



Blue Water Design ALERT2 API Guide

Binary API: Supported TLV Types

API Description	API Number	Read / Write	Values	A2X	A2M	Default Value
Source Address	24	RW	1 - 65534	✓	✓	1000
Destination Address	25	RW	1 - 65534	✓	✓	1
Add Path Service	26	RW	0: Disabled 1: Enabled	✓	✓	1
Include Destination	27	RW	0: False 1: True	✓	✓	0
Concentration Test Flag	30	RW	0: False 1: True	✓	✓	0
Concentration PDU ID	32	RW	0: Disabled 1: Enabled	✓	✓	1
IND Timestamp Service	40	RW	0: Disabled 1: Enabled	✓	✓	1
Current Address List	49	RW	0 - 3	✓		0
Current Address List Enabled	50	RW	0: Disabled 1: Enabled	✓		0
Current Address List Action	51	RW	0: Pass 1: Reject	✓		0
Current Address List Type	52	RW	0: Source Address 1: Destination Address 2: Add Path Address	✓		0
Add List to Current Address List	53	WO	uint16_t[]	✓		N/A
Add Range to Current Address List	54	WO	uint16_t[2]	✓		N/A
Remove List from Current Address List	55	WO	uint16_t[]	✓		N/A

Remove Range from Current Address List	56	WO	uint16_t[2]	✓		N/A
Report Rejected Messages	58	RW	0: False 1: True	✓		1
Echo Suppression	63	RW	0: Disabled 1: Enabled	✓	✓	1
Hop Limit	64	RW	0 - 7	✓	✓	1
EERDS Enabled	65	RW	0: False 1: True	✓		0
EERDS Retransmit Delay (ms)	66	RW	500 - 720000	✓		6000
EERDS Maximum Retransmissions	67	RW	0 - 10	✓		3
TDMA Frame Length (ms)	72	RW	2000 - 360000	✓	✓	15000
TDMA Slot Length (ms)	74	RW	500 - 10000	✓	✓	1000
TDMA Slot Offset (ms)	75	RW	0 - 10000	✓	✓	0
GPS Interval (min)	76	RW	0 - 200	✓	✓	29
GPS Timeout (min)	77	RW	1 - 200	✓	✓	5
Transmission Delay (ms)	78	RW	25 - 250	✓	✓	25
Center Transmission	79	RW	0: False 1: True	✓	✓	0
TDMA Slot Overrun Behavior	81	RW	0: Buffer (LIFO) 1: Drop 2: Overrun	✓		0
TDMA Max Payload	82	RO		✓		N/A
CO Time (ms)	96	RW	5 - 1000	✓	✓	10
AGC Time (ms)	97	RW	5 - 1000	✓	✓	55
RF Tail Time (ms)	98	RW	5 - 500	✓	✓	5
Invert Modulation	99	RW	0: False 1: True	✓	✓	0
FEC Level	100	RW	0 - 2	✓	✓	0
Tx Always On	101	RW	0: False 1: True	✓	✓	0
Tx Warm Up (ms)	102	RW	25 - 1999	✓	✓	750
Tx Voltage (p2p)	104	RW	100 - 1200	✓		400
API Version Verification	117	WO	Must be 1	✓	✓	N/A
Source Address (Alias)	118	RW		✓	✓	N/A
Agency ID	119	RW	String (64)	✓		NONE

Save Configuration to NV Storage	120	WO	N/A	✓	✓	N/A
Return Configuration	121	WO	N/A	✓	✓	N/A
Reset Configuration to Defaults	122	WO	N/A	✓	✓	N/A
Load Configuration from NV Storage	123	WO	N/A	✓	✓	N/A
Return Configuration Parameter	124	WO		✓	✓	N/A
GPS Time	126	RO		✓	✓	N/A
GPS Clock Status	127	RO		✓	✓	N/A
Encrypt Outgoing Messages	130	RW	0: False 1: True	✓		0
Encryption Address to Configure	131	RW	0 - 65534	✓		0
Encryption Key Rotation Time	132	RW	POSIX Time	✓		0
Set Encryption Key	133	WO	String (16)	✓		N/A
Remove Encryption Key	134	WO	N/A	✓		N/A
Encryption EMID	135	WO	0 - 16777216	✓		N/A
List Addresses With Encryption Keys	136	RO	uint16_t[]	✓		N/A
Firmware Version	150	RO	String (64)	✓		N/A
Baud Rate	4096	RW	1200 2400 4800 9600 19200 38400 57600 115200	✓	✓	9600
Parity	4097	RW	0: None 1: Odd 2: Even	✓	✓	0
Stop Bits	4098	RW	1 - 2	✓	✓	1
Flow Control	4099	RW	0: None 1: Hardware 2: Software	✓	✓	0
Timeout (ms)	4102	RW	1 - 5000	✓	✓	250
Serial Port To Configure	4103	RW	0 - 2	✓	✓	0
Input Mode	4104	RW	0: API 1: ALERT Concentration	✓	✓	0

