M615&L615&H615

Cooled Series Thermal Imaging Module

Operating Commands User Manual

V1.0.4

Historical Versions

Version	Date	Description
V1.0.0	2024-07	Initial version
V1.0.1	2024-08	Add the following commands:Set &Read Brightness, Set &Read Contrast, Image Flip
V1.0.2	2024-08	Add the SN, FPGA, and embedded version query commands.
V1.0.3	2024-08	Add power-on initialization status query, power-on cooling progress query, and automatic return of cooling progress on power-up.
V1.0.4	2024-08	Add the save settings and restore factory settings commands.

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1. Serial Port Settings

Table 1.1 Serial Port Default Settings

Baud Rate	Transmission Format			Parity Check
115200bps	Data bit: 8 bits	Start bit: 1 bit	Stop bit: 1 bit	None

Note: *For each byte of information, the least significant bit (LSB) is transmitted first.*

2. Module Communication Protocol

2.1 Module Command Reception Format

Table 2.1 Command Reception Format

Head	Bytes	Command Word 0	Command Word 1	Operation Word	Parameter 0	Parameter 1	…	Parameter n	Parity Bit	Tail	
		This section pertains to the command body.									
0xAA	0xXX	0xXX	0xXX	0xXX	0xXX	0xXX	0xXX	0xXX	0xXX	0xEB	0xAA

Note:

(1) The above numbers and letters are in the hexadecimal byte format and this note will not be given again in the following content;

(2) The number of bytes is the total number of bytes from command word 0 (inclusive) to parity bit (inclusive);

(3) The parity bit is the remainder when the sum of all bytes before the command parity bit is divided by 256;

(4) Refer to the Module Command Reception and Status Information Table for detailed command words and parameters;

(5) If the parameter is a 16-bit or 32-bit data, please put the low byte first, such as bit0~bit7, bit8~bit15, bit16~bit23, and bit24~bit31;

(6) The command header is fixed at 0xAA, and the command tail is fixed at 0xEB and 0xAA.

2.2 Module Return Status Information Command Format

Table 2.2 Return Status Information Command Format

Head	Bytes	Command Word	Operation Word	Return Value 0	Return Value 1	…	Return Value n	Parity Bit	Tail	
		This section pertains to the command body.								
0x55	0xXX	0xXX	0x33	0xXX	0xXX	0xXX	0xXX	0xXX	0xEB	0xAA

Note:

(1) The status information returned by the module reflects the completion of internal command execution within the module;

(2) The number of bytes is the total number of bytes from command word 0 (inclusive) to parity bit (inclusive);

(3) Refer to the Module Command Reception and Status Information Table for detailed command words and return values. The low byte of the return value comes first;

(4) The command header is fixed at 0x55, the operation word is fixed at 0x33, and the command tail is fixed at 0xEB and 0xAA.

When the module is controlled by the user, if the command words returned to the upper computer are 0xFF and only one byte has the return value as shown in Table 2.3, it indicates a communication protocol error. Please identify the error reason based on the table.

Table 2.3 List of Return Value Errors

Return Value	Error Reason
0xF1	Command timeout
0xFB	No command word
0xFD	DRC checksum byte error
0xFF	Packet head 0xAA error

2.3 Module Command Reception and Status Information

Function		Command	Status Information
Read the External Sensor Temperature	Receive	AA 04 01 7C 00 2B EB AA	X1-X2 refer to the external sensor temperature× 100, with low byte first and high byte last, and the negative number in the complement format. X3 is the reserved bit, and X4 is the checksum. (Example: external sensor
	Return	55 06 7C 33 **X1 X2 X3 X4** EB AA (Example: 55 06 7C 33 **29 0C 01 40** EB AA)	

