-1						2		2			25-100				•	•	•	•	•				28						PW	
PCA9559			5-1-1								4			20-80			•	•	•	•	•				20							PW	
PCA9560			5-1-2								4			25-100			•	•	•	•	•				20				D			PW	
PCA9561			6-0-4								4			25-100			•	•	•	•	•				20				D			PW	
PCA9564						•					128	0-1	•				•	•	•	•	•				20			D				PW	BS
PCF85102C-2									2		8						•	•	•	•	•				8	N	D						
PCF85103C-2									2		8						•	•	•	•	•				8	N	D						
PCF85116-3									16		8						•	•	•	•	•				8	N	D						
PCF8574/74A	8										4	0-1		20-100	•		•	•	•	•	•				16	PN		TD	TDK				
PCF8575	16										8	0-1		20-100	•		•	•	•	•	•				24					TSDB			
PCF8575C	16										8	0-1		20-100			•	•	•	•	•				24					TSDB			
PCF8582C-2									2		8						•	•	•	•	•				8	N	D						
PCF8584						•					128	0-1	•				•	•	•	•	•				20	PN		TD					
PCF8591										8	8						•	•	•	•	•				16	PN		TD					
PCF8594C-2									4		8						•	•	•	•	•				8	N	D						
PCF8598C-2									8		8						•	•	•	•	•				8	N		D					
SAA1064		4x8									4			21 - mA			•	•	•	•	•				24		P		T				
SA56004-X							1°C				8	0-1					•	•	•	•	•		0 to 125		8		D				DP		
SE95							1°C				8	0-1				2.8	•	•	•	•	•			•	8		D				DP		

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Date of release: February 2004
document order number: 9397 750 12744

Published in U.S.A.

