

UHF RFID Reader Module/Reader Communication Protocol

(V1.3)

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Change tracking

Version	Author	Items	Data	Page
1.0	Ken	The first draft	2010-07-04	
1.1	Ken	Add parameter setting for Ethernet port function	2012-01-16	3.2.59~3.2.60
1.2	Ken	Add FastID, Tagfocus, get environment RSSI value function	2013-10-20	3.2.63~3.2.72
1.3	Ken	Add get unique ID function Add the filtering function of data in EPC、TID、USR area when read、write、lock、kill、block-write、block-erase. Filtering parameter setting before inventory Baud rate setting function; Block Write and Block erase function Software reset function Add antenna setting, the setting of working time for antenna, power-down saved function for idle time of switch antenna Continue inventory and delay time instead of continue inventory time, and add power-down saved function. Add Dual mode and Single mode for modules, add power-down saved function.	2013-11-1	3.1.5~3.1.6 3.2.17~3.2.20 3.2.33~3.2.36 3.2.45~3.2.52 3.2.63~3.2.82 3.3.20~3.3.23

Contents

Communication Protocol	1
1. Overview	6
2. Data transmission frame format	6
2.1. Header and end	6
2.2. Length	6
2.3. Command	7
2.4. Data	10
2.5. Check code	10
3. Communication frame description	10
3.1. Version management frame	10
3.1.1. Get reader hardware version	10
3.1.2. Get reader hardware version response	11
3.1.3. Get reader firmware version	11
3.1.4. Get reader firmware version response	12
3.1.5. Get Unique ID	12
3.1.6. Get unique ID response	13
3.2. Parameters setting frame	14
3.2.1. Set transmission power	14
3.2.2. Set transmission power response	14
3.2.3. Get current transmission power	15
3.2.4. Get current transmission power response	15
3.2.5. Frequency hopping setting	16
3.2.6. Frequency hopping setting response	17
3.2.7. Get current equipment hopping status	18
3.2.8. Get current equipment hopping status response	18
3.2.9. Set Gen2 data	19
3.2.10. Set Gen2 data response	21
3.2.11. Get current gen2 data setting	22
3.2.12. Get current gen2 data setting response	22
3.2.13. CW setting	25
3.2.14. CW setting response	26
3.2.15. Get current equipment CW setting	26
3.2.16. Get current equipment CW setting response	27
3.2.17. Antenna setting	27
3.2.18. Antenna setting response	28
3.2.19. Get current equipment antenna setting	28
3.2.20. Get current equipment antenna setting response	29
3.2.21. Regional standard setting	30
3.2.22. Regional standard setting response	30
3.2.23. Get Regional standard setting	31
3.2.24. Get Regional standard setting response	31
3.2.25. Get port return loss (SWR)	32

3.2.26.	Get port return loss (SWR) response	32
3.2.27.	Get current equipment temperature	33
3.2.28.	Get current equipment temperature response	34
3.2.29.	Set temperature protection	34
3.2.30.	Set temperature protection response.....	35
3.2.31.	Get temperature protection setting	35
3.2.32.	Get temperature protection setting response	36
3.2.33.	Set continue inventory time.....	36
3.2.34.	Set continue inventory time response.....	37
3.2.35.	Get continuous inventory time setting.....	38
3.2.36.	Get continuous inventory time setting response.....	38
3.2.37.	Get error flag	39
3.2.38.	Get error flag response	39
3.2.39.	Clear error flag	40
3.2.40.	Clear error flag response	40
3.2.41.	Set GPIO	41
3.2.42.	Set GPIO response	41
3.2.43.	Get GPIO.....	42
3.2.44.	Get GPIO response.....	43
3.2.45.	Set working time of antenna.....	43
3.2.46.	Set working time of antenna response.....	44
3.2.47.	Get working time of antenna.....	44
3.2.48.	Get working time of antenna response	45
3.2.49.	Set idle time of switch antenna	45
3.2.50.	Set idle time of switch antenna response.....	46
3.2.51.	Get idle time of switch antenna.....	46
3.2.52.	Get idle time of switch antenna response	47
3.2.53.	Set recommend RF links	47
3.2.54.	Set recommend RF links response	48
3.2.55.	Get recommend RF links.....	48
3.2.56.	Get recommend RF links response.....	49
3.2.57.	Buzzer Setting	50
3.2.58.	Buzzer Ringing Response Setting	51
3.2.59.	Parameter setting of Ethernet interface	51
3.2.60.	Parameter response setting of Ethernet interface	52
3.2.61.	Parameter setting of Wifi.....	53
3.2.62.	Parameter response setting of Wifi.....	53
3.2.63.	FastID function setting	54
3.2.64.	FastID function response setting	54
3.2.65.	Get FastID functional status	54
3.2.66.	Get FastID functional Status Response	55
3.2.67.	Tagfocus function setting	55
3.2.68.	Tagfocus function response setting	56
3.2.69.	Get Tagfocus functional status	56
3.2.70.	Get Tagfocus functional status response	57

3.2.71.	Get environment RSSI value.....	57
3.2.72.	Get environment RSSI value response.....	58
3.2.73.	Baud rate setting of reader module.....	58
3.2.74.	Baud rate setting of reader module response.....	60
3.2.75.	Software reset.....	60
3.2.76.	Software reset response.....	61
3.2.77.	Dual and singel mode setting.....	61
3.2.78.	Dual and singel mode setting response.....	62
3.2.79.	Get Dual and singel mode.....	63
3.2.80.	Get Dual and singel mode response.....	63
3.2.81.	Inventory filtering setting.....	64
3.2.82.	Inventory filtering setting response.....	65
3.3.	Tag application frames	65
3.3.1.	Inventory for once	65
3.3.2.	Inventory for once response	66
3.3.3.	Continue inventory	66
3.3.4.	Continue inventory response	67
3.3.5.	Stop continue inventory	68
3.3.6.	Stop continue inventorying response	68
3.3.7.	Read data.....	69
3.3.8.	Read data response	70
3.3.9.	write data	71
3.3.10.	Write data response	71
3.3.11.	Lock tag.....	72
3.3.12.	Lock tag response.....	73
3.3.13.	Kill tag.....	74
3.3.14.	Kill tag response.....	75
3.3.15.	Fast read TID.....	75
3.3.16.	Fast read TID response.....	75
3.3.17.	Time frame inventory	76
3.3.18.	Time frame Inventory Response	76
3.3.19.	Get Time frame Inventory Result.....	77
3.3.20.	Block Write Data.....	77
3.3.21.	Block Write Data response.....	79
3.3.22.	Block Erase Data.....	80
3.3.23.	Block Erase Data response.....	81
3.4.	Operation failed response frame	81
3.4.1.	Operation failed response frame.....	81

1. Overview

UHF RFID reader/the reader module communication protocol is the one which enables data communication between the reader/the reader module and the computer.

The protocol support HYM730, HYM740, HYM750 series RFID reader module, and HYR810, HYR820, HYR830 series RFID reader.

The communication protocol based on UART and USB, which the UART band rate =115200 bps, 8 bits for data; 1 bit for stop; no check bit; no hardware flow control . Data transmission according to a fixed frame format.

2. Data transmission frame format

Data frame consists of header, length, format, data, check code and end, showing below in sheet

Sheet 1. Data transmission frame format

Header	Length	Command	Data	Check code	End
2 bytes	2 bytes	1 byte	N bytes	1 byte	2 bytes

2.1. Header and end

The **header** is the beginning of the data package, total 2 bytes which is fixed as **0xA5、0x5A**; and the **End** means the end of the data package with 2 bytes fixed as **0x0d、0x0a** (as the Enter in keyboard).

2.2. Length

The Length is the length of complete data frame, it will be calculated as blow:

Length= 2+2+1+N+1+2, N is the length of Data.

2.3. Command

The different Command has different function, all the Commands are showing blow.

Sheet 2. List of frame command

Description of frame function	Command	Remark
Get reader hardware version	0x00	
Get reader hardware version response	0x01	
Get reader firmware version	0x02	
Get reader firmware version response	0x03	
Get Unique ID	0x04	
Get Unique ID response	0x05	
Reserve	0x06~0x0f	Reserved for expansion
Set transmitting power	0x10	
Set transmitting power response	0x11	
Get current transmitting power	0x12	
Get current transmitting power response	0x13	
Frequency hopping setting	0x14	
Frequency hopping setting response	0x15	
Get current equipment Frequency hopping setting status	0x16	
Get current equipment Frequency hopping setting status response	0x17	
Set Gen2 data	0x20	
Set current Gen2 data response	0x21	
Get current Gen2 data setting	0x22	
Get Gen2 data setting response	0x23	
CW setting	0x24	
CW setting response	0x25	
Get current CW setting	0x26	
Get current CW setting response	0x27	
Antenna setting	0x28	
Antenna setting response	0x29	
Get current antenna setting	0x2a	
Get current antenna setting response	0x2b	
Regional standard setting	0x2c	
Regional standard setting response	0x2d	
Get Regional standard setting	0x2e	