Independent Addressing Enabled	4105	RW	0: False 1: True	✓	✓	0
Port Address (If Enabled)	4106	RW	1 - 65534	✓	✓	9000
Output Mode	4107	RW	0: Disable 1: ASCII 2: Binary	✓		1
One Radio Tx/Rx	7000	RW	0: False 1: True	✓		0
Status Interval (Hours)	7001	RW	0 - 48	✓		1
DHCP	7003	RW	0: Disabled 1: Enabled	✓		1
IP Address	7004	RW	String (16)	✓		192.168.1.10
Netmask	7005	RW	String (16)	✓		255.255.255.0
Gateway	7006	RW	String (16)	✓		192.168.1.1
DNS Servers	7007	RW	String (255)	✓		8.8.8.8,8.8.4.4
Clock Source	7009	RW	0: GPS 1: NTP 2: Disabled	✓		0
NTP Servers	7010	RW	String (255)	✓		0.bluewater.pool.ntp.org 1.bluewater.pool.ntp.org 2.bluewater.pool.ntp.org 3.bluewater.pool.ntp.org
ASCII IP Forward	7011	RW	String (255)	✓		
Binary IP Forward	7012	RW	String (255)	✓		
Network Password	7013	RW	String (255)	✓		N/A
Tx Radio Channel	7014	RW	0 - 1	✓		0
Rx Radio Channel	7015	RW	0 - 1	✓		0
Current IP Address	7016	RO	String (32)	✓		N/A
Low Power Mode	7017	RW	0: Disabled 1: Enabled	✓		0
Report Status Offset (minutes)	7018	RW	0 - 59	✓		0
Send Status Message	7019	WO	N/A	✓		N/A
Switch to Firmware Upgrade mode	7020	WO	N/A		✓	N/A
Force GPS Wake	7021	WO	N/A	✓		N/A
Read GPS C_N0	7022	RO	N/A	✓		N/A
Force Reboot	7023	WO	N/A	✓		N/A

Please note that API type numbers above 7000 have not been finalized, and are subject to change without notice.

ASCII Output: Message and Metadata Types

The A2X uses an extended version of the ALERT2 ASCII output specification, which adds a “M” message, for metadata.

The metadata message format is as follows:

Description	M	Msg Type	Year	Month	Day	Hour	Min	Second	CODE=Value	...
Example	M	P	2017	12	21	18	32	21.0214	NLVL=68	

The following metadata types are defined:

Message Type	Code	Description
P	NLVL	Noise Level (0 - 100) during viterbi decoding. Lower levels indicate a better signal.
P	FEC	FEC Mode used to transmit the message (0-2)
N	ENC	Encrypted (0=message was sent in plain text; 1=message was encrypted and has been successfully decrypted)

Status Report Multi-Sensor Report

The A2X can be configured to send status reports on regular intervals. Status reports are sent via a Multi-Sensor Report with a type value of 5. The following measurement suite is used. Each field is fixed length, and must contain the number of bytes listed. The value format, measurement resolution and units are derived from the nature and typical accuracy of the measurement.

Sensor	Bytes	Format	Resolution	Units
GPS Status	1	Unsigned Integer	Discrete Values	0 = Synchronized 2 = Drifted 3 = Never Locked
Battery Voltage	1	Unsigned Integer	0.1	V
Internal Temperature	2	Integer	0.1	Degrees C
Messages Received	2	Unsigned Integer	1	Count
Messages Sent	2	Unsigned Integer	1	Count
Warnings and Errors	1	Integer	Bit Field	0x01: Decoder 0x02: Encoder 0x04: GPS 0x08: API 0x10: I/O 0x20: User
Reserved				
Reserved				