Function		Command	Status Information
			temperature 30.14°C→0x0BC6)
Read Cryo-Cooler Temperature	Receive	AA 04 01 7D 00 2C EB AA	X1-X2 refer to the cryo-cooler temperature × 10, with low byte first and high byte last, and the negative number in the complement format. X3 is checksum. (Example: cooled module temperature 75K→0x02EE)
	Return	55 05 7D 33 **X1 X2 X3** EB AA (Example: 55 05 7D 33 **EE 02 FA** EB AA)	
Read the FPGA Temperature	Receive	AA 04 01 7E 00 2D EB AA	X1-X2 refer to the FPGA temperature × 100, with low byte first and high byte last, and the negative number in the complement format. X3 is checksum. (Example: FPGA temperature 34.63°C→0x0D87) Note: When the FPGA temperature exceeds 120°C, a module alarm prompt appears. Please cool down in time.
	Return	55 05 7E 33 **X1 X2 X3** EB AA (Example: 55 05 7E 33 **87 0D 9F** EB AA)	
Read Self-check Results	Receive	AA 04 01 6E 00 1D EB AA	The lowest bit of X1 is the DDR status, with 0 representing abnormal and 1 normal. The second lowest bit of X1 is the cryo-cooler status, with 0 representing abnormal and 1 normal. X2 is the checksum. (Example: DDR and cryo-cooler are normal → 0x03)
	Return	55 04 6E 33 **X1 X2** EB AA (Example: 55 04 6E 33 **03 FD** EB AA)	
Manual Non-uniformity Correction	Receive	Background correction: AA 05 01 02 02 C0 74 EB AA Defocus correction: AA 05 01 02 02 C4 78 EB AA	
	Return	55 04 02 33 01 8F EB AA	
Digital Zoom	Receive	1 ×: AA 0C 01 40 02 00 00 00 00 7F 02 FF 01 7A EB AA 2 ×: AA 0C 01 40 02 A0 00 80 00 DF 01 7F 01 79 EB AA 3 ×: AA 0C 01 40 02 D5 00 AB 00 A9 01 54 01 78 EB AA 4 ×: AA 0C 01 40 02 F0 00 C0 00 8F 01 3F 01 79 EB AA 5 ×: AA 0C 01 40 02 00 01 CD 00 7F 01 32 01 7A EB AA 6 ×: AA 0C 01 40 02 0B 01 D5 00 74 01 29 01 79 EB AA 7 ×: AA 0C 01 40 02 12 01 DB 00	Set the array width of the detector as W, height of it as H and zoom value of it as M (1-4, step size: 0.1), then: Top-left corner X=W/2-W/2M Top-left corner Y=H/2-H/2M Bottom-right corner X=W/2+W/2M-1 Bottom-right corner Y=H/2+H/2M-1 (X1-X2 correspond to the X-axis start coordinates. X3-X4 correspond to the Y-axis start

Function		Command	Status Information
		6C 01 23 01 78 EB AA 8×: AA 0C 01 40 02 18 01 E0 00 67 01 1F 01 7A EB AA Settings: AA 0C 01 40 02 **X1 X2 X3 X4 X5 X6 X7 X8 X9** EB AA	coordinates. X5-X6 correspond to the X-axis end coordinates. X7-X8 correspond to the Y-axis end coordinates. X9 is the checksum, with low byte first and high byte last.)
	Return	55 04 40 33 01 CD EB AA	
Cross Reticle On	Receive	Style 1: AA 05 01 43 02 80 75 EB AA Style 2: AA 05 01 43 02 81 76 EB AA Style 3: AA 05 01 43 02 82 77 EB AA	
	Return	55 04 43 33 01 D0 EB AA	
Cross Reticle Off	Receive	AA 05 01 43 02 00 F5 EB AA	
	Return	55 04 43 33 01 D0 EB AA	
Cross Reticle Position	Receive	Move up: AA 09 01 44 02 06 00 00 00 00 00 EB AA Move down: AA 09 01 44 02 07 00 00 00 00 01 EB AA Move left: AA 09 01 44 02 08 00 00 00 00 02 EB AA Move right: AA 09 01 44 02 09 00 00 00 00 03 EB AA Set: AA 09 01 44 02 05 **X1 X2 X3 X4 X5** EB AA (Example: AA 09 01 44 02 05 **40 01 00 01 41** EB AA)	X1-X2 are the X-axis coordinates. X3-X4 are the Y-axis coordinates, with low byte first and high byte last. X5 is the checksum. (Example: X-axis coordinate 320, Y-axis coordinate 256→0x01400100)
	Return	55 04 44 33 01 D1 EB AA	
Cross Reticle Information	Receive	On: AA 05 01 43 02 90 85 EB AA Off: AA 05 01 43 02 80 75 EB AA	
	Return	55 04 43 33 01 D0 EB AA	
Cross Reticle Color Setting	Receive	Transparent: AA 05 01 45 02 00 F7 EB AA Black: AA 05 01 45 02 01 F8 EB AA White: AA 05 01 45 02 0E 05 EB AA	
	Return	55 04 45 33 01 D2 EB AA	
Read the Position of the Cross Reticle	Receive	AA 04 01 44 00 F3 EB AA	X1-X2 are the X-axis coordinates. X3-X4 are the Y-axis coordinates, with low byte first and high byte last. X5 is the checksum.
	Return	55 07 44 33 **X1 X2 X3 X4 X5** EB AA	