Get Regional standard setting response	0x2f	
Get port return loss	0x32	
Get port return loss response	0x33	
Get current equipment temperature	0x34	
Get current equipment temperature response	0x35	
Set temperature protection	0x38	
Set temperature protection response	0x39	
Get temperature protection setting	0x3A	
Get temperature protection setting response	0x3B	
Set continue inventory time	0x3C	
Set continue inventory time response	0x3D	
Get continue inventory time setting	0x3E	
Get continue inventory time setting response	0x3F	
Get error flag	0x40	
Get error flag response	0x41	
Clear error flag	0x42	
Clear error flag response	0x43	
Set GPIO	0x46	
Set GPIO response	0x47	
Get GPIO	0x48	
Get GPIO response	0x49	
Set working time of antenna	0x4A	
Set working time of antenna response	0x4B	
Get working time of antenna	0x4C	
Get working time of antenna response	0x4D	
Set idle time of switch antenna	0x4E	
Set idle time of switch antenna response	0x4F	
Get idle time of switch antenna	0x50	
Get idle time of switch antenna response	0x51	
Set recommend RF links	0x52	
Set recommend RF links response	0x53	
Get recommend RF links	0x54	
Get recommend RF links response	0x55	
Buzzer setting	0x56	
Buzzer ringing response setting	0x57	
Parameter setting of Ethernet interface	0x58	
Parameter response setting of Ethernet interface	0x59	
Set WIFI parameter	0x5A	
Set WIFI parameter response	0x5B	
FastID function setting	0x5C	

FastID function response setting	0x5D	
Get FastID functional status	0x5E	
Get FastID functional status response	0x5F	
Tagfocus function setting	0x60	
Tagfocus function response setting	0x61	
Get tagfocus functional status	0x62	
Get tagfocus functional status response	0x63	
Get environment RSSI value	0x64	
Get environment RSSI value response	0x65	
Baud rate setting of modules	0x66	
Baud rate setting of modules response	0x67	
Software reset	0x68	
Software reset response	0x69	
Dual and Single mode setting	0x6A	
Dual and Single mode setting response	0x6B	
Get Dual and Single mode	0x6C	
Get Dual and Single mode response	0x6D	
Inventory filtering setting	0x6E	
Inventory filtering setting response	0x6F	
Reserve	0x70~0x7f	Reserved
Inventory for once	0x80	
Inventory for once response	0x81	
Continue inventory	0x82	
Continue inventory response	0x83	
Stop continue inventory	0x8c	
Stop continue inventory response	0x8d	
Read data	0x84	
Read data response	0x85	
Write data	0x86	
Write data response	0x87	
Lock tag	0x88	
Lock tag response	0x89	
Kill tag	0x8a	
Kill tag response	0x8b	
Fast read TID	0x8e	
Fast read TID response	0x8f	
Time frame inventory	0x90	
Time frame inventory response	0x91	
Get time frame inventory result	0x92	
Block write tags	0x93	

Block write tags response	0x94	
Block erase tags	0x95	
Block erase tags response	0x96	
Reserve	0x97~0xfe	Reserved
Operation fail response	0xff	

2.4. Data

According to frame format, “Data” contains data and control information. Refer to command frame, it means control information; refer to response frame, it means data information.

2.5. Check code

The difference byte value of the data (except header and end) in each frame.

For example:

0xA5 0x5A 0x00 0x0A 0x43 0x01 0x25 CRC 0x0d 0x0a

$CRC = 0x00 \oplus 0x0A \oplus 0x43 \oplus 0x01 \oplus 0x25 = 0x6D$

Header : 2
Length : 2
Command : 1
Data : N
Check code : 1
End : 2

3. Communication frame description

3.1. Version management frame

3.1.1. Get reader hardware version

Header: 0xA5 0x5A

Length: 0x00 0x08

Command: 0x00

Data: No

Check code: 0x08

End: 0x0d 0x0a

Function: Get the information of reader hardware version.

Sheet 3. Get reader hardware version command frame

Header		Length		Command	Data	Check code	End
0xA5	0x5A	0x00	0x08	0x00	No	0x08	0x0D

End
0x0A

Remark: This command frame has no data.

Example: Get reader hardware version

Command: A5 5A 00 08 00 08 0D 0A

3.1.2. Get reader hardware version response

Header: 0xA5 0x5A

Length: 0x00 0x0B

Command: 0x01

Data: Total 3 bytes, including main version, sub-version and complementary version.

Check code: 0xxx

End: 0x0d 0x0a

Function: Send hardware version information.

Sheet 4. Get reader hardware version response frame

Header		Length		Command	Data		
0xA5	0x5A	0x00	0x0B	0x01	Main version	Sub-version	Comp. version
Check code	End						
0xxx	0x0D	0x0A					

Remark: No

Example: the response from reader with hardware version V2.3.5

Command: A5 5A 00 0B 01 02 03 05 0E 0D 0A

3.1.3. Get reader firmware version

Header: 0xA5 0x5A

Length: 0x00 0x08

Command: 0x02

Data: No

Check code: 0x05

End: 0x0d 0x0a

Function: get firmware version information

Sheet 5. Get reader firmware version command frame

Header	Length	Command	Data	Check code	End
--------	--------	---------	------	------------	-----

0xA5	0x5A	0x00	0x08	0x02	No	0x0A	0x0D
End							
0x0A							

Remark: This control command has no data.

Example: Get reader firmware version

Command: A5 5A 00 08 02 0A 0D 0A

3.1.4. Get reader firmware version response

Header: 0xA5 0x5A

Length: 0x00 0x0B

Command: 0x03

Data: Total 3 bytes, including main version, sub-version and complementary version.

Check code: 0xxx

End: 0x0d 0x0a

Function: Send firmware version information

Sheet 6. Get reader firmware version response frame

Header		Length		Command	Data		
0xA5	0x5A	0x00	0x0B	0x03	Main version	Sub-version	Comp. version
Check code	End						
0xxx	0x0D	0x0A					

Remark: No

Example: the response from reader with firmware version V2.3.5

Command: A5 5A 00 0B 03 02 03 05 0C 0D 0A

3.1.5. Get unique ID

Header: 0xA5 0x5A

Length: 0x00 0x08

Command: 0x04

Data: No

Check code: 0x0C

End: 0x0d 0x0a

Function: Get reader-module ID

Sheet 7. Get reader module ID frame

Header		Length		Command	Data
0xA5	0x5A	0x00	0x08	0x04	No
Check code	End				
0x0C	0x0D	0x0A			

Remark: No

Example: Get reader module ID

Command: A5 5A 00 08 04 0C 0D 0A

3.1.6. Get unique ID response

Header: 0xA5 0x5A

Length: 0x00 0x0C

Command: 0x05

Data: Total 4 bytes, ID of reader-module.

Check code: 0xxx

End: 0x0d 0x0a

Function: Get reader-module ID response

Sheet 8. Get reader module ID response frame

Header		Length		Command	Data			
0xA5	0x5A	0x00	0x0c	0x05	Dbyte3	Dbyte2	Dbyte1	Dbyte0
Check code	End							
0xxx	0x0D	0x0A						

Remark: Dbyte3 ~ Dbyte0 16 hexadecimal converted to the decimal number, which is the unique ID

Example: Response for the unique ID of the reader is 1328

Command: A5 5A 00 0C 05 00 00 05 30 3C 0D 0A

3.2. Parameters setting frame

3.2.1. Set transmission power

Header: 0xA5 0x5A

Length: 0x00 0x0E

Command: 0x10

Data: All 6 bytes, status 1 bit, antenna number 1 bit, reading power and writing

power 2 bits for each. The unit of reading/writing power is dBm.

Check code: 0xxx

End: 0x0d 0x0a

Function: Set writing/reading power for specific antenna.

Sheet 9 Set transmission power command frame

Header		Length		Command	Data		
0xA5	0x5A	0x00	0x0E	0x10	Status	Antenna No.	Read(MSB)
Data			Check code	End			
Read(LSB)	Write(MSB)	Write(LSB)	0xxx	0x0D	0x0A		

Sheet 10 description of status

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Rev	Rev	Rev	Rev	Rev	Rev	0: No save 1: Save	0: Open loop 1: Close loop

Remark: status: Bit0 0x00 means open loop status, 0x01 means closed loop status; Bit1 0x00 means the state will be lost when the module power down, 0x01 means the state will be saved whatever the module power down or restart. Bit7-Bit2 reserved. The Antenna No. is hexadecimal. The transmission power times 100 then turned into hexadecimal

Example: Set No. 3 antenna with read power 15dBm, write power 30dBm, open loop, no save

Command: A5 5A 00 0E 10 00 03 05 DC 0B B8 77 0D 0A

3.2.2. Set transmission power response

Header: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x11

Data: showing if the setting is successful, successful setting: 0x01; failed setting: 0x00

Check code: 0xxx

End: 0x0d 0x0a

Function: showing if the setting is successful

Sheet 11. Successful setting for transmission power response frame

Header	Length	Command	Data	Check code	End
--------	--------	---------	------	------------	-----

0xA5	0x5A	0x00	0x09	0x11	OK-0x01 Fail-0x00	0xxx	0x0D
End							
0x0A							

Remark: No

Example: Successful setting for transmission power

Command: A5 5A 00 09 11 01 19 0D 0A

3.2.3. Get current transmission power

Header: 0xA5 0x5A

Length: 0x00 0x08

Command: 0x12

Data: No

Check code: 0x1A

End: 0x0d 0x0a

Function: Get current transmission power

Sheet 12. Get current transmission power command frame

Header		Length		Command	Data	Check code	End
0xA5	0x5A	0x00	0x08	0x12	No	1A	0x0D
End							
0x0A							

