Electronics Single wire communication

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October 23, 2017

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Single wire communication

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Single wire communication

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Why does the number of signals matter?

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• Single wire means all communication is asynchronous

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- Single wire means all communication is asynchronous
- Bidirectional communication on a single line means low data rates

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- Bidirectional communication on a single line means low data rates
- Bidirectional communication on a single line requires a pull-up resistor, like I^2C

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• Data is transferred in 1200 baud, RS-232 format

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- Data is transferred in 1200 baud, RS-232 format
 - 7 bit, even parity
- Master-slave configuration

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- Data, ground, and 12V lines

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- Data is transferred in 1200 baud, RS-232 format
 7 bit, even parity
- Master-slave configuration

One master can communicate with up to 62 slaves

- Data, ground, and 12V lines
- Used for environmental monitoring

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From : SD-12 support group



• SD-12

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From: Sentek



• SD-12

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DHT11,22

• Proprietary format

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- Communication between one microprocessor and one device

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- 40 bit data; 5 bytes: humidity H,L , temperature H,L , CRC

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- Proprietary format
- Communication between one microprocessor and one device
- Data, ground, and V_{DD} (3.5 5.5V) lines
- User for temperature and humidity sensors
- 40 bit data; 5 bytes: humidity H,L , temperature H,L , CRC
- Minimum interval of 2 seconds between readings

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From Aosong datasheet



• DHT11

From Aosong datasheet



• AM2302

Dallas 1-wire

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Dallas 1-wire

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- Master-slave configuration
 Each device has a 64 bit serial number
 Devices are enumerated
- Data and ground lines *only* Each device has a 800pF capacitor and gets power from the data line
- Lots of devices

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From Wikipedia

Wire Name	Ous 6400 1280s 1520s 2560s 2300s 2840s 4480s 6120s 6760s 6400s
1-wire output	rezet
1-wire input	device response
imput sample time	
	reset procedure
Wire Ner	960us (1.024ns (1.089ns (1.152ns (1.216ns (1.28ns (1.344ns (1.408ns (1.472ns
1-wire	output 1 0 1 0 MSB, 0
1-wire	input
imput as	mple time
•	send byte x"22" (b"00110011")
Wire Na	ne 1.536mi 1.6mi 1.664mi 1.728mi 1.792mi 1.856mi 1.50mi 1.994mi 2.048mi 2.1
1-911	e output
1-wir	a input 1 1 0 0 1 1 0 0
imput a	ample time
-	

1 Wire reset, write and read example with DS2432

• 1-wire