Function		Command	Status Information
		(Example: 55 07 44 33 **40 01 00 01 15** EB AA)	(Example: 0x01400100→X-axis coordinate 320, Y-axis coordinate 256)
Polarity Switching	Receive	White-hot: AA 05 01 42 02 00 F4 EB AA Black-hot: AA 05 01 42 02 01 F5 EB AA	
	Return	55 04 42 33 01 CF EB AA	
Set Brightness	Receive	AA 05 01 23 01 **X1 X2** EB AA (Example: AA 05 01 23 01 **5A 2E** EB AA)	X1 is the brightness setting value, supporting 0-255, and X2 is the checksum. (Example: Brightness 90 → 0x5A)
	Return	55 04 23 33 01 B0 EB AA	
Read Brightness	Receive	AA 04 01 23 00 D2 EB AA	X1 is the brightness reading value, supporting 0-255, and X2 is the checksum. (Example: 0x5A → Brightness 90)
	Return	55 04 23 33 **X1 X2** EB AA (Example: 55 04 23 33 **5A 09** EB AA)	
Set Contrast	Receive	AA 05 01 22 01 **X1 X2** EB AA (Example: AA 05 01 22 01 **5F 32** EB AA)	X1 is the contrast setting value, supporting 0-255, and X2 is the checksum. (Example: Contrast 95 → 0x5F)
	Return	55 04 22 33 01 AF EB AA	
Read Contrast	Receive	AA 04 01 22 00 D1 EB AA	X1 is the contrast reading value, supporting 0-255, and X2 is the checksum. (Example: 0x5F → Contrast 95)
	Return	55 04 22 33 **X1 X2** EB AA (Example: 55 04 22 33 **5F 0D** EB AA)	
Filter Switching	Receive	On: AA 05 01 1B 02 01 CE EB AA Off: AA 05 01 1B 02 00 CD EB AA	
	Return	55 04 1B 33 01 A8 EB AA	
DDE Switching	Receive	On: AA 05 01 1A 02 01 CD EB AA Off: AA 05 01 1A 02 00 CC EB AA	
	Return	55 04 1A 33 01 A7 EB AA	
DDE Setting	Receive	AA 05 01 1E 02 **X1 X2** EB AA (Example: AA 05 01 1E 02 **3C 0C** EB AA)	X1 is the DDE setting value, supporting 0-255, and X2 is the checksum. (Example: DDE 60→0x3C)
	Return	55 04 1E 33 01 AB EB AA	
Digital Video Source Switching	Receive	ORG: AA 05 01 5C 01 00 0D EB AA NUC: AA 05 01 5C 01 01 0E EB AA DNS: AA 05 01 5C 01 05 12 EB	ORG/NUC has 16 bits. DNS has 14 bits. DRC has 8 bits.