Remark: No

Example: Get current transmission power

Command: A5 5A 00 08 12 1A 0D 0A

3.2.4. Get current transmission power response

Header: 0xA5 0x5A

Length: Not fixed

Command: 0x13

Data: the unit for status、 antenna number and the read/write power are all dBm

Check code: 0xxx

End: 0x0d 0x0a

Function: Get read/write power of each antenna

Sheet 13. Get current transmission power response frame

Header	Length	Command	Data
--------	--------	---------	------

0xA5	0x5A	0xxx	0xxx	0x13	Status	Antenna No.	Read(MSB)
Data							
Read(LSB)	Write(MSB)	Write(LSB)	Antenna No.	Read(MSB)	Read(LSB)	Write(MSB)	Write(LSB)
Data						Check code	End
...	Antenna No.	Read(MSB)	Read(LSB)	Write(MSB)	Write(LSB)	0xxx	0x0D
End							
0x0A							

Remark: status: 0x00 means open loop, 0x01 means closed loop, other values are wrong; the read/write power times 100 then turned into hexadecimal; if the value is a negative number, a complement form shall be adopted; the antenna number shows the exact antenna which is in use

Example: when the equipment is in closed loop status, antenna 1 has read power -7dBm, write power 21dBm, antenna 5 has read power 3dBm, write power 14dBm

Command: A5 5A 00 13 13 01 01 FD 44 08 34 05 01 2C 05 78 D0 0D 0A

3.2.5. Frequency hopping setting

Header: 0xA5 0x5A

Length: Not fixed

Command: 0x14

Data: shows hopping point number and hopping frequency

Check code: 0xxx

End: 0x0d 0x0a

Function: Set hopping status and hopping frequency table

HYR820,HYM360 do not support the command.

Sheet 14. Frequency hopping setting command frame

Header		Length		Command	Data		
0xA5	0x5A	0xxx	0xxx	0x14	Hopping point number	Freq[1] (MSB)	Freq[1]
Data					Check code	End	
Freq[1] (LSB)	...	Freq[n] (MSB)	Freq[n]	Freq[n] (LSB)	0xxx	0x0D	0x0A

Remark: when hopping point number is 1, it means fixed frequency, Freq[1] means the point of fixed frequency. The unit for hopping point frequency is KHz.

Example : Set the equipment to hopping status, with 5 hopping points: 920125(0E0A3D), 921250(0E0EA2), 921625(0E1019), 922375(0E1307), 924375(0E1AD7)

Command: A5 5A 00 18 14 05 0E 0A 3D 0E 0E A2 0E 10 19 0E 13 07 0E 1A D7 4C 0D 0A

3.2.6. Frequency hopping setting response

Header: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x15

Data: Ok: 0x01; fail: 0x00

Check code: 0xxx

End: 0x0d 0x0a

Function: Frequency hopping setting response

HYR820, HYM360 do not support the command.

Sheet 15. Frequency hopping setting response frame

Header		Length		Command	Data	Check code	End
0xA5	0x5A	0x00	0x09	0x15	ok: 0x01 fail: 0x00	0xxx	0x0D
End							
0x0A							

Remark: No

Example: Frequency hopping setting fail

Command: A5 5A 00 09 15 00 1C 0D 0A

3.2.7. Get current equipment hopping status

Header: 0xA5 0x5A

Length: 0x00 0x08

Command: 0x16

Data: No

Check code: 0x1E

End: 0x0d 0x0a

Function: get current equipment hopping status and hopping table

HYR820, HYM360 do not support the command.

Sheet 16. Get current equipment hopping status command frame

Header		Length		Command	Data	Check code	End
0xA5	0x5A	0x00	0x08	0x16	No	0x1E	0x0D
End							
0x0A							

Remark: No

Example: Get current equipment Frequency hopping setting status

Command: A5 5A 00 08 16 1E 0D 0A

3.2.8. Get current equipment hopping status response

Header: 0xA5 0x5A

Length: Not fixed

Command: 0x17

Data: the number of hopping points and hopping frequency table

Check code: 0xxx

End: 0x0d 0x0a

Function: Get equipment hopping status and hopping frequency table

HYR820,HYM360 do not support the command.

Sheet 17. Get current equipment hopping status response frame

Header		Length		Command	Data		
0xA5	0x5A	0xxx	0xxx	0x17	Hopping point number	Freq[1] (MSB)	Freq[1]
				Check code	End		
Freq[1] (LSB)	...	Freq[n] (MSB)	Freq[n] (LSB)	0xxx	0x0D	0x0A	

Remark: when hopping point number is 1, it means fixed frequency, Freq[1] means the point of fixed frequency. The unit for hopping point frequency is KHz.

Example: Set the equipment to hopping status, with 5 hopping points: 920125(0E0A3D)、921250(0E0EA2)、921625(0E1019)、922375(0E1307)、924375(0E1AD7)

Command: A5 5A 00 18 17 05 0E 0A 3D 0E 0E A2 0E 10 19 0E 13 07 0E 1A D7 4F 0D 0A

3.2.9. Set Gen2 data

Header: 0xA5 0x5A

Length: 0x00 0x10

Command: 0x20

Data: Setting for Session、Q、Coding, etc.

Check code: 0xxx

End: 0x0d 0x0a

Function: Set gen2 data

HYR820,HYM360 do not support the command.

Sheet 18. Set gen2 command frame

Header		Length		Command	Data		
0xA5	0x5A	0x00	0x10	0x20	DByte7	DByte6	DByte5
Data					Check code	End	
DByte4	DByte3	DByte2	DByte1	DByte0	0xxx	0x0D	0x0A

Remark: The definition for data is showed in the sheet below

Sheet 19 Data bit definition

DByte7										DByte6										DByte5										DByte4									
Target			Action				T	Q	StartQ					MinQ					MaxQ					D	C	P	Sel	Ses	G	LF									
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x								
DByte3										DByte2										DByte1										Dbyte0									
Reserve																																							
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							

Target setting: select target data for command

S0	B'000
S1	B'001
S2	B'010
S3	B'011
SL	B'100

Action setting: select action data for command

Action	Matching	Non-Matching
000	assert SL or inventoried → A	de-assert SL or inventoried → B
001	assert SL or inventoried → A	do nothing
010	do nothing	de-assert SL or inventoried → B
011	negate SL or (A → B, B → A)	do nothing
100	de-assert SL or inventoried → B	de-assert SL or inventoried → A
101	de-assert SL or inventoried → B	do nothing
110	do nothing	de-assert SL or inventoried → A

111	do nothing	negate SL or $(A \rightarrow B, B \rightarrow A)$
-----	------------	---

T setting: select truncate data for command

Disable truncation	B'0
Enable truncation	B'1

Q setting:

Fixed calculation	Q	B'0
Dynamic calculation	Q	B'1

Note: Under fixed Q calculation, Q is fixed as StartQ, ignoring MinQ and MaxQ.

startQ setting:

0	B'0000	4	B'0100	8	B'1000	12	B'1100
1	B'0001	5	B'0101	9	B'1001	13	B'1101
2	B'0010	6	B'0110	10	B'1010	14	B'1110
3	B'0011	7	B'0111	11	B'1011	15	B'1111

MinQ setting:

0	B'0000	4	B'0100	8	B'1000	12	B'1100
1	B'0001	5	B'0101	9	B'1001	13	B'1101
2	B'0010	6	B'0110	10	B'1010	14	B'1110
3	B'0011	7	B'0111	11	B'1011	15	B'1111

MaxQ setting:

0	B'0000	4	B'0100	8	B'1000	12	B'1100
1	B'0001	5	B'0101	9	B'1001	13	B'1101
2	B'0010	6	B'0110	10	B'1010	14	B'1110
3	B'0011	7	B'0111	11	B'1011	15	B'1111

D setting: DR data for query command

8	B'0
64/3	B'1

Coding setting: M data for query command

FM0	B'00
Miller2	B'01
Miller4	B'10
Miller8	B'11

P setting: TRext data for query command

No pilot tone	B'0
Use pilot tone	B'1

Sel setting: sel data for query command

All	B'00
All	B'01
~SL	B'10
SL	B'11

Ses setting: session data for query command

S0	B'00
S1	B'01
S2	B'10
S3	B'11

G setting: Target data for query command

A	B'0
B	B'1

Link Frequency setting:

40KHz	B'000
160KHz	B'001
200KHz	B'010
250KHz	B'011
300KHz	B'100
320KHz	B'101
400KHz	B'110
640KHz	B'111

Example: Target setting is S0, Action setting is B'100, Truncate data is Disable Truncate, under dynamic Q calculation, startQ is 4, minQ is 0, maxQ is 15, Dr is 8, M data is Miller4, Trest data is No pilot tone, sel data is ALL, Session data is S2, Target data is A, Link Frequency is 160KHz

Command: A5 5A 00 10 20 11 40 F4 21 00 00 00 00 B4 0D 0A

3.2.10. Set Gen2 data response

Header: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x21

Data: OK: 0x01; fail: 0x00

Check code: 0xxx

End: 0x0d 0x0a

Function: Set gen2 data

HYR820,HYM360 do not support the command.

