DOOYA Electronic R&D Course Project Input Specification BD-4.2-20 C/00

Project model: General 485 protocol for external interface (opening and closing curtain)

new version update:
2015-01-10: reformatting

Translated by Mikhail Zelenkin

1. Function introduction

Universal 485 protocol suitable for opening and closing curtains (see general rules for basic format)

2. Applicable read and write address description

Data address	**Description**	**Data format**	**Read/write**	
0x00	ID_L	0x01~0xfe	Writable	*
0x01	ID_H	0x01~0xfe		*
0x02	Current position (percentage)	0x00~0x64 (0xff means no stroke is set) Open (UP) to the stroke point is 100% 0% when DOWN to the stroke point	Read only	M
0x03	Motor default direction	0x00—default direction 0x01—reverse direction	Read and write	M
0x04	Pull start enable	0x00—enabled by default 0x01—Closed, no pull function	Read and write	M
0x05 (A3 Version)	Motor state	0x00—STOP 0x01—OPEN 0x02—CLOSE 0x03—SETTING	Read only	M
0x27(A1)	Passive external switch type	0x01—default double bounce switch 0x02—Double non-bounce switch 0x03—DC246 electronic switch 0x04—Single key cycle switch	Read and write	M
0x28(A1)	Powerful external switch	0x00-strong electric double key no rebound mode (default)	Read and write	M

	type (only EV motor with 5-core power cord)	0x01—Hotel mode (plug-in card power switch) 0x02-Strong electric double keys can rebound mode		
0xe0-0xef	Information	For the host to read and write (Note 1)	Read and write	*
0xf0	Equipment type	0x01 Curtain opening and closing (Note 1)	Read only	*
0xf1	Module channel number	1-15 (Note 1)	Read only	*
0xfd	Software version	0-255 (Note 1)	Read only	*
0xfe(A1)	Protocol version	0xA4	Read only	*

3. Description of applicable control instructions

Instructions (Note 2)	Description	Instruction parameter	Remark
0x01	Open command	Nothing	
0x02	Close command	Nothing	
0x03	Stop command	Nothing	
0x04	Percentage command	0~100 (percentage)	
0x07	Delete limits	None (delete all)	*
0x08(A1)	Reset	Nothing	*
0x09(A2)	Set profile	See general description	
0x0A(A2)	Running profile	See general description	
0x0B(A2)	Delete profile	See general description	
0x0f(A4)	Invert command	Nothing, the last time the open command was executed, the close command is executed, otherwise the open command is executed	

4. Other instructions

5. for example

5.1 Control command (0x03)

5.1.1 Control Command - Open

	Start code	Device address		Function	Data address	CRC16	
Request	55	12	34	03	01	AD	8A
Response	55	12	34	03	01	AD	8A

Group control

	Start code	Device address		Function	Data address	CRC16	
Request	55	00	00	03	01	E9	3C
Response	Nothing						

5.1.2 Control Command - Close

	Start code	Device address		Function	Data address	CRC16	
Request	55	12	34	03	02	ED	8B
Response	55	12	34	03	02	ED	8B

Group control

	Start code	Device address		Function	Data address	CRC16	
Request	55	00	00	03	02	A9	3D
Response	Nothing						

5.1.3 Control Command - Stop

	Start code	Device address	Function	Data address	CRC16

Request	55	12	34	03	03	2C	4B
Response	55	12	34	03	03	2C	4B

Group control

	Start code	Device address		Function	Data address	CRC16	
Request	55	00	00	03	03	68	FD
Response	Nothing						

5.1.4 Control command-percentage (30%)

	Start code	Device address		Function	Data code	Data	CRC16	
Request	55	12	34	03	04	1E	C8	E5
Response	55	12	34	03	04	1E	2C	4B
	55	12	34	03	04	FF*	08	AD

(*) When the device does not set the stroke, it returns 0xFF and the motor does not move.
When the device is powered on again after a power failure, there is no stroke at this time, and it cannot be controlled by a percentage command. You can execute the open or close command first to restore the stroke,In order to execute percentage command control.

