SERIAL-TO-WIFI ADAPTER

COMMAND REFERENCE

Reference: GS-S2WF-CFG

Version: SP-2.2

Date: *20-Aug-10*

Version	Date	Remarks
1.0	17 November 2009	Initial release. Applies to S2WiFi version 1.0.9 and above.
1.2	5 March 2010	Applies to S2WiFi version 1.0.9 and above.
2.0	8 June 2010	Updated and reformatted. Applies to S2WiFi version 1.0.9 and above.
2.2	20 August 2010	Updated and reformatted. Applies to S2WiFi version 2..2 and above.

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Command	Parameters	Responses / Effects
COMMAND INTERFACE		
AT	(none)	"OK". This command is to verify the connectivity between Host processor and S2W module.
ATE	n=0 (disable) =1 (enable)	IF 1, echo all input.
ATV	n=0 (disable) =1 (enable)	IF 1 responses are ASCII, else numerical codes. This command displays any current and saved profile parameter values as ASCII characters.
AT?	(none)	List of all supported commands.
UART / ADAPTER INTERFACE CONFIGURATION		
ATB	<baudrate>[[,<bitsperchar>] [,<parity>][,<stopbits>]]	UART parameters are immediately reset to values provided.
AT&K	n=0 (disable) =1 (enable)	IF 1, software flow control is enabled.
AT&R	n=0 (disable) =1 (enable)	IF 1, hardware flow control is enabled.
ATS	n=0 to 5; p=(parameter value)	Sets various timeout values; see table 5 of [1].
ATI	n=0 to 3;	Various Adapter ID information; see table 6 of [1].
PROFILE MANAGEMENT		
AT&W	n=0 (profile 0) =1 (profile 1)	Save profile specified by n.
ATZ	n=0 (profile 0) =1 (profile 1)	Load profile specified by n.
AT&Y	n=0 (profile 0) =1 (profile 1)	Set default profile to the value n.
AT&F	(none)	Restore profile to factory default values.
AT&V	(none)	Current and saved profile parameter values as ASCII.
WI-FI INTERFACE		
AT+NMAC=	<MAC ADDRESS>	Sets the adapter MAC address (an 8-byte colon-delimited hexadecimal number), and stores the value in flash memory.
AT+NMAC2=	<MAC ADDRESS>	Sets the adapter MAC address (an 8-byte colon-delimited hexadecimal number), and stores the value in non-volatile RAM.
AT+NMAC=?	(none)	Returns the current adapter MAC address.

Command	Parameters	Responses / Effects
AT+NMAC2=?	(none)	Returns the current adapter MAC address.
AT+WREGDOMAIN=	<Regulatory Domain> 0 (FCC) 1 (ETSI) 2 (TELEC)	FCC → supported Channel range is 1 to 11. ETSI → supported Channel range is 1 to 13. TELEC → supported Channel range is 1 to 14.
AT+WREGDOMAIN=?	(none)	Configured regulatory domain in the Serial2WiFi adaptor FCC : 0 ETSI : 1 TELEC : 2
AT+WS=	[<SSID>[,<BSSID>][,<Channel>][,<Scan Time>]]	Network scan, returns list of found networks in the format: <SSID>,<BSSID>,<Channel>,<RSSI>,<Mode>,<Security> Scan time is measured in mSec.
AT+WM=	n=0 (infrastructure) =1 (ad hoc)	Set 802.11 Station operating mode.
AT+WA=	<SSID>[,[<BSSID>][,<Ch>]]	Associate to specified SSID, BSSID, and channel.
AT+WD	(none)	Disassociate from the current network.
ATH	(none)	Disassociate from the current network.
AT+WWPS=	<METHOD>[,PIN]	Associate to an AP using WPS METHOD is push button (1) or pin (2). PIN is the pin for PIN method.
AT+NSTAT=?	(none)	Current wireless and network configuration.
AT+WSTATUS		Adapter reports the current network configuration to the serial host
AT+WRSSI=?	(none)	Current RSSI as ASCII.
AT+WRATE=?	(none)	Current transmit rate as ASCII.
AT+WRETRY=	<retrycount>	Value of 802.11 TX retry is reset.
Wi-Fi SECURITY		
AT+WAUTH=	n=1 to 2	Authentication mode setting; see 4.7.1 of [1].
AT+WWEPn=	n=1 to 4, <key>	WEP key n is set to the value in <key>.
AT+WWPA=	<passphrase>	WPA passphrase set to the value in <passphrase>.
AT+WWPAPSK=	<SSID>,<passphrase>	Computes and stores the WPA2 PSK value.