Sheet 20. Set gen2 data response frame

Header		Length		Command	Data	Check code	End
0xA5	0x5A	0x00	0x09	0x21	Ok: 0x01 fail: 0x00	0xxx	0x0D
End							
0x0A							

Remark: No

Example: Successful gen2 data setting

Command: A5 5A 00 09 21 01 29 0D 0A

3.2.11. Get current gen2 data setting

Header: 0xA5 0x5A

Length: 0x00 0x08

Command: 0x22

Data: No

Check code: 0x2A

End: 0x0d 0x0a

Function: Get current gen2 data setting

HYR820,HYM360 do not support the command.

Sheet 21. Get current gen2 data command frame

Header		Length		Command	Data	Check code	End
0xA5	0x5A	0x00	0x08	0x22	No	0x2A	0x0D
End							
0x0A							

Remark: No

Example: Get current equipment gen2 data setting

Command: A5 5A 00 08 22 2A 0D 0A

3.2.12. Get current gen2 data setting response

Header: 0xA5 0x5A

Length: 0x00 0x10

Command: 0x23

Data: Setting for Session、Q、Coding, etc.

Check code: 0xxx

End: 0x0d 0x0a

Function: Get current Gen2 data setting

HYR820,HYM360 do not support the command.

Sheet 22. Get current gen2 data response frame

Header		Length		Command	Data		
0xA5	0x5A	0x00	0x10	0x23	DByte7	DByte6	DByte5
Data					Check code	End	
DByte4	DByte3	DByte2	DByte1	DByte0	0xxx	0x0D	0x0A

Remark: The definition for data is showed in the sheet below

Sheet 23. Data bit definition

DByte7										DByte6										DByte5										DByte4									
Target			Action				T	Q	StartQ					MinQ					MaxQ					D	C	P	Sel	Ses	G	LF									
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
DByte3										DByte2										DByte1										Dbyte0									
Reserve																																							
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						

Target setting: select Target data for command

S0	B'000
S1	B'001
S2	B'010
S3	B'011
SL	B'100

Action setting: select Action data for command

Action	Matching	Non-Matching
000	assert SL or inventoried $\rightarrow A$	de-assert SL or inventoried $\rightarrow B$
001	assert SL or inventoried $\rightarrow A$	do nothing
010	do nothing	de-assert SL or inventoried $\rightarrow B$
011	negate SL or ($A \rightarrow B, B \rightarrow A$)	do nothing
100	de-assert SL or inventoried $\rightarrow B$	de-assert SL or inventoried $\rightarrow A$
101	de-assert SL or inventoried $\rightarrow B$	do nothing
110	do nothing	de-assert SL or inventoried $\rightarrow A$
111	do nothing	negate SL or ($A \rightarrow B, B \rightarrow A$)

T setting: select Truncate data for command

Disable truncation	B'0
Enable truncation	B'1

Q setting:

Fixed calculation	Q	B'0
Dynamic calculation	Q	B'1

Note: Under fixed Q calculation, Q is fixed as StartQ, ignoring MinQ and MaxQ.
startQ setting:

0	B'0000	4	B'0100	8	B'1000	12	B'1100
1	B'0001	5	B'0101	9	B'1001	13	B'1101
2	B'0010	6	B'0110	10	B'1010	14	B'1110
3	B'0011	7	B'0111	11	B'1011	15	B'1111

MinQ setting:

0	B'0000	4	B'0100	8	B'1000	12	B'1100
1	B'0001	5	B'0101	9	B'1001	13	B'1101
2	B'0010	6	B'0110	10	B'1010	14	B'1110
3	B'0011	7	B'0111	11	B'1011	15	B'1111

MaxQ setting:

0	B'0000	4	B'0100	8	B'1000	12	B'1100
1	B'0001	5	B'0101	9	B'1001	13	B'1101
2	B'0010	6	B'0110	10	B'1010	14	B'1110
3	B'0011	7	B'0111	11	B'1011	15	B'1111

D setting: DR data for query command

8	B'0
64/3	B'1

Coding setting: M data for query command

FM0	B'00
Miller2	B'01
Miller4	B'10
Miller8	B'11

P setting: TRext data for query command

No pilot tone	B'0
Use pilot tone	B'1

Sel setting: sel data for query command

All	B'00
All	B'01
~SL	B'10
SL	B'11

Ses setting: session data for query command

S0	B'00
S1	B'01
S2	B'10
S3	B'11

G setting: Target data for query command

A	B'0
B	B'1

Link Frequency setting:

40KHz	B'000
160KHz	B'001
213KHz	B'010
256KHz	B'011
320KHz	B'100
640KHz	B'101

Example: Target setting is S0, Action setting is B'100, Truncate data is Disable

Truncate, under dynamic Q calculation, startQ is 4, minQ is 0, maxQ is 15, Dr is 8, M data is Miller4, Trext data is No pilot tone, sel data is ALL, Session data is S2, Target data is A, Link Frequency is 160KHz

Command: A5 5A 00 10 23 11 40 F4 21 00 00 00 00 B7 0D 0A

3.2.13. CW setting

Header: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x24

Data: On CW: 0x01; Off CW: 0x00

Check code: 0xxx

End: 0x0d 0x0a

Function: On or off CW (continue wave)

Sheet 24. CW setting command frame

Header		Length		Command	Data	Check code	End
0xA5	0x5A	0x00	0x09	0x24	On: 0x01 Off: 0x00	0xxx	0x0D
End							
0x0A							

Remark: No

Example: Power On CW

Command: A5 5A 00 09 24 01 2C 0D 0A

3.2.14. CW setting response

Header: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x25

Data: OK: 0x01; fail: 0x00

Check code: 0xxx

End: 0x0d 0x0a

Function: On or off CW

Sheet 25 CW setting response frame

Header		Length		Command	Data	Check code	End
0xA5	0x5A	0x00	0x09	0x25	ok: 0x01 fail: 0x00	0xxx	0x0D

End
0x0A

Remark: No

Example: Successful setting

Command: A5 5A 00 09 25 01 2D 0D 0A

3.2.15. Get current equipment CW setting

Header: 0xA5 0x5A

Length: 0x00 0x08

Command: 0x26

Data: No

Check code: 0x2E

End: 0x0d 0x0a

Function: Get current equipment CW status

Sheet 26 Get current equipment CW data command frame

Header		Length		Command	Data	Check code	End
0xA5	0x5A	0x00	0x08	0x26	No	0x2E	0x0D
End							
0x0A							

Remark: No

Example: Get current equipment CW setting

Command: A5 5A 00 08 26 2E 0D 0A

3.2.16. Get current equipment CW setting response

Header: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x27

Data: CW on: 0x01; CW off: 0x00

Check code: 0xxx

End: 0x0d 0x0a

Function: Get current CW status of the equipment

Sheet 27. Get current equipment CW data response frame

Header		Length		Command	Data	Check code	End
0xA5	0x5A	0x00	0x09	0x27	On: 0x01 Off: 0x00	0xxx	0x0D
End							

0x0A

Remark: No

*Example: CW is on**Command: A5 5A 00 09 27 01 2F 0D 0A***3.2.17. Antenna setting**

Header: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x28

Data: Total 3 bytes, 16 bits, each bit represents an antenna; when it is 1, then chooses the corresponding antenna; then it is 0, then cancels the corresponding antenna.

Check code: 0xxx

End: 0x0d 0x0a

Function: Set the antenna for the equipment

Sheet 28. Antenna setting command frame

Header		Length		Command	Data		
0xA5	0x5A	0x00	0x0A	0x28	DByte2	DByte1	DByte0
Check code		End					
0xxx		0x0D	0x0A				

Remark: Dbyte2=0x01, indicate set the antenna power-down saved function.
Dbyte2=0x00, negative. Please check as follow:

Sheet 29. Antenna setting data definition

DByte1							
Ant16	Ant15	Ant14	Ant13	Ant12	Ant11	Ant10	Ant9
DByte0							
Ant8	Ant7	Ant6	Ant5	Ant4	Ant3	Ant2	Ant1

*Example: Choose antenna 2 and antenna 14, set power-down saved function**Command: A5 5A 00 0A 28 20 02 00 0D 0A***3.2.18. Antenna setting response**

Header: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x29

Data: OK: 0x01; fail: 0x00

Check code: 0xxx

End: 0x0d 0x0a

Function: Set antenna for equipment

Sheet 30. Antenna setting response frame

Header		Length		Command	Data	Check code	End
0xA5	0x5A	0x00	0x09	0x29	Ok: 0x01 fail: 0x00	0xxx	0x0D
End							
0x0A							

Remark: No

Example: Setting is successful

Command: A5 5A 00 09 29 01 21 0D 0A

3.2.19. Get current equipment antenna setting

Header: 0xA5 0x5A

Length: 0x00 0x08

Command: 0x2a

Data: No

Check code: 0x22

End: 0x0d 0x0a

Function: Get the current antenna used by the equipment

Sheet 31. Get antenna setting command frame

Header		Length		Command	Data	Check code	End
0xA5	0x5A	0x00	0x08	0x2a	No	0x22	0x0D
End							
0x0A							

Remark: No

Example: Get current equipment antenna setting

Command: A5 5A 00 08 2a 22 0D 0A

3.2.20. Get current equipment antenna setting response

Header: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x2b

Data: Total 2 bytes, 16 bits, each bit represents one antenna; when the bit is 1, the

corresponding antenna is chosen; when the bit is 0, the corresponding antenna is not chosen.

