Project Model: External interface general 485 protocol (open and close curtain)		Protocol version:A4
Responsible Engineer:	Time：2015-1-6	Supervisor

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1 Function Introduction

A universal RS-485 protocol suitable for curtain motor (basic format is outlined in the general principles)

2 Explanation of applicable read/write addresses.

Data Address	Description	Data Format	Readable/Writable	
0x00	ID_L	0x01~0xfe	Writable	*
0x01	ID_H	0x01~0xfe		*
0x02	Current Position (Percentage)	0x00~0x64 (0xff indicates no travel set) When fully open (UP), it is 100% When fully closed (DOWN), it is 0%	Read-only	M
0x03	Motor Default Direction	0x00—Default Direction 0x01—Default Direction	Readable/Writable	M
0x04	Manual Pull Function	0x00—Default ON 0x01—OFF, No Manual Pull Function	Readable/Writable	M
0x05(A3)	Motor Status	0x00—STOP 0x01—OPEN 0x02—CLOSE 0x03—SETTING	Read-only	M
0x27 (A1)	Passive External Switch Type	0x01—Default Double Rebound Switch 0x02—Double Non-rebound Switch 0x03—DC246 Electronic Switch 0x04—Single Button Cyclic Switch	Readable/Writable	M
0x28 (A1)	Strong Electricity External Switch Type(Only EV motor with 5-core power cord)	0x00—Strong Electricity Double Button Non-rebound Mode (Default) 0x01—Hotel Mode (Card Insertion Power Switch) 0x02—Strong Electricity Double Button Rebound Mode	Readable/Writable	M
0xe0-0xef	Information	*For Host Read/Write (Note 1)*	Readable/Writable	*
0xF0	Device Type	0x01 *Curtain Motor(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 Explanation of Applicable Control Commands

Command (Note 2)	Description	Command Parameters	Remarks
0x01	Open Command	None	
0x02	Close Command	None	
0x03	Stop Command	None	
0x04	Percentage Command	0~100 (Percentage)	
0x07	Delete Travel Path	None (Deletes All)	*
0x08(A1)	Restore Factory Settings	None	*
0x09(A2)	Set Scene Mode	See General Instructions	
0x0A(A2)	Run Scene Mode	See General Instructions	
0x0B(A2)	Delete Scene Mode	See General Instructions	
0x0f(A4)	Toggle Command	None, If the last executed command was Open, then execute Close; otherwise, execute Open	

4 Other instructions/notes.

5 Illustration of Control Commands

5.1 Control Commands (0x03)

5.1.1 Control Command - Open

	Start Code	Device Address		Function	Data Address	CRC16	
Host Transmission	55	12	34	03	01	AD	8A
Device Response	55	12	34	03	01	AD	8A

	Start Code	Device Address		Function	Data Address	CRC16	
Host Transmission	55	00	00	03	01	E9	3C
Device Response	None						

For group control

5.1.2 Control Command - Close

	Start Code	Device Address		Function	Data Address	CRC16	
Host Transmission	55	12	34	03	02	ED	8B
Device Response	55	12	34	03	02	ED	8B

For group control

	Start Code	Device Address		Function	Data Address	CRC16	
Host Transmission	55	00	00	03	02	A9	3D
Device Response	None						

5.1.3 Control Command - Stop

	Start Code	Device Address		Function	Data Address	CRC16	
Host Transmission	55	12	34	03	03	2C	4B
Device Response	55	12	34	03	03	2C	4B

	Start Code	Device Address		Function	Data Address	CRC16	
Host Transmission	55	00	00	03	03	68	FD
Device Response	无						

For group control

5.1.4 Control Command - Percentage (30%)

	Start Code	Device Address		Function	Data Address	Data Information	CRC16	
Host Transmission	55	12	34	03	04	1E	C8	E5
Device Response	55	12	34	03	04	1E	C8	E5
	55	12	34	03	04	FF*	08	AD

(*) When the device has no travel set, it returns 0xFF, and the motor does not move.

After power loss and restoration, if there is no travel set, the device cannot be controlled using the percentage command.

To restore control using the percentage command, first execute an open or close command to reset the travel.