Group control

	Start code	Device address		Function	Data address	Data	CRC16	
Request	55	00	00	03	03	1E	7E	D6
Response	Nothing							

5.1.5 Control command-delete limits

	Start code	Device address		Function	Data address	CRC16	
Request	55	12	34	03	07	2D	88
Response	55	12	34	03	07	2D	88

5.1.6 Control command-restore factory settings

	Start code	Device address		Function	Data address	CRC16	
Request	55	12	34	03	08	6D	8C
Response	55	12	34	03	08	6D	8C

After restoring the factory settings, all the settings of the motor will be restored to the default state, and all the saved data will be cleared.
The device address is restored to 0xfefe, and the limits is deleted.

5.1.7 Control command-set the scene mode

	Start code	Device address		Function	Data code	Data	CRC16	
Request	55	12	34	03	09	01	8D	BD
Response	55	12	34	03	09	01	8D	BD
	55	12	34	03	09	FF*	0C	3D

Each motor can set up to 20 scene modes (the data content is the scene mode number). When the device has not set the limits, the scene mode cannot be set, and 0xFF is returned.
When the device is powered on again after a power failure, the profile mode cannot be set at this time. You can execute the open or close command to restore the trip before setting the profile mode.

Group control

	Start code	Device address		Function	Data address	Data	CRC16	
Request	55	00	00	03	09	01	3D	8E
Response	Nothing							

5.1.8 Control command-running profile

	Start code	Device address		Function	Data code	Data	CRC16	
Request	55	12	34	03	0A	01	8D	4D
Response	55	12	34	03	0A	01	8D	4D
	55	12	34	03	0A	FF*	0C	CD

When letting the motor run in a scenario that is not set, the motor will not run and return 0xFF.
When the motor has no set stroke, it cannot run the scene mode and returns 0xFF.
When the device is powered on again after a power failure, the profile mode cannot be run at this time. You can execute the open or close command to restore the trip before running the profile mode.

Group control

	Start code	Device address		Function	Data address	Data	CRC16	
Request	55	00	00	03	0A	01	3B	7E
Response	Nothing							

5.1.9 Control command-delete profile

	Start code	Device address		Function	Data code	Data	CRC16	
Request	55	12	34	03	0B	01	8C	DD
Response	55	12	34	03	0B	01	8C	DD

Group control

	Start code	Device address		Function	Data address	Data	CRC16	
Request	55	00	00	03	0B	01	7A	EE
Response	Nothing							

5.2 Read command (0x01)

5.2.1 Read command-position (percentage) - 0x02

	Start code	Device address		Function	Data code	Data	CRC16	
Request	55	12	34	01	02	01	2B	4D
	Start code	Device address		Function	Data code	Data	CRC16	
Response	55	12	34	01	01	1E*	6A	75
						FF*	AA	3D

*When the device has a set limits, the device returns to the current limits (0x00~0x64), 0x00 means completely closed, 0x64 means completely open.
*When the device does not set the limits, the device returns 0xFF

5.2.2 Read command-direction status - 0x03

	Start code	Device address		Function	Data code	Data	CRC16	
Request	55	12	34	01	03	01	2A	DD
Response	55	12	34	01	03	01	2A	DD

*0x00-default direction, 0x01-reverse direction
*This direction is used to determine the opening and closing direction of the curtain
The direction is reversed to make the control command consistent with the actual operation of the motor.

5.2.3 Read command-pull state --0x04

	Start code	Device address		Function	Data code	Data	CRC16	
Request	55	12	34	01	04	01	28	ED
Response	55	12	34	01	01	00*	EA	7D

*0x00- can be started by hand by default, 0x01- can not be started by hand

5.2.4 Read command-motor status --0x05

	Start code	Device address		Function	Data code	Data	CRC16	
Request	55	12	34	01	05	01	29	7D
Response	55	12	34	01	01	00*	EA	7D

*00- means the motor stops. 01- indicates that the motor is turned on. 02-Indicates that the motor is off. 03-Indicates that the motor is in the setting state

