TAOLST Serial Protocol Commands

App Commands	Bootloader Commands	Common Commands
APP_GET_TELEM	BOOTLOADER_ACK	COMMON_ACK
APP_GET_TIME	BOOTLOADER_ERASE	COMMON_ASCII
APP_REBOOT	BOOTLOADER_NACK	COMMON_NACK
APP_SET_TIME	BOOTLOADER_PING	
APP_TELEM	BOOTLOADER_WRITE_PAGE	

App Commands (1/2)

APP_GET_TELEM

Required Params:
  None
Optional Params:
  None
Reply:
  APP_TELEM

radio_terminal:
> lst get_telem

APP_GET_TIME

Required Params:
  None
Optional Params:
  None
Reply:
  If time not set
    COMMON_NACK
  If time set
    APP_SET_TIME
    with time params

radio_terminal:
> lst get_time

APP_REBOOT

Required Params:
  None
Optional Params:
  Delay (seconds)
Reply:
  If no delay or delay<=MAX
    COMMON_ACK
  If delay>MAX
    COMMON_NACK

radio_terminal:
> lst reboot

App Commands (2/2)

APP_SET_TIME

Required Params:
  Sec and Nanosec
Optional Params:
  None
Reply:
  COMMON_ACK

$ time_sync

APP_TELEM

Required Params:
  Many
Optional Params:
  None
Reply:
  COMMON_NACK
  (APP_TELEM should only ever be sent, not received)

Bootloader Commands (1/2)

BOOTLOADER_ACK

Required Params:
- None

Optional Params:
- Reason
  - PONG (ping resp)
  - ERASED (erase resp)

Reply:
- COMMON_NACK (BOOTLOADER_ACK should only ever be sent, not received)

BOOTLOADER_ERASE

Required Params:
- None

Optional Params:
- Status (unused)

Reply:
- If in app not boot
  - COMMON_NACK
- If in boot not app
  - BOOTLOADER_ACK with ERASED param

BOOTLOADER_NACK

Required Params:
- None

Optional Params:
- None

Reply:
- COMMON_NACK (BOOTLOADER_NACK should only ever be sent, not received)

Bootloader Commands (2/2)

BOOTLOADER_PING

Required Params:
  None
Optional Params:
  None
Reply:
  If in app not boot
    COMMON_NACK
  If in boot not app
    BOOTLOADER_ACK
    with PONG param

radio_terminal:
> lst bootloader_ping

BOOTLOADER_WRITE_PAGE

Required Params:
  Page Number
Optional Params:
  Page Data
Reply:
  If in app not boot
    COMMON_NACK
  If in boot and FLASH_WRITE_OK
    BOOTLOADER_ACK
    with Page Number as param
  If in boot and !FLASH_WRITE_OK
    BOOTLOADER_NACK

Common Commands

COMMON_ACK

Required Params:
  None
Optional Params:
  None
Reply:
  COMMON_ACK

radio_terminal:
> lst ack

COMMON_ASCII

Required Params:
  Char sequence
  (not null terminated)
Optional Params:
  None
Reply:
  COMMON_NACK
  (Special command usually sent, not received)

COMMON_NACK

Required Params:
  None
Optional Params:
  None
Reply:
  COMMON_NACK

radio_terminal:
> lst nack

APP_GET_TELEM

0x22	0x69	0x06	0xHH	0xHH	0xHH	0xHH	0xHH	0x17
Start Byte 0	Start Byte 1	Body Length	HW ID LSByte	HW ID MSByte	MSG ID LSByte	MSG ID MSByte	Dest ID	Opcode

APP_GET_TIME

0x22	0x69	0x06	0xHH	0xHH	0xHH	0xHH	0xHH	0x13
Start Byte 0	Start Byte 1	Body Length	HW ID LSByte	HW ID MSByte	MSG ID LSByte	MSG ID MSByte	Dest ID	Opcode

APP_REBOOT

0x22	0x69	0x06 OR 0x0a	0xHH	0xHH	0xHH	0xHH	0xHH	0x12
Start Byte 0	Start Byte 1	Body Length	HW ID LSByte	HW ID MSByte	MSG ID LSByte	MSG ID MSByte	Dest ID	Opcode

