

# Defiance Digital

## LoRaBlue AT-Command Manual

### Software Version:

Returns version of currently running firmware.

Command	Response	Parameter
AT+VERSION	AT+VERSION=<version>	NULL

### UF2 Bootloader:

Activates UF2 Bootloader for updating firmware.

Command	Response	Parameter
AT+UF2	AT+OK AT+RESETTING	NULL

### Reset Device:

Performs software reset. Recommended after changing LoRa Radio Settings but not automatic (for convenience when changing multiple settings).

Command	Response	Parameter
AT+RESET	AT+OK AT+RESETTING	NULL

### Get Configuration CSV:

Returns configuration values the app needs, all at once.

Command	Response	Parameter
AT+CONFIG	CSV Data	NULL

### 30 second antenna swap:

Shuts everything LoRa down for 30 seconds to allow changing of antennas. Failure to either use this command or power down before removing antenna could result in damage to the LoRa Radio. Blue led will blink while command is in effect instead of giving response.

Command	Response	Parameter
AT+ANT	NULL	NULL

### Reset Parameters:

Reset all parameters to default values.

Command	Response	Parameter
AT+DEFAULT=1	AT+OK AT+RESETTING	NULL

# Defiance Digital

## LoRaBlue AT-Command Manual

### Sleep Device:

Can only be done via UART or BLE. A HIGH signal on SWITCH Pin or writing any UART data will wake device.

Command	Response	Parameter
AT+SLEEP=1	AT+OK	NULL

### LED Settings:

Enable/Disable LEDs.

Command	Response	Parameter
AT+LED	AT+LED=<parameter>	NULL
AT+LED=<parameter>	AT+OK AT+RESETTING	0: NONE 1: BLE Connection 2: BLE Connection & LoRa (DEFAULT) 3: LoRa

### Enable/Disable all peripherals:

If enabled, all data will always be returned on USB, BLE and UART at the same time. If disabled, data will be sent to the last peripheral it received data from.

Command	Response	Parameter
AT+ENAP	AT+ENAP=<parameter>	NULL
AT+ENAP=<parameter>	AT+OK	0: Disabled (DEFAULT) 1: Enabled

### Enable/Disable encryption:

If enabled, messages send over LoRa will be encrypted using passphrase

Command	Response	Parameter
AT+ENCRYPT	AT+ENCRYPT=<parameter>	NULL
AT+ENCRYPT=<parameter>	AT+OK AT+RESETTING	0: Disabled 1: Enabled (DEFAULT)

### Encryption Passphrase:

Passphrase used to derive encryption key.

Command	Response	Parameter
AT+PASSPHR	AT+PASSPHR=<parameter>	NULL
AT+PASSPHR=<parameter>	AT+OK AT+RESETTING	Max 64 character string (DEFAULT=open sesame)

# Defiance Digital

## LoRaBlue AT-Command Manual

### Bluetooth Interface:

Enable/Disable BLE interface.

Command	Response	Parameter
AT+BTEN	AT+BTEN=<parameter>	NULL
AT+BTEN=<parameter>	AT+OK AT+RESETTING	0: Disabled 1: Enabled (DEFAULT)

### Bluetooth Name:

Advertised BLE name.

Command	Response	Parameter
AT+NAME	AT+NAME=<parameter>	NULL
AT+NAME=<parameter>	AT+OK AT+RESETTING	Max 32 character string (DEFAULT=LoRaBlue)

### Enable/Disable DefiChat:

Enables/Disables DefiChat Protocol.

*(If DEFICHAT=1, the following will be set also: ENCRYPT=1, CRC=1, FHSS=1, HC=105, FREQ=912.8, BW=250.0, HP=25, SF=12, CR=5, SW=222, PRE=12, PWR=20, GAIN=0)  
(If DEFICHAT=0, SW will also be set to SW=221)*

Command	Response	Parameter
AT+DEFICHAT	AT+DEFICHAT=<parameter>	NULL
AT+DEFICHAT =<parameter>	AT+OK	0: Disabled 1: Enabled (DEFAULT)

### Maximum DefiChat Echoes:

Maximum amount of echoes DefiChat will perform.

Command	Response	Parameter
AT+MAXECHO	AT+MAXECHO=<parameter>	NULL
AT+ MAXECHO =<parameter>	AT+OK AT+RESETTING	DEFAULT=5

### DefiChat Username:

Username for use with DefiChat.

Command	Response	Parameter
AT+USER	AT+USER=<parameter>	NULL
AT+USER=<parameter>	AT+OK AT+RESETTING	Max 16 character string (DEFAULT=ANONYMOUS)

# Defiance Digital

## LoRaBlue AT-Command Manual

### Bluetooth Name/Username Setup:

Will set USER to <parameter> and NAME to “LoRaBlue-<parameter>”. Used for initial app setup.

Command	Response	Parameter
AT+SETUP=<parameter>	AT+OK=<parameter>	NULL

### Bluetooth Pairing PIN:

BLE pairing pin for secure connections.

Command	Response	Parameter
AT+PIN	AT+PIN=<parameter>	NULL
AT+PIN=<parameter>	AT+OK AT+RESETTING	6 digit pin (DEFAULT=123456)

### UART Baud:

Data rate for UART interface.