Command	Parameters	Responses / Effects
AT+WPSK=	<PSK>	Sets the WPA2 pre-shared key to the <PSK>.
AT+ WEAPCONF=	<Outer Authentication>,<Inner Authentication>,<user name>,<password>	Set the Outer authentication, Inner authentication, user name and password for EAP Security. This command returns the normal response codes. The valid outer authentication values are: Eap-FAST: 43 Eap-TLS: 13 Eap-TTLS: 21 Eap-PEAP: 25 The valid Inner Authentication values are: Eap-MSCHAP: 26 Eap-GTC: 6
AT+ WEAP=	<Type>,<Format>,<Size>, < Location> <ESC>W <data of size above>	Configure certificate for EAP-TLS
AT+ TCERTADD=	<Name>,<Format>,<Size >,<Location>	Configure the certificate for SSL/HTTPS
AT+TCERTDEL=	<certificate name>	Delete a certificate from memory
WIRELESS CONFIGURATION		
AT+WRXACTIVE=	n=0 (disable) =1 (enable)	If 1, 802.11 radio is enabled.
AT+WRXPS=	n=0 (disable) =1 (enable)	If 1, Power Save mode is enabled.
AT+MCSTSET=	n=0 (disable) =1 (enable)	If 1, multicast reception is enabled.
AT+WP=	<power>	Transmit power set to <power>. The value of the parameter can range from 0 to 7 for the GainSpan TLS board, with a default value of 7.
AT+WSYNCINTRL=	<n> 1 to 65535.	Configure the sync loss interval
AT+EXTPA=	n=0 (disable) =1 (enable)	Enable/disable the external PA
AT+PSPOLLINTRL=	<n> 1 to 65535.	Configure the keep-alive timer interval. The default vale is 45 seconds. The value 0 disables this timer.

Command	Parameters	Responses / Effects
NETWORK INTERFACE		
AT+NDHCP=	n=0 (disable) =1 (enable)	If 1, DHCP is enabled.
AT+NSET=	<Src Address>,<Net-mask>,<Gateway>	Static network parameters; overrides previous values.
AT+DNSLOOKUP=	<URL>,[<retry>,[<timeout=S>]	Query DNS server for address of hostname URL.
AT+DNSSET=	<DNS1 IP>,[<DNS2 IP>]	Set the DNS server addresses to be used.
AT+STORENWCONN		Store network connection parameters prior to transition to Standby.
AT+RESTORENWCONN		Restore network connection parameters after wake from Standby.
CONNECTION MANAGEMENT		
AT+NCTCP=	<Dest-Address>,<Port>	Attempt TCP client connection to Destination; CONNECT <CID> if successful.
AT+NCUDP=	<Dest-Address>,<Port> [<,Src.Port>]	Open UDP client socket to Destination; CONNECT <CID> if successful.
AT+NSTCP=	<Port>	Start a TCP server on Port; CONNECT <CID> if successful.
AT+NSUDP=	<Port>	UDP server on Port; CONNECT <CID> if successful.
AT+CID=?		Returns the current CID configuration.
AT+NCLOSE=	<CID>	Close connection identified by CID.
AT+NCLOSEALL	(none)	Close all open connections.
AT+SETSOCKOPT=	<Cid>,<Type>, <Parameter>,<Value>, <Length>	Configure a socket which is identified by a Cid
AT+SSLOPEN=	<cid>,<certificate name>	Open an SSL connection
AT+SSLCLOSE=	<cid>	Close an SSL connection
AT+HTTPCONF=	<Param>,<Value>	Configure an HTTP client
AT+HTTPOPEN=	<host>,<Port Number>, [<SSL Flag>,<certificate name>]	Open an HTTP client connection. This command opens an HTTP client on the adaptor and connects to the server specified by the host name or IP address
AT+HTTPSEND=	<cid>,<Type>,<Timeout>, <Page>,[Size of content]	GET/POST HTTP data on the HTTP client connection
AT+HTTPCLOSE=	<cid>	Close the HTTP client connection
AT+NRAW=	<0|1|2>	Enable / Disable Raw Ethernet support.

Command	Parameters	Responses / Effects
AT+UNSOLICITEDTX=	<Frame Control>,<Sequence Cntrl>,<Channel>,<Rate>, <WmmInfo>, <Receiver Mac>,<Bssid of AP>,<Frame Length>	Unsolicited data transmission
BATTERY CHECK		
AT+BCHKSTRT=	<Batt.chk.freq>	Start checking battery each 0 <Batt.chk.freq ≤ 100 packets transmitted.
AT+ BATTLVLSET=	<Warning Level>,<Warning Freq>,<Standby Level>	Set the battery warning/standby level to enable the adaptor's internal battery measuring logic
AT+BCHK=	<Batt.chk.freq>	Reset value of battery check frequency.
AT+BCHKSTOP		Stop checking battery.
AT+BATTVALGET		Retrieve the most recent battery check value.
POWER STATE MANAGEMENT		
AT+PSDPSLEEP	(none)	Enable SOC Deep Sleep power saving mode.
AT+PSSTBY=	<x>[,<DelayTime>,<Alarm 1 pol.>,<Alarm2 pol.>]	Request transition to Standby for x milliseconds.
AUTO CONNECTION		
AT+WAUTO=	<mode>,<SSID>,<BSSID> ,[channel]	Sets WiFi parameters to be used for Auto Connect.
AT+NAUTO=	<Type>,<Protocol>,<Destination IP>,<Destination Port>	Sets network parameters to be used for Auto Connect.
ATC	n=0 (disable) =1 (enable)	IF 1, Auto Connect is enabled on next reboot or AT.
ATA	(none)	Start Auto Connect, including association.
ATA2	(none)	Start Auto Connect using existing association.
ATO	(none)	Return to a previous Auto Connect session; returns an error if no such session exists.
PROVISIONING		
AT+WEBPROV=	<user name>,<passwd>	Provisioning through web pages
AT+WEBLOGOADD=	<size> maximum size is 1788 bytes	Adding the Logo that will appear on the web pages used for provisioning.
RF TEST		

