ASR6601

BootLoader Communication Notes

Version 1.0.0

Issue Date 2023-01-11

About This Document

This document introduces the communication protocol of the internal Bootloader in ASR6601.

Intended Readers

This document is mainly for engineers who use this chip to develop their own platform and products, for instance:

- Hardware Development Engineer
- Software Engineer
- Technical Support Engineer

Included Chip Models

The product models corresponding to this document are as follows.

Model	Flash	SRAM	Processor	Package	Frequency
ASR6601SE	256 KB	64 KB	32-bit 48 MHz Arm China STAR-MC1	QFN68, 8*8 mm	150 ~ 960 MHz
ASR6601CB	128 KB	16 KB	32-bit 48 MHz Arm China STAR-MC1	QFN48, 6*6 mm	150 ~ 960 MHz

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Revision History

Date	Version	Release Notes
2023.01	V1.0.0	First Release.

Table of Contents

1. Bootloader Command

1.1 Serial Port Setting

Baud rate: 921600

Data bits: 8

Stop bits: 1

Parity: None

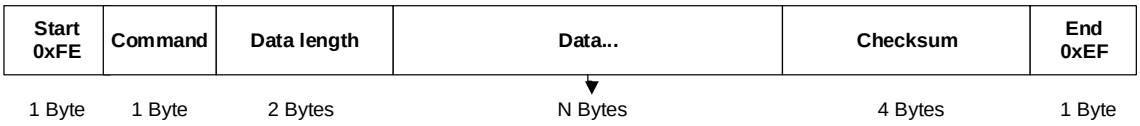
Flow control: None

1.2 Command List

Command	ID	Description
SYNC	1	SYNC command, determining if the connection is normal
JUMP	2	Jump command
FLASH	3	Download command
ERASE	4	Erasure command
VERIFY	5	Verification command
WROTP	6	Write OTP command
RDOTP	7	Read OTP command
WROPT0	8	Write Option0 command
RDOPT0	9	Read Option0 command
WROPT1	10	Write Option1 command
RDOPT1	11	Read Option1 command
REBOOT	12	Reboot command
SN	13	Read serial number command
WRREG	14	Write register command
RDREG	15	Read register command
BAUDRATE	16	Set baud rate command
VERSION	17	Read version number command

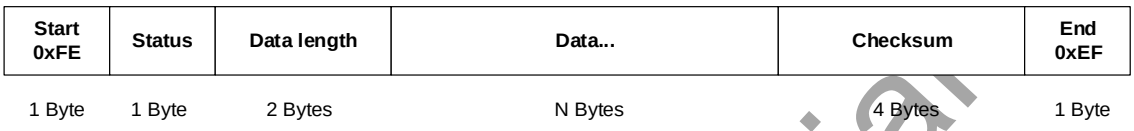
1.3 Basic Communication Command Format

1.3.1 Request



“Command” means the command id and the checksum algorithm is CRC32.

1.3.2 Response



“Status” means the status code, 0 means success, and non-0 value means failure. The checksum algorithm is CRC32.

1.4 Command Load Format

1.4.1 SYNC Command Load Format

Request:

None

Response:

None

1.4.2 JUMP Command Load Format

Request:

Addr: 4 Bytes, jump address

Response:

None

1.4.3 FLASH Command Load Format

Request:

Addr: 4 Bytes, download address

Size: 4 Bytes, download data length

Data: N Bytes, download data

Response:

None

1.4.4 ERASE Command Load Format

Request:

Addr: 4 Bytes, erasure address

Size: 4 Bytes, erasure area size

Response:

None

1.4.5 VERIFY Command Load Format

Request:

Addr: 4 Bytes, verification starting address

Size: 4 Bytes, verification area size

Checksum: 4 Bytes, verification checksum

Response:

None

1.4.6 WROTP Command Load Format

Request:

Addr: 4 Bytes, download address of OTP to write

Size: 4 Bytes, download data length

Data: N Bytes, download data

Response:

None

1.4.7 RDOTP Command Load Format

Request:

Addr: 4 Bytes, address of OTP to read

Size: 4 Bytes, data length

Response:

Data: N Bytes, data

1.4.8 WROPT0 Command Load Format

Request:

Opt0_l: 4 Bytes, lower 32 bits of Option0

Opt0_h: 4 Bytes, higher 32 bits of Option0

Response:

None

1.4.9 RDOPT0 Command Load Format

Request:

None

Response:

Opt0_l: 4 Bytes, lower 32 bits of Option0

Opt0_h: 4 Bytes, higher 32 bits of Option0

1.4.10 WROPT1 Command Load Format

Request:

Opt1_l: 4 Bytes, lower 32 bits of Option1

Opt1_h: 4 Bytes, higher 32 bits of Option1

Response:

None

1.4.11 RDOPT1 Command Load Format

Request:

None

Response:

Opt1_l: 4 Bytes, lower 32 bits of Option1

Opt1_h: 4 Bytes, higher 32 bits of Option1

1.4.12 REBOOT Command Load Format

Request:

None

Response:

None

1.4.13 SN Command Load Format

Request:

None

Response:

SN: 8 Bytes, serial number

1.4.14 WRREG Command Load Format

Request:

Addr: 4 Bytes, address of register to write

Value: 4 Bytes, value

Response:

None

1.4.15 RDREG Command Load Format

Request:

Addr: 4 Bytes, address of register to read

Response:

Value: 4 Bytes, value

1.4.16 BAUDRATE Command Load Format

Request:

Baudrate: 4 Bytes, baud rate

Response:

None

1.4.17 VERSION Command Load Format

Request:

None

Response:

Version: 4 Bytes, version number

2. Program for Reference

For the Bootloader communication program, please refer to build\scripts\tremo_loader.py.