Function		Command	Status Information
		AA DRC: AA 05 01 5C 01 02 0F EB AA	
	Return	55 04 5C 33 01 E9 EB AA	
Analog Video Switching	Receive	On: AA 05 01 3D 02 01 F0 EB AA Off: AA 05 01 3D 02 00 EF EB AA	
	Return	55 04 3D 33 01 CA EB AA	
Power-on Working Time	Receive	AA 04 01 79 00 28 EB AA	X1-X4 are the boot working time, with low byte first and high byte last, and X5 is the checksum. (Example: 1106650ms→0x0010E2DA)
	Return	55 07 79 33 **X1 X2 X3 X4 X5** EB AA (Example: 55 07 79 33 **DA E2 10 00 D4** EB AA)	
Cumulative Working Time of the Cryo-cooler	Receive	AA 04 01 99 00 48 EB AA	X1-X4 are the cumulative working time of cryo-cooler, with low byte first and high byte last, and X5 is the checksum. (Example: 2418min→0x00000972)
	Return	55 07 99 33 **X1 X2 X3 X4 X5** EB AA (Example: 55 07 99 33 **72 09 00 00 A3** EB AA)	
Integral Time Adaptation	Receive	AA 04 01 DF 02 90 EB AA	X1 is the reserved bit. X2 is the checksum. It is suggested that the background correction shall be carried out after the integral time adaptation.
	Return	55 04 DF 33 **X1 X2** EB AA	
Target Mean Setting	Receive	AA 06 01 5F 01 **X1 X2 X3** EB AA (Example: AA 06 01 5F 01 **00 7D 8E** EB AA)	X1-X2 are the target mean values, with low byte first and high byte last, and X3 is the checksum. (Example: target mean value 32000→0x7D00)
	Return	55 04 5F 33 01 EC EB AA	
Target Mean Reading	Receive	AA 04 01 5F 00 0E EB AA	X1-X2 are the target mean values, with low byte first and high byte last, and X3 is the checksum. (Example: target mean value 0x7D00→32000)
	Return	55 05 5F 33 **X1 X2 X3** EB AA(Example:55 05 5F 33 **00 7D 69** EB AA)	
Actual Mean Reading	Receive	AA 04 01 C4 00 73 EB AA	X1-X2 are the actual mean values of the original data, with low byte first and high byte last, and X3 is the checksum. (Example: actual mean value of original data 62572→0xF46C)
	Return	55 07 C4 33 **X1 X2** 00 00 **X3** EB AA (Example: 55 07 C4 33 **6C F4** 00 00 **B3** EB AA)	
External Synchronization Type Setting	Receive	Internal synchronization: AA 06 01 A3 01 00 00 55 EB AA External synchronization output: AA 06 01 A3 01 01 00 56 EB AA External synchronization input: AA	

Function		Command	Status Information
		06 01 A3 01 02 00 57 EB AA Adaptive: AA 06 01 A3 01 03 00 58 EB AA	
	Return	55 04 A3 33 01 30 EB AA	
External Synchronization Type Reading	Receive	AA 05 01 A3 00 01 54 EB AA	X1 is the external synchronization type. 00 and 01 are the internal and external synchronization outputs respectively. 02 is the external synchronization input. 03 is the adaptive type. X2 is the checksum. (Example: external synchronous output →0x01)
	Return	55 04 A3 33 **X1 X2** EB AA (Example: 55 04 A3 33 **01 30** EB AA)	
Integral Time Setting	Receive	AA 08 01 C1 04 **X1 X2 X3 X4 X5** EB AA (Example: AA 08 01 C1 04 **39 30 00 00 E1** EB AA)	X1-X4 are the integral time, with low byte first and high byte last, and X5 is the checksum. (Example: 12345μs→0x00003039)
	Return	55 04 C1 33 01 4E EB AA	
Integration Time Reading	Receive	AA 04 01 C1 03 73 EB AA	X1-X4 are the integral time, with low byte first and high byte last, and X5 is the checksum. (Example: 0x00003039→12345μs)
	Return	55 07 C1 33 **X1 X2 X3 X4 X5** EB AA (Example: 55 07 C1 33 **39 30 00 00 B9** EB AA)	
On/Off of Defective Pixel Reticle	Receive	On: AA 05 01 43 02 C1 B6 EB AA Off: AA 05 01 43 02 40 35 EB AA	X1-X2 are the X-axis coordinates. X3-X4 are the Y-axis coordinates, with low byte first and high byte last. X5 is the checksum. (Example: 0x01400100→X-axis coordinate 320, Y-axis coordinate 256)
	Return	55 07 43 33 **X1 X2 X3 X4 X5** EB AA (Example: 55 07 43 33 **40 01 00 01 14** EB AA)	
Defective Pixel Cursor Movement	Receive	Move up: AA 05 01 44 02 01 F7 EB AA Move down: AA 05 01 44 02 02 F8 EB AA Move left: AA 05 01 44 02 03 F9 EB AA Move right: AA 05 01 44 02 04 FA EB AA Center: AA 05 01 44 02 00 F6 EB AA	X1-X2 are the X-axis coordinates. X3-X4 are the Y-axis coordinates, with low byte first and high byte last. X5 is the checksum. (Example: 0x01400100→X-axis coordinate 320, Y-axis coordinate 256)
	Return	55 07 44 33 **X1 X2 X3 X4 X5** EB AA (Example: 55 07 44 33 **40 01 00 01 15** EB AA)	
Single Defective	Receive	AA 04 01 93 02 44 EB AA	When a single defective pixel is