	Start Code	Device Address		Function	Data Address	Data Content	CRC16	
Host Transmission	55	00	00	03	04	1E	7E	D6
Device Response	None							

For group control

5.1.5 Control Command - Delete Travel

	Start Code	Device Address		Function	Data Address	CRC16	
Host Transmission	55	12	34	03	07	2D	88
Device Response	55	12	34	03	07	2D	88

5.1.6 Control Command - Restore to Factory Settings

	Start Code	Device Address		Function	Data Address	CRC16	
Host Transmission	55	12	34	03	08	6D	8C
Device Response	55	12	34	03	08	6D	8C

After restoring to factory settings, all motor settings are reset to their default states, and all saved data will be cleared. The device address is restored to 0xfefe, and the travel is deleted.

5.1.7 Control Command - Set Scene Mode

	Start Code	Device Address		Function	Data Address	Data Content	CRC16	
Host Transmission	55	12	34	03	09	01	8D	BD
Device Response	55	12	34	03	09	01	8D	BD
						FF*	0C	3D

Each motor can be set with up to 20 scene modes (the "Data" content represents the scene mode number). When the device has no travel set, it cannot set scene modes and will return 0xFF. After the device loses power and is powered on again, it also cannot set scene modes until the travel is restored by executing an open or close command.

	Start Code	Device Address		Function	Data Address	Data Content	CRC16	
Host Transmission	55	00	00	03	09	01	3B	8E
Device Response	None							

For group control

5.1.8 Control Command - Run Scene Mode

	Start Code	Device Address		Function	Data Address	Data Content	CRC16	
Host Transmission	55	12	34	03	0A	01	8D	4D
Device Response	55	12	34	03	0A	01	8D	4D
						FF*	0C	CD

If the motor is instructed to run a scene that is not set, it will not operate ,return 0xFF.

When the motor has no travel set, it cannot run scene modes , return 0xFF.

After the device loses power and is powered on again, it also cannot run scene modes until the travel is restored by executing an open or close command.

	Start Code	Device Address		Function	Data Address	Data Content	CRC16	
Host Transmission	55	00	00	03	0A	01	3B	7E
Device Response	None							

For group control

5.1.9 Control Command - Delete Scene Mode

	Start Code	Device Address		Function	Data Address	Data Content	CRC16	
Host Transmission	55	12	34	03	0B	01	8C	DD
Device Response	55	12	34	01	0B	01	8C	DD

	Start Code	Device Address		Function	Data Address	Data Content	CRC16	
Host Transmission	55	00	00	03	0B	01	7A	EE
Device Response	None							

For group control

5.2 Read Command (0x01)

5.2.1 Read Command - Position (Percentage) --0x02

	Start Code	Device Address		Function	Data Address	Data Length	CRC16	
Host Transmission	55	12	34	01	02	01	2B	4D
	Start Code	Device Address		Function	Data Length	Data Content	CRC16	
Device Response	55	12	34	01	01	1E*	6A	75
						FF*	AA	3D

*When the device has a set travel, it returns the current position (0x00~0x64), where 0x00 represents fully closed and 0x64 represents fully open.

*When the device has no set travel, it returns 0xFF.

5.2.2 Read Command - Direction Status --0x03

	Start Code	Device Address		Function	Data Address	Data Length	CRC16	
Host Transmission	55	12	34	01	03	01	2A	DD
	Start Code	Device Address		Function	Data Length	Data Content	CRC16	
Device Response	55	12	34	01	01	00*	EA	7D

*0x00 - Default Direction, 0x01 - Opposite Direction

*This direction is used to judge the opening and closing direction of the curtain. For example, when a control command to open is sent but the motor closes, please execute a read direction command and then write the opposite direction to change the direction, ensuring that the control command is consistent with the actual operation of the motor.

5.2.3 Read Command - Manual Pull Status --0x04

	Start Code	Device Address		Function	Data Address	Data Length	CRC16	
Host Transmission	55	12	34	01	04	01	28	ED
	Start Code	Device Address		Function	Data Length	Data Content	CRC16	
Device Response	55	12	34	01	01	00*	EA	7D

*0x00 - Default to allow manual pull to activate, 0x01 - Cannot be activated by manual pull.

5.2.4 Read Command - Motor Status --0x05

	Start Code	Device Address		Function	Data Address	Data Length	CRC16	
Host Transmission	55	12	34	01	05	01	29	7D
	Start Code	Device Address		Function	Data Length	Data Content	CRC16	
Device Response	55	12	34	01	01	00*	EA	7D

*00 - indicates the motor is stopped. 01 - indicates the motor is opened. 02 - indicates the motor is closed. 03 - indicates the motor is in setup mode.