0xHH	0xHH	0xHH	0xHH
Optional Delay LSByte	Optional Delay	Optional Delay	Optional Delay MSByte

APP_SET_TIME

0x22	0x69	0x0e	0xHH	0xHH	0xHH	0xHH	0xHH	0x14
Start Byte 0	Start Byte 1	Body Length	HW ID LSByte	HW ID MSByte	MSG ID LSByte	MSG ID MSByte	Dest ID	Opcode

0xHH	0xHH	0xHH	0xHH	0xHH	0xHH	0xHH	0xHH
Sec LSByte	Sec	Sec	Sec MSByte	Ns LSByte	Ns	Ns	Ns MSByte

APP_TELEM

0x22	0x69	0xHH	0xHH	0xHH	0xHH	0xHH	0xHH	0x18
Start Byte 0	Start Byte 1	Body Length	HW ID LSByte	HW ID MSByte	MSG ID LSByte	MSG ID MSByte	Dest ID	Opcode

APP_TELEM has no optional fields and many required fields, but they may need to be modified for our purposes

BOOTLOADER_ACK

0x22	0x69	0x06 OR 0x07	0xHH	0xHH	0xHH	0xHH	0xHH	0x01
Start Byte 0	Start Byte 1	Body Length	HW ID LSByte	HW ID MSByte	MSG ID LSByte	MSG ID MSByte	Dest ID	Opcode

0xHH	
Optional Reason	PONG (response to ping): 0x00 ERASED (response to erase): 0x01 Page Number (response to write)

BOOTLOADER_ERASE

0x22	0x69	0x06 OR 0x07	0xHH	0xHH	0xHH	0xHH	0xHH	0x0c
Start Byte 0	Start Byte 1	Body Length	HW ID LSByte	HW ID MSByte	MSG ID LSByte	MSG ID MSByte	Dest ID	Opcode

0xHH	
Optional Status	<- Unused

BOOTLOADER_NACK

0x22	0x69	0x06	0xHH	0xHH	0xHH	0xHH	0xHH	0x0f
Start Byte 0	Start Byte 1	Body Length	HW ID LSByte	HW ID MSByte	MSG ID LSByte	MSG ID MSByte	Dest ID	Opcode

BOOTLOADER_PONG

0x22	0x69	0x06	0xHH	0xHH	0xHH	0xHH	0xHH	0x00
Start Byte 0	Start Byte 1	Body Length	HW ID LSByte	HW ID MSByte	MSG ID LSByte	MSG ID MSByte	Dest ID	Opcode

BOOTLOADER_WRITE_PAGE

0x22	0x69	0x07 OR 0x87	0xHH	0xHH	0xHH	0xHH	0xHH	0x02
Start Byte 0	Start Byte 1	Body Length	HW ID LSByte	HW ID MSByte	MSG ID LSByte	MSG ID MSByte	Dest ID	Opcode

0xHH	0xHH	
Page Number	Page Data	x128 (so 256 hex chars representing 128 bytes)

COMMON_ACK

0x22	0x69	0x06	0xHH	0xHH	0xHH	0xHH	0xHH	0x10
Start Byte 0	Start Byte 1	Body Length	HW ID LSByte	HW ID MSByte	MSG ID LSByte	MSG ID MSByte	Dest ID	Opcode

COMMON_ASCII

0x22	0x69	0xHH	0xHH	0xHH	0xHH	0xHH	0xHH	0x10
Start Byte 0	Start Byte 1	Body Length	HW ID LSByte	HW ID MSByte	MSG ID LSByte	MSG ID MSByte	Dest ID	Opcode

0xHH	
ASCII Data	Up to 249 chars (not null terminated)

COMMON_NACK

0x22	0x69	0x06	0xHH	0xHH	0xHH	0xHH	0xHH	0xff
Start Byte 0	Start Byte 1	Body Length	HW ID LSByte	HW ID MSByte	MSG ID LSByte	MSG ID MSByte	Dest ID	Opcode