Function		Command	Status Information
Pixel Detection	Return	55 04 93 33 01 20 EB AA	detected, the defective pixel reticle automatically jumps to the position of it.
Single Defective Pixel Addition	Receive	Add: AA 05 01 90 01 01 42 EB AA Cancel: AA 05 01 90 01 02 43 EB AA	A single defective pixel needs to be saved manually after it is added.
	Return	Add: 55 04 90 33 01 1D EB AA Cancel: 55 04 90 33 01 1D EB AA	
Defective Pixel Saving	Receive	AA 04 01 91 02 42 EB AA	Support addition of single defective pixel or detection of defective pixels in batch
	Return	55 04 91 33 01 1E EB AA	
Detection of Defective Pixels in Batch	Receive	AA 09 01 9F 02 01 **X1 X2 X3 X4 X5** EB AA (Example: AA 09 01 9F 02 01 **08 00 14 00 72** EB AA)	X1-X2 are the threshold of automatic defective pixel detection (it is recommended to set 4-8, the smaller the threshold, the better the detection effect). X3-X4 are the number of automatic defective pixel detections (it is recommended to set 20). X6-X7 are the number of defective pixels to be detected, with low byte first and high byte last. X5/X8 is the checksum. Note: Defective pixels shall be manually saved after being detected in batch. (Example: threshold: 8, times: 20→0x08001400) (Example: 0x1400→ number of defective pixels 20)
	Return	55 05 9F 33 **X6 X7 X8** EB AA (Example: 55 05 9F 33 **14 00 40** EB AA)	
Automatic Defective Pixel Detection Switching	Receive	On: AA 05 01 0F 01 01 C1 EB AA Off: AA 05 01 0F 01 00 C0 EB AA	
	Return	55 04 0F 33 01 9C EB AA	
Automatic Defective Pixel Detection Threshold Setting	Receive	AA 08 01 13 01 **X1** 00 00 00 **X2** EB AA (Example: AA 08 01 13 01 **1E** 00 00 00 **E5** EB AA)	X1 is the threshold. The smaller the threshold, the stricter the detection conditions. X2 is the checksum. (Example: threshold 0x1E→30)
	Return	55 04 13 33 01 A0 EB AA	
Automatic Defective Pixel Detection Threshold Reading	Receive	AA 04 01 13 00 C2 EB AA	X1 is the threshold. The smaller the threshold, the stricter the detection conditions. X2 is the checksum. (Example: threshold 0x1E→30)
	Return	55 04 13 33 **X1 X2** EB AA (Example: 55 04 13 33 **1E BD** EB AA)	
	Return	55 0C 71 33 X1 X2 X3 X4 X5 X6 X7 X8 00 X9 EB AA (Example: 55 0C 6F 33 32 30 32	

Function		Command	Status Information
		31 32 37 30 32 00 93 EB AA)	
Image Flip	Receive	No flip: AA 05 01 4C 01 01 FE EB AA Horizontal flip: AA 05 01 4C 01 02 FF EB AA Vertical flip: AA 05 01 4C 01 04 01 EB	
	Return	No flip: AA 05 01 4C 01 01 FE EB AA Horizontal flip: AA 05 01 4C 01 02 FF EB AA Vertical flip: AA 05 01 4C 01 04 01 EB AA Horizontal&Vertical Flip: AA 05 01 4C 01 08 05 EB AA	
Motor Focus	Receive	One step focus +: AA 06 01 01 01 00 00 B3 EB AA One step focus -: AA 06 01 01 01 01 00 B4 EB AA Continuous focus +: AA 06 01 01 01 03 00 B6 EB AA Continuous focus -: AA 06 01 01 01 02 00 B5 EB AA Stop continuous focus: AA 06 01 01 01 04 00 B7 EB AA Auto focus: AA 06 01 01 01 05 00 B8 EB AA	
	Return	55 04 01 33 01 8E EB AA	
Motor Zoom	Receive	One step zoom +: AA 06 01 03 01 00 00 B5 EB AA One step zoom -: AA 06 01 03 01 01 00 B6 EB AA Continuous zoom +: AA 06 01 03 01 03 00 B8 EB AA Continuous zoom -: AA 06 01 03 01 02 00 B7 EB AA Stop continuous zoom: AA 06 01 03 01 04 00 B9 EB AA	
	Return	55 04 03 33 01 90 EB AA	