Command	Parameters	Responses / Effects
AT+RFFRAMETXSTART=	<Channel>,<Power>,<Rate>,<No.Of.Times>,<Fr.Intrvel>,<FrameControl>,<DurationId>,<Sequence Control>,<frameLen>,<Preamble>,<Scrambler>[,<Dst Mac>,<Src Mac>]	Enable the asynchronous frame transmission
AT+RFRXSTART=	<Channel>[,<Sendtouser>]	Enable the asynchronous frame reception
AT+RFWAVETXSTART=	<Modulated>,<Channel>,<Rate>,<PreambleLong>,<ScamblerOff>,<Cont.Tx>,<Power>,<Ssid>	Enable the modulated/un-modulated wave transmission
AT+RFSTOP		Stop any of the RF tests transmission/reception
MISCELLANEOUS		
AT+FWUP=	<SrvIp>,<SrvPort>,<SrcPort>, <retry>	Get a firmware upgrade from the server address/port to the adapter port SrcPort.
AT+SETTIME=	<dd/mm/yyyy>,<HH:MM:SS>	Set the adaptor system time
AT+DGPIO=	<GPIO-NO>,<SET/RESET(0/1)>	Set or reset (high/low) a GPIO pin
AT+VER=?		Return the current adapter firmware versions.
AT+PING=	<IP>,[[Trails],[<Interval>],[<Len>],[<TOS>],[<TTL>],[<PAYLOAD>]]	PING the IP address provided. Trails = 0 will ping until <Esc> C is issued.
AT+TRACEROUTE=	<IP>,[[Interval],[<MaxHops>],[<MinHops>],[<TOS>]]	Trace the route to the IP address provided.

Commands must be terminated with a carriage return and line feed, <CR><LF>. Parameters in [ ] are optional. Values are expressed as ASCII text unless otherwise specified.

Default return messages are:

STATUS	MESSAGE (VERBOSE ENABLED)	MESSAGE (VERBOSE DISABLED)
VALID INPUT	OK	0
INVALID INPUT	ERROR: INVALID INPUT	2

Some commands can return other error messages; see [1] for more information.

Escape Sequence	Description
<Esc><Esc>	This sequence is used to encode the escape character itself.
<Esc>S CID	This escape sequence selects the specified Connection ID as the current connection. This switches the connection to be used without exiting from the Data mode of operation. Use this sequence to send data from a UDP client (must be done before data can be received by that client). Example: <Esc>S10123456789<Esc>E where 1 is the UDP client CID and 012...9 is the data to be sent.
<Esc>U CID remote address: remote port:	This escape sequence is used when sending and receiving UDP data on a UDP server connection. The remote address and remote port is transmitted in ASCII text encoding and terminated with a ':' character. Example: <Esc>U4192.168.1.1:52:<data><Esc>E
<Esc>u CID <remote address> <remote port>	This escape sequence is used when sending and receiving UDP data on a UDP server connection. The remote address and remote port is transmitted in binary encoding with the MSB transmitted first. The following example shows the header to transmit a UDP packet using binary addressing taking up 9 bytes (d denoting decimal value): <Esc>u4<192d><168d><1d><1d><0d><52d><data><Esc>E
<Esc>E	End-of-Data sequence, indicating end of a transmit frame, and start of transmission. The data received is sent on the network, and the interface returns to Command mode.
<Esc>C	This sequence causes transmission of the data received, after which the currently selected connection is closed, and the interface returns to Command Mode. Any buffered data is sent before the connection is closed.
<Esc>O	"OK": This sequence is sent to the serial host by the Serial2WiFi Adapter upon successful completion of either the <Esc>S or <Esc>E commands.
<Esc>F	"FAILURE": This sequence is sent to the host by the Serial2WiFi Adapter if an <Esc>S or <Esc>E command failed.
<Esc>xxx	If an unknown character 'xxx' is detected after an <Esc> character the <Esc> and the <xxx> character are ignored.
<Esc>Q	This sequence is used to encode a literal XON character to be transmitted when Software Flow Control is enabled.
<Esc>T	This sequence is used to encode a literal X-OFF character to be transmitted when Software Flow Control is enabled.

<Esc>R:<Length>:<Dst.Addr><Src.Addr><EtherType><RawPayload>	This sequence is used to transmit or receive a raw Ethernet frame.

The contents of < > are a byte or byte stream, except for <Esc>; literals outside brackets are ASCII characters.

Reference

1. Serial-to-WiFi Adapter Application Programming Guide, GS-S2WF-APG, GainSpan Corporation.