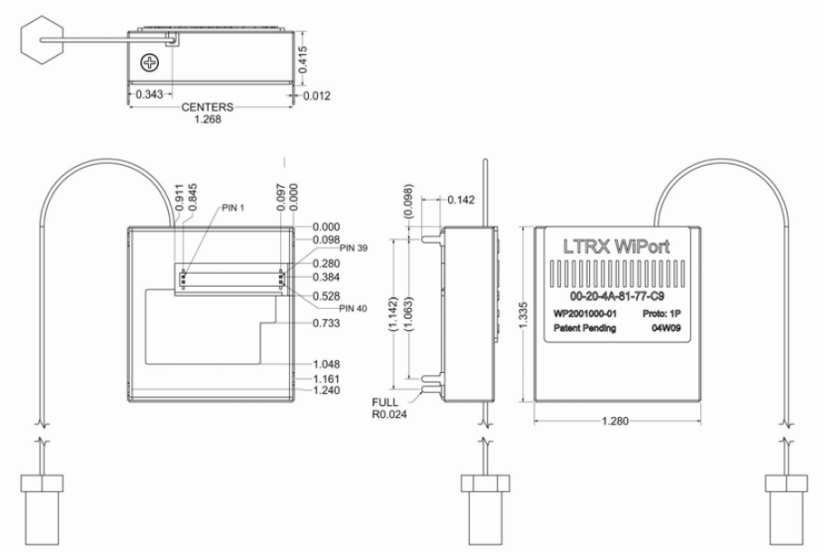
WiPort について　　（0.8 版）

WiPort は小型のコンピュータモジュールで、LANTRONIX 社の製品です。WiPort は CPU（186 系、256KB　SRAM）、IEEE802.11b/g 無線／有線 LAN インターフェース、シリアル、汎用 I/O で構成されます。

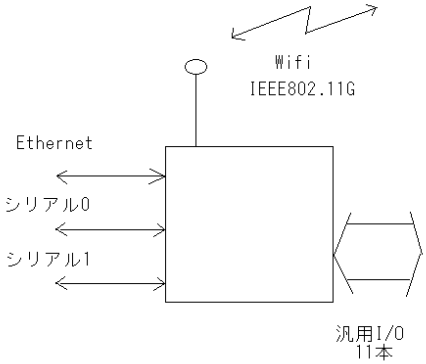
特徴

• Complete integrated RoHS compliant solution
• Supports 802.11 WLAN or Ethernet connectivity
• Serial to 802.11b/g conversion
• Wired Ethernet to 802.11 b/g WLAN Bridging
• Stable, field proven TCP/IP protocol suite and web-based application framework
• Optional End-to-End 128, 192 and 256 Bit AES Encryption
• WPA PSK TKIP security, 128 bit WEP encryption
• Dual serial ports
• Easy configuration through a web interface
• Easy installation of customized web pages
• Embedded web server
• 11 General Purpose Input/Output（GPIO）pins
• E-mail alerts
• Upgradeable firmware via the network or serial port
• High performance data throughput