5.2.5 Read Command - Low Voltage Switch Type --0x27

	Start Code	Device Address		Function	Data Address	Data Length	CRC16	
Host Transmission	55	12	34	01	27	01	31	DD
	Start Code	Device Address		Function	Data Length	Data Content	CRC16	
Device Response	55	12	34	01	01	01*	2B	BD

*0x01 - Default double-bounce switch (Open button: press once to open, press again to stop)
*0x02 - Double non-bounce switch (Open button: press down to open, release to stop)
*0x03 - DC246 electronic switch (Open button: press once to open, press again to stop)
*0x04 - Single-button cycling switch (One button: press once to open, press again to stop, press again to close, press again to stop)

5.2.6 Read Command - High Voltage Switch Type --0x28

	Start Code	Device Address		Function	Data Address	Data Length	CRC16	
Host Transmission	55	12	34	01	28	01	34	2D
	Start Code	Device Address		Function	Data Length	Data Content	CRC16	
Device Response	55	12	34	01	01	00*	EA	7D

*0x00 - Default standard two-wire high voltage switch (White wire connected to live wire to open, black wire connected to live wire to close, disconnected to stop)
*0x01 - Hotel mode (White wire connected to live wire to activate motor and open, white wire disconnected from live wire to deactivate motor and close)

5.2.7 Read Command - Protocol Version --0xfe

	Start Code	Device Address		Function	Data Address	Data Length	CRC16	
Host Transmission	55	12	34	01	fe	01	6A	4D
	Start Code	Device Address		Function	Data Length	Data Content	CRC16	
Device 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	Data	CRC16	
Host Transmission	55	00	00	02	00	02	12（ID_L）	34(ID_H)	50	7F
	Start Code	Device Address		Function	Data Address	Data Length	CRC16			
Device Response	55	12	34	02	00	02	9A	2C		

*ID_H cannot be set to 0x00 or 0xff, and ID_L cannot be set to 0x00 or 0xff. The default address is 0xfefe (factory reset address).

*Before executing the write device address command, press and hold the motor setup button for 5 seconds. Wait for the LED to flash twice, then proceed. If successful, the LED will flash 5 times consecutively. If the operation is unsuccessful, the device address will remain unchanged.

*Default address: 0xfefe.

5.3.2 Write Command - Set Direction --0x03

	Start Code	Device Address		Function	Data Address	Data Length	Data	CRC16	
Host Transmission	55	12	34	02	03	01	01*	9D	5B
	Start Code	Device Address		Function	Data Address	Data Length	CRC16		
Device Response	55	12	34	02	03	01	DA	DD	

*0x01 set to reverse direction.

5.3.3 Write Command - Set Manual Pull Enable --0x04

	Start Code	Device Address		Function	Data Address	Data Length	Data	CRC16	
Host Transmission	55	12	34	02	04	01	01*	2C	9A
	Start Code	Device Address		Function	Data Address	Data Length	CRC16		
Device Response	55	12	34	02	04	01	D8	ED	

*Set to disable manual pull activation function.

5.3.4 Write Command - Set Low Voltage Switch Type --0x27

	Start Code	Device Address		Function	Data Address	Data Length	Data	CRC16	
Host Transmission	55	12	34	02	27	01	02*	9D	51
	Start Code	Device Address		Function	Data Address	Data Length	CRC16		
Device Response	55	12	34	02	27	01	C1	DD	

*0x02 set to double non-bounce switch mode.

5.3.5 Write Command - Set High Voltage Switch Type --0x28

	Start Code	Device Address		Function	Data Address	Data Length	Data	CRC16	
Host Transmission	55	12	34	02	28	01	01*	ED	53
	Start Code	Device Address		Function	Data Address	Data Length	CRC16		
Device Response	55	12	34	02	28	01	C4	2D	

*0x01 set to single live wire switch mode (card-inserted power switch).

5.4 Slave Request Command (0x04)

	Start Code	Device Address		Function	Data Address	CRC16	
Slave transmission	55	FE	FE	04	01	BB	14

	Start Code	Device Address		Function	Data Address	Data Length	Data	Data	CRC16	
Host Transmission	55	00	00	02	00	02	12(ID_L)	34(ID_H)	50	7F

	Start Code	Device Address		Function	Data Address	Data Length	CRC16	
Slave response	55	12	34	02	00	02	9A	2C

While the motor is powered on, press and hold the motor setup button until the indicator light flashes twice (approximately 5 seconds), then release the button. The slave will actively send a request to the master to assign an address. Within 10 seconds, the master can send a write address command to the slave to change the slave device address.