Command	Response	Parameter
AT+BAUD	AT+BAUD=<parameter>	NULL
AT+BAUD=<parameter>	AT+OK	0: 1200 1: 2400 2: 4800 3: 9600 (DEFAULT) 4: 14400 5: 19200 6: 28800 7: 31250 8: 38400 9: 56000 10: 57600 11: 76800 12: 115200 13: 230400 14: 460800 15: 921600 16: 1000000

# Defiance Digital

## LoRaBlue AT-Command Manual

### LoRa Debug Information:

Prints additional information about LoRa communications such as Signal Strength (RSSI).

Command	Response	Parameter
AT+DEBUG	AT+DEBUG=<parameter>	NULL
AT+DEBUG=<parameter>	AT+OK	0: Disabled (DEFAULT) 1: Enabled

### LoRa FHSS:

Enable/Disable Frequency Hopping Spread Spectrum.

Command	Response	Parameter
AT+FHSS	AT+FHSS=<parameter>	NULL
AT+FHSS=<parameter>	AT+OK	0: Disabled 1: Enabled (DEFAULT)

### LoRa Home Channel:

Home Channel for FHSS.

Command	Response	Parameter
AT+HC	AT+HC=<parameter>	NULL
AT+HC=<parameter>	AT+OK	<b><u>VALID OPTIONS</u></b> 0-128 (DEFAULT=105)

### LoRa Frequency:

LoRa Frequency (Not available when using FHSS).

Command	Response	Parameter
AT+FREQ	AT+FREQ=<parameter>	NULL
AT+FREQ=<parameter>	AT+OK	<b><u>VALID OPTIONS</u></b> 902.0-928.0MHz (DEFAULT=912.8MHz)

### LoRa Hopping Period:

Symbol period between frequency hops.

Command	Response	Parameter
AT+HP	AT+HP=<parameter>	NULL
AT+HP=<parameter>	AT+OK	<b><u>VALID OPTIONS</u></b> 10-255 (DEFAULT=25)

# Defiance Digital

## LoRaBlue AT-Command Manual

### LoRa Bandwidth:

LoRa Link Bandwidth in KHz.

Command	Response	Parameter
AT+BW	AT+BW=<parameter>	NULL
AT+BW=<parameter>	AT+OK	<b><u>VALID OPTIONS</u></b> 10.4 15.6 20.8 31.25 41.7 62.5 125 250 (DEFAULT) 500

### LoRa Spreading Factor:

LoRa Link Spreading Factor.

Command	Response	Parameter
AT+SF	AT+SF=<parameter>	NULL
AT+SF=<parameter>	AT+OK	<b><u>VALID OPTIONS</u></b> 6-12 (DEFAULT=12)

### LoRa CRC:

Enables/Disables CRC check of received packets.

Command	Response	Parameter
AT+CRC	AT+CRC=<parameter>	NULL
AT+CRC=<parameter>	AT+OK	0: Disabled 1: Enabled (DEFAULT)

### LoRa Coding Rate:

LoRa link coding rate denominator.

Command	Response	Parameter
AT+CR	AT+CR=<parameter>	NULL
AT+CR=<parameter>	AT+OK	<b><u>VALID OPTIONS</u></b> 5-8 (DEFAULT=5)

# Defiance Digital

## LoRaBlue AT-Command Manual

### LoRa Sync Word:

Typically used to distinguish different networks (52 is reserved for LoRaWAN networks).

Command	Response	Parameter
AT+SW	AT+SW=<parameter>	NULL
AT+SW=<parameter>	AT+OK	<b>VALID OPTIONS</b> 0-255 [ 52 RESTRICTED ] (DEFAULT=222)

### LoRa Preamble:

Length of LoRa transmission preamble in symbols.

Command	Response	Parameter
AT+PRE	AT+PRE=<parameter>	NULL
AT+PRE=<parameter>	AT+OK	<b>VALID OPTIONS</b> 6-65535 (DEFAULT=12)

### LoRa Power:

Transmission output power in dBm.

Command	Response	Parameter
AT+PWR	AT+PWR=<parameter>	NULL
AT+PWR=<parameter>	AT+OK	<b>VALID OPTIONS</b> 2-17 & 20 (DEFAULT=20)

### LoRa Gain:

Gain of receiver LNA (low-noise amplifier). Can be set to any integer in range 1 to 6 where 1 is the highest gain. Set to 0 to enable automatic gain control (recommended).

Command	Response	Parameter
AT+GAIN	AT+GAIN=<parameter>	NULL
AT+GAIN=<parameter>	AT+OK	<b>VALID OPTIONS</b> 0-6 (DEFAULT=0)

# Defiance Digital

## LoRaBlue AT-Command Manual

### LoRa Explicit Header:

Enables/Disables Explicit Header Mode.

Command	Response	Parameter
AT+EXPHDR	AT+EXPHDR=<parameter>	NULL
AT+EXPHDR=<parameter>	AT+OK	0: Disabled 1: Enabled (DEFAULT)

### LoRa Low-Data-Rate-Optimization:

Set LDRO. LDRO is required when symbol time is greater than 16ms (LDRO-auto detects this and sets LDRO appropriately).

Command	Response	Parameter
AT+LDRO	AT+LDRO=<parameter>	NULL
AT+LDRO=<parameter>	AT+OK	0: LDRO-off 1: LDRO-on 2: LDRO-auto (DEFAULT)