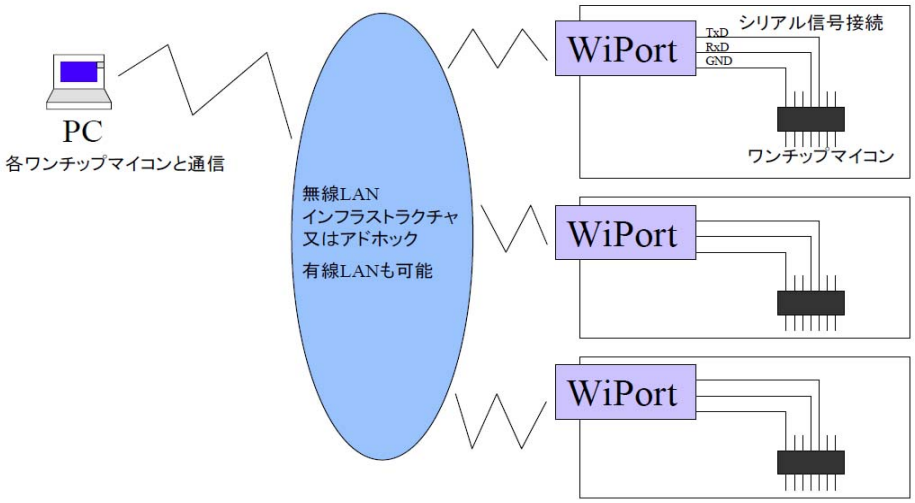
外観



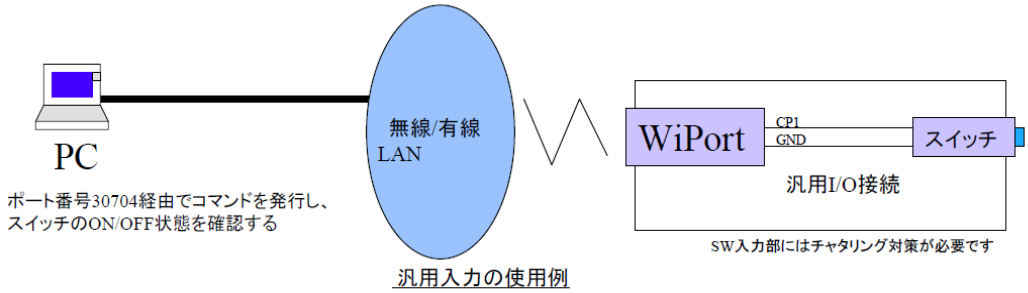
ブロック図

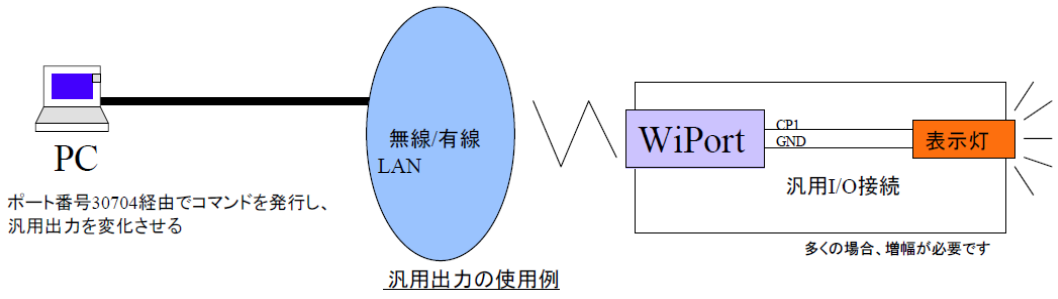


使用例



シリアル I/O による接続





汎用 I/O による接続

接続コネクタ

Pin Number	WiPort Pin Function	Pin Number	WiPort Pin Function
1	3.3V Power	21	Reserved
2	3.3V Power	22	Reserved
3	RTS0	23	Signal Ground
4	TXD0	24	Signal Ground
5	RXD0	25	Reserved
6	Configurable Pin 2	26	Reserved
7	Configurable Pin 3	27	Ethernet Status LED2
8	CTS0	28	Ethernet Status LED1
9	Configurable Pin 10	29	Ethernet TX-
10	Configurable Pin 8	30	Ethernet TX+
11	Signal Ground	31	Ethernet RX Center Tap
12	Signal Ground	32	Ethernet TX Center Tap
13	Reset In	33	Ethernet RX-
14	Configurable Pin 0	34	Ethernet RX+
15	RTS1	35	Configurable Pin 1
16	TXD1	36	Reserved
17	RXD1	37	Configurable Pin 6
18	Configurable Pin 9	38	Configurable Pin 5
19	Configurable Pin 4	39	WLAN Activity LED
20	CTS1	40	Configurable Pin 7

Configurable Pins

The WiPort has eleven pins configurable for General Purpose I/O（GPIO）.
Use these GPIO pins to control devices such as relays, servers, lights, monitor switches, sensors, and even processes such as data transfer.