Function		Command	Status Information
Focal Length Setting	Receive	AA 06 01 BE 01 **X1 X2 X3** EB AA (Example: AA 06 01 BE 01 **00 01 71** EB AA)	X1-X2 are the focal length × 10, with low byte first and high byte last, and X3 is the checksum. (Example: focal length 0x0100→25.6mm)
	Return	55 04 BE 33 01 4B EB AA	
Focal Length and FOV Reading	Receive	AA 04 01 BE 00 6D EB AA	X1-X2 are the focal length × 10. X3-X4 are the horizontal FOV × 100. X5-X6 are the vertical FOV× 100, with low byte first and high byte last. X7 is the checksum. (Example: focal length 25.6mm, horizontal FOV 180°, vertical FOV 180°→0x010046504650)
	Return	55 09 BE 33 **X1 X2 X3 X4 X5 X6 X7** EB AA (Example: 55 09 BE 33 **01 00 50 46 50 46 7C** EB AA)	
Test Chart Switching	Receive	On: AA 05 01 C6 02 80 F8 EB AA Off: AA 05 01 C6 02 00 78 EB AA	
	Return	55 04 C6 33 01 53 EB AA	
SN Query	Receive	AA 04 01 6F 00 1E EB AA	The returned X1-X9 are the CORE SN codes, and X10 is the checksum (e.g., PIM615 → 0x50494D363135).
	Return	55 0C 6F 33 **X1 X2 X3 X4 X5 X6 X7 X8 X9 X10** EB AA (Example: 55 0C 6F 33 **50 49 4D 36 31 35 00 00 00 85** EB AA)	
FPGA Software Version Query	Receive	AA 04 01 75 00 24 EB AA	XX represents the length field, X1-Xn are the version numbers, and Xcheck is the checksum. (e.g., 2019021S00_QE_V0_D2024080213→ 0x323031393032315330305F51455F56305F44323032343038303 23133)
	Return	55 **XX** 75 33 **X1 … Xn Xcheck** EB AA (Example: 55 **1F** 75 33 **32 30 31 39 30 32 31 53 30 30 5F 51 45 5F 56 30 5F 44 32 30 32 34 30 38 30 32 31 33 A1** EB AA)	
Embedded Software Version Query	Receive	AA 04 01 76 00 25 EB AA	
	Return	55 **XX** 76 33 **X1 … Xn** 00 **Xcheck** EB AA (Example: 55 **20** 76 33 **32 30 31 39 30 32 31 53 30 30 5F 4E 45 5F 56 30 5F 44 32 30 32 34 30 38 31 35 30 36 00 A6** EB AA)	XX represents the length field, X1-Xn are the version numbers, stopping at 0x00, and Xcheck is the checksum. (e.g., 2019021S00_NE_V0_D2024081506→ 0x323031393032315330305F51455F56305F44323032343038313 53036)
Power-on Initialization Status Query	Receive	AA 05 01 EA 00 00 9A EB AA	X1 represents the initialization status: 1 indicates initialization completed, 0 indicates initialization not completed; X2 is the checksum.
	Return	55 04 EA 33 **X1 X2** EB AA (e.g., 55 04 EA 33 01 77 EB AA)	

Function		Command	Status Information
			(Example: 0x01 → Initialization completed).
Power-on Cooling Progress Query	Receive	AA 05 01 EA 00 01 9B EB AA	X1 represents the cooling progress, X2 is the checksum. (Example: 0x01 → Cooling progress is 1%).
	Return	55 04 EA 33 **X1 X2** EB AA (e.g., 55 04 EA 33 01 77 EB AA)	
Automatically Return Cooling Progress on Power-up	Receive	(On) AA 05 01 EA 01 01 9C EB AA(Default) (Off) AA 05 01 EA 01 00 9B EB AA	
	Return	55 04 EA 33 01 77 EB AA	
Save Settings	Receive	AA 04 01 7F 02 30 EB AA	
	Return	55 04 7F 33 01 0C EB AA	
Restore Factory Settings	Receive	AA 05 01 82 02 00 34 EB AA	
	Return	55 04 82 33 01 0F EB AA	