5.2.5 Read command-weak current switch type - 0x27

	Start code	Device address		Function	Data code	Data	CRC16	
Request	55	12	34	01	27	01	31	DD
Response	55	12	34	01	01	01*	2B	BD

*0x01-default double rebound switch (open key, press once to open, press again to stop)
*0x02-Double non-rebound switch (open button, press to open, lift to stop)
*0x03-DC246 electronic switch (open key, press once to open, press again to stop)
*0x04-single key cycle switch (one button, press once to open, press again to stop, press again to close, press again to stop)

5.2.6 Read command-strong current switch type - 0x28

	Start code	Device address		Function	Data code	Data	CRC16	
Request	55	12	34	01	28	01	34	2D
Response	55	12	34	01	01	00*	EA	7D

*0x00-default ordinary two-wire strong current switch (the white wire is connected to the live wire to open, the black wire is connected to the live wire to close, and the disconnection stops)
*0x01-Hotel mode (the white wire is connected to the live wire motor to turn on, and the white wire is disconnected to turn the live wire motor off)

5.2.7 Read command - protocol version - 0xfe

	Start code	Device address		Function	Data code	Data	CRC16	
Request	55	12	34	01	FE	01	6A	4D
Response	55	12	34	01	01	A3*	AA	04

5.3 Write command (0x02)

5.3.1 Write command-write device address* - 0x00

	Start code	Device address		Function	Data address	Data length	Data		CRC16	
Request	55	00	00	02	00	02	12 (ID_L)	34 (ID_H)	50	7F

	Start code	Device address		Function	Data address	Data	CRC16	
Response	55	12	34	02	00	02	9A	2C

*ID_H cannot be set to 0x00, 0xff, and ID_L cannot be set to 0x00, 0xff. The default address is 0xfefe (restore factory settings).
*Before writing the device address, press and hold the motor setting button for 5 seconds, wait until the LED flashes twice, and then execute it. The LED will flash 5 times if success. Unsuccessful operation device address keep the original address unchanged.
*Default address 0xfefe

5.3.2 Write command-set direction - 0x03

	Start code	Device address		Function	Data address	Data length	Data	CRC16	
Request	55	12	34	02	03	01	01*	9D	5B

	Start code	Device address		Function	Data address	Data	CRC16	
Response	55	12	34	02	03	01	DA	DD

*0x01 is set to the opposite direction

5.3.3 Write command-set pull enable - 0x04

	Start code	Device address		Function	Data address	Data length	Data	CRC16	
Request	55	12	34	02	04	01	01*	2C	9A

	Start code	Device address		Function	Data address	Data	CRC16	
Response	55	12	34	02	04	01	D8	ED

*It is set to the function of no-pull start.

5.3.4 Write command-set weak current switch type - 0x27

	Start code	Device address		Function	Data address	Data length	Data	CRC16	
Request	55	12	34	02	27	01	02*	9D	51

	Start code	Device address		Function	Data address	Data	CRC16	
Response	55	12	34	02	27	01	C1	DD

*0x02 Set to double-key non-rebound switch mode

5.3.5 Write command-set the type of strong current switch - 0x28

	Start code	Device address		Function	Data address	Data length	Data	CRC16	
Request	55	12	34	02	28	01	01*	ED	53

	Start code	Device address		Function	Data address	Data	CRC16	
Response	55	12	34	02	28	01	C4	2D

*0x01 Set to single live wire switch mode (plug-in card power switch)

5.4 Slave request command (0x04)

	Start code	Device address		Function	Data address	CRC16	
Send from machine	55	FE	FE	04	01	BB	14

	Start code	Device address		Function	Data address	Data length	Data		CRC16	
Request	55	00	00	02	00	02	12 (ID_L)	34 (ID_H)	50	7F

	Start code	Device address		Function	Data address	Data	CRC16	
Return from the machine	55	12	34	02	00	02	9A	2C

When the motor is energized, press and hold the motor setting button, the indicator light flashes twice (about 5 seconds) and then release the button, and the slave machine actively sends a request to the host to assign an address
Within 10 seconds, the master can send a write address command to the slave to change the device address of the slave.