Check code: 0xxx

End: 0x0d 0x0a

Function: Get current antenna used by the equipment

Sheet 32. Get antenna setting response frame

Header		Length		Command	Data		Check code
0xA5	0x5A	0x00	0x0A	0x2b	DByte1	DByte0	0xxx
End							
0x0D	0x0A						

Remark: Data bit definition is shown as follows:

Sheet 33. Antenna setting data bit definition

DByte1							
Ant16	Ant15	Ant14	Ant13	Ant12	Ant11	Ant10	Ant9
DByte0							
Ant8	Ant7	Ant6	Ant5	Ant4	Ant3	Ant2	Ant1

Example: Currently antenna 1, 5, 10 and 14 are chosen

Command: A5 5A 00 0A 2b 22 11 12 0D 0A

3.2.21. Regional standard setting

Header: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x2C

Data: 2 bytes

Check code: 0xxx

End: 0x0d 0x0a

Function: set areas

Sheet 34. Regional standard setting command frame

Header		Length		Command	Data		Check code
0xA5	0x5A	0x00	0x0A	0x2c	Kept setting flag	DByte0	0xxx
End							
0x0D	0x0A						

Remark: When the kept setting flag is 0, the setting will not be kept; when the

flag is 1, then keep the setting. When the computer starts next time, it will be acknowledged as current region.

Data bit DByte0 definition is shown below:

China1	0x01
China2	0x02
Europe	0x04
USA	0x08
Korea	0x16
Japan	0x32

Example: Keep the setting, the set area is USA

Command: A5 5A 00 0A 2C 01 08 2F 0D 0A

3.2.22. Regional standard setting response

Header: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x2D

Data: Ok: 0x01; fail: 0x00

Check code: 0xxx

End: 0x0d 0x0a

Function: Set area response

Sheet 35. Regional standard setting response frame

Header		Length		Command	Data	Check code	End
0xA5	0x5A	0x00	0x09	0x2D	Ok: 0x01 fail: 0x00	0xxx	0x0D
End							
0x0A							

Remark: No

Example: Setting is successful

Command: A5 5A 00 09 2D 01 25 0D 0A

3.2.23. Get Regional standard setting

Header: 0xA5 0x5A

Length: 0x00 0x08

Command: 0x2E

Data: No

Check code: 0x26

End: 0x0d 0x0a

Function: Get Regional standard setting for the equipment

Sheet 36. Get Regional standard setting command frame

Header		Length		Command	Data	Check code	End
0xA5	0x5A	0x00	0x08	0x2E	No	0x26	0x0D
End							
0x0A							

Remark: No

Example: Get Regional standard setting

Command: A5 5A 00 08 2E 26 0D 0A

3.2.24. Get Regional standard setting response

Header: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x2F

Data: 2 bytes

Check code: 0xxx

End: 0x0d 0x0a

Function: Get response for the equipment Regional standard setting

Sheet 37. Get Regional standard setting response frame

Header		Length		Command	Data		Check code
0xA5	0x5A	0x00	0x0A	0x2f	Ok: 0x01 fail: 0x00	DByte0	0xxx
End							
0x0D	0x0A						

Remark: Data bit definition is shown below:

China1	0x01
China2	0x02
Europe	0x04
USA	0x08
Korea	0x16
Japan	0x32

Example: Current area is set to China2

Command: A5 5A 00 0A 01 2F 02 26 0D 0A

3.2.25. Get port return loss (SWR)

Header: 0xA5 0x5A

Length: 0x00 0x08

Command: 0x32

Data: No

Check code: 0x3A

End: 0x0d 0x0a

Function: Get current equipment reflected power

HYR820,HYM360 do not support the command.

Sheet 38. Get current equipment reflected power command frame

Header		Length		Command	Data	Check code	End
0xA5	0x5A	0x00	0x08	0x32	No	0x3A	0x0D
End							
0x0A							

Remark: No

Example: Get equipment reflected power

Command: A5 5A 00 08 32 3A 0D 0A

3.2.26. Get port return loss (SWR) response

Header: 0xA5 0x5A

Length: 0x00 0x0B

Command: 0x33

Data: Flag 0x01: OK, 0x00: fail. Reflected power takes 2 bytes, the unit is dBm

Check code: 0xxx

End: 0x0d 0x0a

Function: Get equipment return loss response.

HYR820,HYM360 do not support the command.

Sheet 39. Get currently equipment return loss response frame

Header		Length		Command	Data		
0xA5	0x5A	0x00	0x0B	0x33	Ok: 0x01 fail: 0x00	Return loss (MSB)	Return loss (LSB)
Check code	End						
0xxx	0x0D	0x0A					

Remark: Make the receiving sensitivity times 100, then turned into hexadecimal, if the value is negative, use complement code.

Example: Obtain successfully, equipment port return loss is -10dB

Command: A5 5A 00 0B 33 0x01 FC 18 F1 0D 0A

3.2.27. Get current equipment temperature

Header: 0xA5 0x5A

Length: 0x00 0x08

Command: 0x34

Data: No

Check code: 0x3C

End: 0x0d 0x0a

Function: Get current equipment temperature, the maximum error between this temperature and the real temperature is $\pm 6^{\circ}\text{C}$ 。

HYR820,HYM360 do not support the command.

Sheet 40. Get equipment current temperature

Header		Length		Command	Data	Check code	End
0xA5	0x5A	0x00	0x08	0x34	No	0x3C	0x0D
End							
0x0A							

Remark: No

Example: Get equipment current temperature

Command: A5 5A 00 08 34 3C 0D 0A

3.2.28. Get current equipment temperature response

Header: 0xA5 0x5A

Length: 0x00 0x0B

Command: 0x35

Data: flag 0x01: OK, 0x00: fail. The temperature times 100 will take 2 bytes, unit: $^{\circ}\text{C}$

Check code: 0xxx

End: 0x0d 0x0a

Function: Get equipment current temperature response

HYR820,HYM360 do not support the command.

Sheet 41. Get equipment current temperature response frame

Header		Length		Command	Data		
0xA5	0x5A	0x00	0x0B	0x35	Ok: 0x01 fail: 0x00	Tem. (MSB)	Tem. (LSB)

Check code	End	
0xxx	0x0D	0x0A

Remark: The temperature times 100 then turned into hexadecimal, if the value is negative, use complement code.

Example: Obtain successfully, the equipment temperature is -40°C

Command: A5 5A 00 0B 35 01 F0 60 AF 0D 0A

3.2.29. Set temperature protection

Header: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x38

Data: 1 byte, Data0, 0x00—No temperature protection, 0x01—with temperature protection

Check code: 0xxx

End: 0x0d 0x0a

Function: Set temperature protection choices

HYR820, HYM360 do not support the command.

Sheet 42 Set temperature protection

Header		Length		Command	Data	Check code	End
0xA5	0x5A	0x00	0x09	0x38	Data0	0xXX	0x0D
End							
0x0A							

Remark: Temperature protection is that when the module tests the temperature is over 60°C, it will speed down the inventory frequency automatically; when the temperature is over 85°C, it will stop automatically and report abnormal temperature error.

Example: Temperature protection setting

Command: A5 5A 00 09 38 01 30 0D 0A

3.2.30. Set temperature protection response

Header: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x39

Data: Flag 0x01: OK, 0x00: fail.

Check code: 0xxx

End: 0x0d 0x0a

Function: Set temperature protection response

HYR820,HYM360 do not support the command.

Sheet 41. Set temperature protection response frame

Header		Length		Command	Data	Check code	End
0xA5	0x5A	0x00	0x09	0x39	Ok: 0x01 fail: 0x00	0xxx	0x0D
End							
0x0A							

Remark: No

Example: Setting is successful

Command: A5 5A 00 09 39 01 31 0D 0A

3.2.31. Get temperature protection setting

Header: 0xA5 0x5A

Length: 0x00 0x08

Command: 0x3A

Data: No

Check code: 0x32

End: 0x0d 0x0a

Function: Get temperature protection setting.

HYR820,HYM360 do not support the command.

Sheet 44. Get temperature protection setting

Header		Length		Command	Data	Check code	End
0xA5	0x5A	0x00	0x08	0x3A	No	0x32	0x0D
End							
0x0A							

Remark: Temperature protection is that when the module tests the temperature is over 60℃, it will speed down the inventory frequency automatically; when the temperature is over 85℃, it will stop automatically and report abnormal temperature error.

Example: Get temperature protection setting

Command: A5 5A 00 08 3A 32 0D 0A

3.2.32. Get temperature protection setting response

Header: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x3B

Data: Flag 0x01: OK, 0x00: fail.

Check code: 0xxx

End: 0x0d 0x0a

Function: Get temperature protection setting response

HYR820,HYM360 do not support the command.

Sheet 45. Get temperature protection setting response frame

Header		Length		Command	Data		Check code
0xA5	0x5A	0x00	0x0A	0x3B	Ok: 0x01 fail: 0x00	Data0	0xxx
End							
0x0D	0x0A						

Remark: Data0, 0x00—No temperature protection; 0x01—With temperature protection

Example: Getting successfully, the current status is on temperature protection

Command: A5 5A 00 0A 3B 01 01 31 0D 0A

3.2.33. Set continue inventory time and delay time

Header: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x3C

Data: 5 bytes, unit: ms

Check code: 0xxx

End: 0x0d 0x0a

Function: Set continue inventory time and delay time

HYR820,HYM360, HYR830, HYM750 do not support the command.