Default Settings
・ Function: general purpose input/output
・ Direction: input
・ Active Level: low
Set the functions for the eleven pins independently and in any combination. The initial directions（input/output）and active levels（low or high active）at bootup can also be configured through 77FE.
This chapter describes how the directions, active levels, and states can be dynamically controlled and probed through special port 77F0.

Features
・ TCP and UDP can be used.
・ The protocol supports up to 32 GPIO for future products.
・ Function configuration can be retrieved.
・ Input or output selection can be retrieved and controlled.
・ Active low or high selection can be retrieved and controlled.
・ Active or inactive selection can be retrieved and controlled.
・ 77F0 can be disabled.
Every change of state（active/inactive）requires a command over TCP or UDP, and thus is not very fast. If you use this port for data transfer, the throughput is low, usually up to 1 Kbps.

Control Protocol

The GPIO control protocol is a simple, proprietary protocol, which is described below.

Guidelines

The GPIO control protocol is described from the PC side. Send means from PC to WiPort. Response comes from WiPort to PC.

The protocol allows for control of up to 11 GPIOs.

The parameters are four bytes long and represent GPIOs 0-31, with GPIO0 in bit 0 of the first byte（Little Endian）. Parameter bits for configurable pins not configured as GPIOs are undefined for Get commands and ignored on Set commands.

Every command consists of nine bytes: one command type of one byte and two parameters of four bytes each.

On some commands, one or all parameters are ignored.

For UDP, command type and parameters need to be in the same datagram.

Responses to valid commands are always five bytes long, consisting of the returned command byte and as parameters in the current or updated values. In case of an invalid command, only one byte with value 0FFh is returned.

When sending a command（TCP and UDP）, wait for the response before sending the next command.

	Command	Parameter 1								Parameter 2							
Byte	0	1		2		3		4		5		6		7		8	
Pin Number		0	7	8	15	16	23	24	31	0	7	8	15	16	23	24	31

	Command	Parameter 1							
Byte	0	1		2		3		4	
Pin Number		0	7	8	15	16	23	24	31

Byte 0 Command Types

10h	**Get functions**
11h	**Get directions** (input or output)
12h	**Get active levels** (high active or low active)
13h	**Get current states** (active or not active)
19h	**Set directions**
1Ah	**Set active levels**
1Bh	**Set current states**

There is no Set functions command. Since the pin's function depends on the hardware in which the WiPort is embedded, that configuration is only allowed via 77FE. Settings changed by any of the Set commands are not stored and are lost when the unit is powered down or rebooted.

Command 1Bh, Set States

Send:		
	2 parameters	
	Bytes 1-4: Mask	
	Bit X	1 means the state for GPIO X will be updated with the value in the second parameter.
		0 means the state for that GPIO will not change.
	Bytes 5-8: New States	
	Bit X	1 means GPIO X will become active.
		0 means it will become inactive.
Response:		
	1 parameter	
	Bytes 1-4: Updated states	

Example PC sends command 1Bh to change the current states of GPIO 0 and 1 (assuming they are configured as outputs).

PC -> WiPort: 1Bh, 01h, 02h, 00h, 00h, 01h, 00h, 00h, 00h
WiPort -> PC: 1Bh, 03h, 00h, 00h, 00h

Command details:

1Bh = command 1Bh
01h, 00h, 00h, 00h = the mask that determines which GPIOs will be changed.

Bit 0 and 9 are 1 → GPIO0 and GPIO9 will be changed.
bit 1 is 0 → GPIO1 will remain the same.

01h, 00h, 00h, 00h = the new states

bit 0 is 1 → GPIO0 will become 1.
bit 1 is ignored since it is masked out.
bit 0 is 0 → GPIO9 will become 0.

Response details:

1Bh = response to command 1Bh
03h, 00h, 00h, 00h =

bit 0 is 1 → GPIO0 = 1
bit 1 is 1 → GPIO1 = 1
bit 9 is 0 → GPIO9 = 0

WiPort 基板について

回路図