Sheet 46. Set continue inventory time

Header		Length		Command	Data		
0xA5	0x5A	0x00	0x0D	0x3C	DByte4	DByte3	DByte2
Data		Check code	End				
DByte1	DByte0	0xXX	0x0D	0x0A			

Remark: set the continue inventory time and delay time function, which is convenience for users to arrange the working time and delay time for the reader. To make sure the rest time for the reader as much as possible and satisfy for users in the meaning time. Continue inventory and delay time, Min value is 0, max is 65535ms (0xFFFF). Dbyte4 are the power-down saved sign, 0 is negative, 1 is positive. Dbyte3,

Dbyte2 are the working time, MSB first. Dbyte1, Dbyte0 are delay time, MSB first.

Example: *Continue working time 50ms, delay time is 100ms, power-down saved function is activated.*

Command: A5 5A 00 0D 3C 01 00 32 00 64 66 0D 0A

3.2.34. Set continue inventory time and delay time response

Header: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x3D

Data: Flag 0x01: OK, 0x00: fail.

Check code: 0xxx

End: 0x0d 0x0a

Function: Set continuous inventory time and delay time response

HYR820, HYM360, HYR830, HYM750 do not support the command.

Sheet 47. Set continue inventory time and delay time response frame

Header		Length		Command	Data	Check code	End
0xA5	0x5A	0x00	0x09	0x3D	Ok: 0x01 fail: 0x00	0xxx	0x0D
End							
0x0A							

Remark: No

Example: *Setting is successful*

Command: A5 5A 00 09 3D 01 35 0D 0A

3.2.35. Get continuous inventory time and delay time setting

Header: 0xA5 0x5A

Length: 0x00 0x08

Command: 0x3E

Data: No

Check code: 0x36

End: 0x0d 0x0a

Function: Get continuous inventory time and delay time setting

HYR820, HYM360, HYR830, HYM750 do not support the command.

Sheet 48. Get continuous inventory time and delay time setting

Header	Length	Command	Data	Check	End
--------	--------	---------	------	-------	-----

				d		code	
0xA5	0x5A	0x00	0x08	0x3E	No	0x36	0x0D
End							
0x0A							

Remark: No。

Example: Get continuous inventory time setting

Command: A5 5A 00 08 3E 36 0D 0A

3.2.36. Get continuous inventory time and delay time setting response

Header: 0xA5 0x5A

Length: 0x00 0x0B

Command: 0x3F

Data: Flag 0x01: OK, 0x00: fail.

Check code: 0xxx

End: 0x0d 0x0a

Function: Get continuous inventory time and delay time setting response

HYR820,HYM360 do not support the command.

Sheet 49. Get continuous inventory time and delay time setting response frame

Header		Length		Command	Data		
0xA5	0x5A	0x00	0x0B	0x3F	Ok: 0x01 fail: 0x00	DByte3	DByte2
Data		Check code	End				
DByte1	DByte0	0xxx	0x0D	0x0A			

Remark: DByte3、DByte2 are working time, DByte1、DByte0 are delay time, unit is ms, MSB first, max is 65535ms

Example: getting succeed, the working time is 50ms, delay time is 100ms

command: A5 5A 00 0D 3F 01 00 32 00 64 65 0D 0A

3.2.37. Get error flag

Header: 0xA5 0x5A

Length: 0x00 0x08

Command: 0x40

Data: None

Check code: 0x48

End: 0x0d 0x0a

Function: Get the error flag

HYR820,HYM360 do not support the command.

Sheet 50. Get the error flag

Header		Length		Command	Data
0xA5	0x5A	0x00	0x0A	0x40	None
Check code	End				
0x48	0x0D	0x0A			

Remark: None

Example: Get the error flag

Command: A5 5A 00 08 40 48 0D 0A

3.2.38. Get error flag response

Header: 0xA5 0x5A

Length: 0x00 0x0B

Command: 0x41

Data: Get successful or not, 0x01 successful ; 0x00 failed.

Check code: 0xxx

End: 0x0d 0x0a

Function: Get the error flag response

HYR820,HYM360 do not support the command.

Sheet 51. Get the error flag response

Header		Length		Command	Data		
0xA5	0x5A	0x00	0x0B	0x41	Ok: 0x01 fail: 0x00	Err Flag (MSB)	Err Flag (LSB)
Check code	End						
0xxx	0x0D	0x0A					

Example: Get successful and the error flag is 0x0402

Command: A5 5A 00 0B 41 01 04 02 4D 0D 0A

3.2.39. Clear error flag

Header: 0xA5 0x5A

Length: 0x00 0x08

Command: 0x42

Data: None

Check code: 0x4A

End: 0x0d 0x0a

Function: Clear the error flag

HYR820,HYM360 do not support the command.

Sheet 52 Clear the error flag

Header		Length		Command	Data
0xA5	0x5A	0x00	0x0A	0x42	None
Check code	End				
0x4A	0x0D	0x0A			

Remark: None

Example: Clear the error flag

Command: A5 5A 00 08 42 4A 0D 0A

3.2.40. Clear error flag response

Header: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x43

Data: Get successful or not, 0x01 successful ; 0x00 failed.

Check code: 0xxx

End: 0x0d 0x0a

Function: Clear the error flag response

HYR820,HYM360 do not support the command.

Sheet 53. Clear the error flag response

Header		Length		Command	Data
0xA5	0x5A	0x00	0x09	0x43	Ok: 0x01 fail: 0x00
Check code	End				
0xxx	0x0D	0x0A			

Example: Clear successful

Command: A5 5A 00 09 43 01 4B 0D 0A

3.2.41. Set GPIO

Header: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x46

Data: 2 bytes.

Check code: 0xxx

End: 0x0d 0x0a

Function: Set the GPIO

Sheet 54. Set GPIO

Header		Length		Command	Data	
0xA5	0x5A	0x00	0x0B	0x46	DByte1	DByte0
Check	End					

code		
0xxx	0x0D	0x0A

Remark: DByte explain as blow

Sheet 55. Set GPIO of DByte

DByte1							
GPIO8	GPIO7	GPIO6	GPIO5	GPIO4	GPIO3	GPIO2	GPIO1
DByte0							
H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L

Remark: output setting of the GPIO, H/L is 1, indicate GPIO output is high; H/L is 0, indicate GPIO output is low. Max equipped 8 pcs GPIO for GPIO output. For reader-module series, only three GPIO from GPIO1~GPIO3, for HYR830, there are 4 GPIO output and 4GPIO input, and GPIO1~GPIO4 are output, GPIO5~GPIO8 are input. HYR820,HYM360 only have 2 output IO ports (GPIO1 and GPIO2).

Example: GPIO1 is High and GPIO3 is low

Command: A5 5A 00 0A 46 05 01 4A 0D 0A

3.2.42. Set GPIO response

Header: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x47

Data: Get successful or not, 0x01 successful ; 0x00 failed.

Check code: 0xxx

End: 0x0d 0x0a

Function: Set GPIO response

Sheet 56. Set GPIO response

Header		Length		Command	Data
0xA5	0x5A	0x00	0x09	0x47	Ok: 0x01 fail: 0x00
Check code	End				
0xxx	0x0D	0x0A			

Example: Clear successful

Command: A5 5A 00 09 47 01 4E 0D 0A

3.2.43. Get GPIO

Header: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x48

Data: 2 Bytes.

Check code: 0xxx

End: 0x0d 0x0a

Function: Get GPIO

Sheet 57. Get GPIO

Header		Length		Command	Data	
0xA5	0x5A	0x00	0x0A	0x48	DByte0	Rev
Check code	End					
0xxx	0x0D	0x0A				

Remark: DByte explain as blow

Sheet 58. Get GPIO of DByte

DByte0							
GPIO8	GPIO7	GPIO6	GPIO5	GPIO4	GPIO3	GPIO2	GPIO1

DByte0 means the different GPIO; and the Rev means reserve

Example: Get GPIO3 state

Command: A5 5A 00 0A 48 04 00 46 0D 0A

3.2.44. Get GPIO response

Header: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x49

Data: 3 bytes.

Check code: 0xxx

End: 0x0d 0x0a

Function: Get the GPIO of module response

Sheet 59. Get GPIO response

Header		Length		Command	Data		
0xA5	0x5A	0x00	0x0B	0x46	Ok:0x01 Fail:0x00	DByte1	DByte0
Check code	End						
0xxx	0x0D	0x0A					

Remark: DByte explain as blow

Sheet 60. Definition of GPIO's DByte

DByte1							
GPIO8	GPIO7	GPIO6	GPIO5	GPIO4	GPIO3	GPIO2	GPIO1
DByte0							
H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L

Data is the sign of the GPIO current status, H/L is 1, indicate GPIO output is HIGH, H/L is 0, GPIO output is low, Max can get 8 GPIIP current status.

Example: GPIO2 and GPIO3 are High and GPIO1 is low, the command is to get the state of GPIO3 and GPIO1 , then get successful

Command: A5 5A 00 0B 49 01 05 04 43 0D 0A

3.2.45. Set working time of antenna

Header: 0xA5 0x5A

Length: 0x00 0x0B

Command: 0x4A

Data: 3 Bytes

Check code: 0xxx

End: 0x0d 0x0a

Function: Set working time of antenna

HYR820,HYM360 do not support the command.

Sheet 61. Set working time of antenna

Header		Length		Command	Data		
0xA5	0x5A	0x00	0x0B	0x4A	DByte2.	DByte1	DByte0
Check code	End						
0xxx	0x0D	0x0A					

Remark: The low 4bit(bit0~bit3) of DByte2 indicate antenna No., range is 1~16. The bit4 of DByte2 indicate whether power-down saved or not, 0 is no, 1 is yes. DByte1 and DByte0 is working time, total 16 bit, unit is ms, range is 10ms~65535ms. (Single antenna port reader-module only can set No.1 antenna, only multi-antenna ports reader-module support all antennas setting.

Example: Set the working time of Antenna3 is 300ms, and power-down saved is activated.

Command: A5 5A 00 0B 4A 13 01 2C 7F 0D 0A

3.2.46. Set working time of antenna response

Header: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x4B

Data: Set successful or not, 0x01 successful ; 0x00 failed.

Check code: 0xxx

End: 0x0d 0x0a

Function: Set working time of antenna response

HYR820,HYM360 do not support the command.

Sheet 62. Set working time of antenna response

Header		Length		Command	Data
0xA5	0x5A	0x00	0x09	0x4B	Ok: 0x01 fail: 0x00
Check code	End				
0xxx	0x0D	0x0A			

Example: Set successful

Command: A5 5A 00 09 4B 01 43 0D 0A

3.2.47. Get working time of antenna

Header: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x4C

Data: 2 Bytes.

Check code: 0xxx

End: 0x0d 0x0a

Function: Get working time of antenna

HYR820,HYM360 do not support the command.

Sheet 63. Get working time of antenna

Header		Length		Command	Data	
0xA5	0x5A	0x00	0x0A	0x4C	Ant Num.	Rev
Check code	End					
0xxx	0x0D	0x0A				

Remark: Ant Num indicate antenna No..

Example: Get antenna 1's working time

Command: A5 5A 00 0A 4C 01 00 47 0D 0A

3.2.48. Get working time of antenna response

Header: 0xA5 0x5A

Length: 0x00 0x0C

Command: 0x4D

Data: 4 Bytes.

Check code: 0xxx

End: 0x0d 0x0a

Function: Get working time of antenna response

HYR820,HYM360 do not support the command.

Sheet 64. Get working time of antenna response

Header		Length		Command	Data			
0xA5	0x5A	0x00	0x0C	0x4D	Ok:0x01F ail:0x00	Ant Num.	DByte1	DByte0
Check code	End							
0xxx	0x0D	0x0A						

Remark: Ant Num indicate antenna No., DByte1 and DByte0 indicate working time, and single antenna reader-module only can get antenna No.1, multi-antenna reader-module can get all antennas.

Example: Get antenna 2's working time successful and the time is 400ms

Command: A5 5A 00 0C 4D 01 02 01 90 D3 0D 0A

3.2.49. Set idle time of switch antenna

Header: 0xA5 0x5A

Length: 0x00 0x0B

Command: 0x4E

Data: 3 Bytes.

Check code: 0xxx

End: 0x0d 0x0a

Function: Set the idle time between two antenna working time

HYR820,HYM360 do not support the command.

Sheet 65. Set idle time of switch antenna

Header		Length		Command	Data		
0xA5	0x5A	0x00	0x0B	0x4E	DByte2	DByte1	DByte0
Check code	End						

0xxx	0x0D	0x0A
------	------	------

Remark: DByte2 meaning the setting whether power-down saved or no, 0 is negative, 1 is positive. DByte1 and DByte0 is idle time of switch antenna, total 16bit, unit is ms, range is 0~65535ms. (not including single antenna reader-module)

Example: idle time is 300ms, power-down saved is activated

命令: A5 5A 00 0B 4E 01 01 2C 69 0D 0A

3.2.50. Set idle time of switch antenna response

Header: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x4F

Data: Set successful or not, 0x01 successful ; 0x00 failed.

Check code: 0xxx

End: 0x0d 0x0a

Function: Set the idle time between two antenna working time response

HYR820,HYM360 do not support the command.

Sheet 66. Set idle time of switch antenna response

Header		Length		Command	Data
0xA5	0x5A	0x00	0x0B	0x4F	OK: 0x01; Failed 0x00
Check code	End				
0xxx	0x0D	0x0A			

Example: Set successful

Command: A5 5A 00 09 4F 01 47 0D 0A

3.2.51. Get idle time of switch antenna

Header: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x50

Data: 2 Bytes.

Check code: 0xxx

End: 0x0d 0x0a

Function: Get the idle time between two antenna working time

HYR820,HYM360 do not support the command.

Sheet 67. Get idle time of switch antenna

Header		Length		Command	Data	
0xA5	0x5A	0x00	0x0A	0x50	Rev	Rev
Check	End					

code		
0xxx	0x0D	0x0A

Example: Get the idle time

Command: A5 5A 00 0A 50 00 00 5A 0D 0A

3.2.52. Get idle time of switch antenna response

Header: 0xA5 0x5A

Length: 0x00 0x0B

Command: 0x51

Data: 3 Bytes.

Check code: 0xxx

End: 0x0d 0x0a

Function: Get the idle time between two antenna working time response

HYR820,HYM360 do not support the command.

Sheet 68. Get idle time of switch antenna response

Header		Length		Command	Data		
0xA5	0x5A	0x00	0x0B	0x51	Ok: 0x01 fail: 0x00	DByte1	DByte0
Check code	End						
0xxx	0x0D	0x0A					

Remark: DByte1 and DByte0 meaning is the idle time of the working. Not including single antenna reader module.

Example: The idle time is 400ms

Command: A5 5A 00 0B 51 01 01 90 CA 0D 0A

3.2.53. Set recommend RF links

Header: 0xA5 0x5A

Length: 0x00 0x0B

Command: 0x52

Data: 3 Bytes.

Check code: 0xxx

End: 0x0d 0x0a

Function: Set recommend RF links

HYR820,HYM360 do not support the command.

Sheet 69. Set recommend RF links

Header		Length		Command	Data		
0xA5	0x5A	0x00	0x0B	0x52	Rev	DByte1	DByte0

Check code	End	
0xxx	0x0D	0x0A

Remark: The RF links will be save whatever power down or restart if the bit of DByte1 equal to 1, unless the RF links will refresh to default value. The DByte0 express that below

DByte0	RF Links
0x00	DSB_ASK /FM0/ 40 KHz
0x01	PR _ASK /Miller4/ 250KHz
0x02	PR _ASK /Miller4/ 300KHz
0x03	DSB_ASK /FM0/ 400KHz
0xxx	Illegal

Example: Set the recommend RF links to be DSB_ASK /FM0/ 40 KHz, non-permanent save

Command: A5 5A 00 0B 52 00 00 00 59 0D 0A

3.2.54. Set recommend RF links response

Header: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x53

Data: Set successful or not, 0x01 successful ; 0x00 failed.

Check code: 0xxx

End: 0x0d 0x0a

Function: Set recommend RF links response

HYR820,HYM360 do not support the command.

Sheet 70. Set recommend RF links response

Header		Length		Command	Data
0xA5	0x5A	0x00	0x09	0x53	Ok: 0x01 Fail: 0x00
Check code	End				
0xxx	0x0D	0x0A			

Example: Set successful

Command: A5 5A 00 09 53 01 5B 0D 0A

3.2.55. Get recommend RF links

Header: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x54

Data: 2 Bytes.

Check code: 0xxx

End: 0x0d 0x0a

Function: Get recommend RF links

HYR820,HYM360 do not support the command.

Sheet 71. Get recommend RF links

Header		Length		Command	Data	
0xA5	0x5A	0x00	0x0A	0x54	Rev	Rev
Check code	End					
0xxx	0x0D	0x0A				

Example: Get the recommend RF links

Command: A5 5A 00 0A 54 00 00 5E 0D 0A

3.2.56. Get recommend RF links response

Header: 0xA5 0x5A

Length: 0x00 0x0B

Command: 0x55

Data: 3 Bytes.

Check code: 0xxx

End: 0x0d 0x0a

Function: Get recommend RF links response

HYR820,HYM360 do not support the command.

Sheet 72. Get recommend RF links response

Header		Length		Command	Data		
0xA5	0x5A	0x00	0x0B	0x55	Ok: 0x01 Fail: 0x00	Rev	DByte0
Check code	End						
0xxx	0x0D	0x0A					

Remarks: The DByte0 express that below

DByte0	RF Links
0x00	DSB_ASK /FM0/ 40 KHz
0x01	PR _ASK /Miller4/ 250KHz
0x02	PR _ASK /Miller4/ 300KHz
0x03	DSB_ASK /FM0/ 400KHz
0xxx	Illegal

Example: Get the recommend RF links response which is DSB_ASK /FM0/ 400 KHz

Command: A5 5A 00 0B 55 01 00 03 58 0D 0A

3.2.57 Buzzer Setting

Head: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x56

Data: Two Bytes

Check code: 0xxx

End: 0x0d 0x0a

Function: Buzzer ringing once setting

The command only support HYR830.

Sheet 73 Buzzer Setting

Head		Length		Command	Data		Check Code
0xA5	0x5A	0x00	0x0A	0x56	Rev	Rev	0xxx
End							
0x0D	0x0A						

Remark: None.

Example: Set the buzzer to ringing one time

Command: A5 5A 00 0A 56 00 00 5C 0D 0A

3.2.58 Buzzer Ringing Response Setting

Head: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x57

Data: a byte

Check Code: 0xxx

End: 0x0d 0x0a

Function: The response setting for Buzzer ringing

The command only support HYR830.

Sheet 74 Buzzer Ringing Response Setting

Head		Length		Command	Data	Check Code	End
0xA5	0x5A	0x00	0x09	0x57	Ok: 0x01 fail: 0x00	0xxx	0x0D
End							
0x0A							

Example: Setting succeeded

Command: A5 5A 00 09 57 01 5F 0D 0A

3.2.59 Parameter setting of Ethernet interface

Head: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x58

Data: 18 bytes

Check Code: 0xxx

End: 0x0d 0x0a

Function: Parameters setting of Ethernet interface, only for the reader-module and reader which have that interface.

The command only support the HYR830 with Ethernet port.

Sheet 75 Parameters Setting of Ethernet Interface

Head		Length		Command	Data		
0xA5	0x5A	0x00	0x1A	0x58	Destination IP	Destination IP	Destination IP
					0xxx	0xxx	0xxx
Destination IP	Destination port	Destination port	Local IP	Local IP	Local IP	Local IP	Local port
0xxx	0xxx	0xxx	0xxx	0xxx	0xxx	0xxx	0xxx
Local port	Local gateway	Local gateway	Local gateway	Local gateway	Working Mode	Rev	Check Code
0xxx	0xxx	0xxx	0xxx	0xxx	0xxx	Rev	0xxx
End							
0x0D	0x0A						

- Destination IP: The IP for connected destination which indicates with hexadecimal system, and lower order in front, based on the working mode for the reader is “Client”, if it is “Server”, negative.
- Destination Port: The Port for connected destination which indicates with hexadecimal system, and lower order in front, based on the working mode for the reader is “Client”, if it is “Server”, negative.。
- Local IP: The IP for reader which indicates with hexadecimal system, and lower order in front.
- Local port: The port for reader which indicates with hexadecimal system, and lower order in front.
- Local Gateway: The Gateway for reader which indicates with hexadecimal system, and lower order in front.
- Working Mode: 0—UDP mode; 1—TCP Client mode; 2—UDP Server mode; 3—Tcp Server mode (default)

Example: Set the destination IP is 192.168.1.1, Destination Port 8234, Local IP 192.168.1.10, Local Port 20108, Local Gateway 192.168.1.201, Working mode Tcp Server.

Command: A5 5A 00 1A 58 01 01 A8 C0 2A 20 0A 01 A8 C0 8C 4E C9 01 A8 C0 03 00 22 0D 0A

3.2.60 Parameter response setting of Ethernet interface

Head: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x59

Data: 1 byte

Check code: 0xxx

End: 0x0d 0x0a

Function: Parameter response setting of Ethernet interface, only for the reader-module and reader which have that interface.

The command only support the HYR830 with Ethernet port.

Sheet 76 Parameter response setting of Ethernet interface

Head		Length		Command	Data	Check Code	End
0xA5	0x5A	0x00	0x09	0x59	Ok: 0x01 fail: 0x00	0xxx	0x0D
End							
0x0A							

Example: Setting succeeded

Command: A5 5A 00 09 59 01 51 0D 0A

3.2.61 Parameter setting of Wifi

Head: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x5A

Data: N bytes

Check code: 0xxx

End: 0x0d 0x0a

Function: Parameter setting of Wifi. Only support the HYR830 reader which have Wifi Function

Sheet 77 Parameter setting of Wifi

Head		Length		Command	Data		Check Code
0xA5	0x5A	0x00	0x0A	0x56	Rev	Rev	0xxx

End	
0x0D	0x0A

Remark: This function under construction.

Example: Parameter setting of Wifi

Command:

3.2.62 Parameter setting response of Wifi

Head: 0xA5 0x5A

Length: 0x00 0x0B

Command: 0x5B

Data: 1 byte

Check code: 0xxx

End: 0x0d 0x0a

Function: Parameter setting response of Wifi. Only support the HYR830 reader which have Wifi Function

Sheet 78 Parameter setting response of Wifi

Head		Length		Command	Data	Check Code
0xA5	0x5A	0x00	0x0B	0x5B	Ok: 0x01 fail: 0x00	0xxx
End						
0x0D	0x0A					

Example: setting succeed

Command: A5 5A 00 09 5B 01 53 0D 0A

3.2.63 FastID function setting

Head: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x5C

Data: 2 bytes

Check code: 0xxx

End: 0x0d 0x0a

Function: Open and Close FastID Function

HYR820,HYM360 do not support the command.

Sheet 79 Fast ID Function Setting

Head	Length	Command	Data	Check
------	--------	---------	------	-------

							Code
0xA5	0x5A	0x00	0x0A	0x5C	ON: 1 OFF: 0	Rev	0xxx
End							
0x0D	0x0A						

Remark: Open: 0x01, Close: 0x00。

Example: Open FastID function

Command: A5 5A 00 0A 5C 01 00 57 0D 0A

3.2.64 FastID function response setting

Head: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x5D

Data: one byte

Check Code: 0xxx

End: 0x0d 0x0a

Function: Set FastID function response

HYR820,HYM360 do not support the command.

Sheet 80 Set FastID function response

Head		Length		Command	Data	Check Code	End
0xA5	0x5A	0x00	0x09	0x5D	Ok: 0x01 fail: 0x00	0xxx	0x0D
End							
0x0A							

Example: Setting Succeeded

Command: A5 5A 00 09 5D 01 55 0D 0A

3.2.65 Get FastID functional status

Head: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x5E

Data: two bytes

Check Code: 0xxx

End: 0x0d 0x0a

Function: Get FastID functional Status, whether it is open or not

HYR820,HYM360 do not support the command.

Sheet 81 Get FastID functional Status

Head		Length		Command	Data		Check Code
0xA5	0x5A	0x00	0x0A	0x5E	Rev	Rev	0xxx
End							
0x0D	0x0A						

Remark: None

Example: Get FastID functional Status

Command: A5 5A 00 0A 5E 00 00 54 0D 0A

3.2.66 Get FastID functional Status Response

Head: 0xA5 0x5A

Length: 0x00 0x0B

Command: 0x5F

Data: 2 bytes

Check code: 0xxx

End: 0x0d 0x0a

Function: Get FastID functional Status response

HYR820,HYM360 do not support the command.

Sheet 82 get FastID functional status response

Head		Length		Command	Data		Check Code
0xA5	0x5A	0x00	0x0A	0x5F	OK: 1 Fail: 0	ON: 1 OFF: 0	0xxx
End							
0x0D	0x0A						

Example: Getting Succeeded, The FastID is opening.

Command: A5 5A 00 0A 5F 01 01 55 0D 0A

3.2.67 Tagfocus function setting

Head: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x60

Data: 2 bytes

Check Code: 0xxx

End: 0x0d 0x0a

Function: Open or Close the Tagfocus function.

HYR820,HYM360 do not support the command.

Sheet 83 Set the Tagfocus

Head		Length		Command	Data		Check Code
0xA5	0x5A	0x00	0x0A	0x60	ON: 1 OFF: 0	Rev	0xxx
End							
0x0D	0x0A						

Remark: Open: 0x01, Close: 0x00。

Example: Open TagFocus Function

Command: A5 5A 00 0A 60 01 00 6B 0D 0A

3.2.68 Tagfocus function response setting

Head: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x61

Data: 1 byte

Check code: 0xxx

End: 0x0d 0x0a

Function: Set Tagfocus function response

HYR820,HYM360 do not support the command.

Sheet 84 Set Tagfocus function response

Head		Length		Command	Data	Check Code	End
0xA5	0x5A	0x00	0x09	0x61	Ok: 0x01 fail: 0x00	0xxx	0x0D
End							
0x0A							

Example: setting succeeded

Command: A5 5A 00 09 61 01 69 0D 0A

3.2.69 Get Tagfocus functional status

Head: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x62

Data: 2 bytes

Check code: 0xxx

End: 0x0d 0x0a

Function: Get the tagfocus of the reader, whether it is open or closed.

HYR820,HYM360 do not support the command.

Sheet 85 Get Tagfocus Functional Status

Head		Length		Command	Data		Check Code
0xA5	0x5A	0x00	0x0A	0x62	Rev	Rev	0xxx
End							
0x0D	0x0A						

Remark: None

Example: Get Tagfoucs functional status

Command: A5 5A 00 0A 62 00 00 68 0D 0A

3.2.70 Get Tagfocus functional status response

Head: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x63

Data: 2 bytes

Check code: 0xxx

End: 0x0d 0x0a

Function: Get Tagfocus functional status response

HYR820,HYM360 do not support the command.

Sheet 86 Get tagfocus functional status response

Head		Length		Command	Data		Check code
0xA5	0x5A	0x00	0x0A	0x63	OK: 1 Fail: 0	ON: 1 OFF: 0	0xxx
End							
0x0D	0x0A						

Example: Getting succeeded, the tagfocus function is open.

Command: A5 5A 00 0A 63 01 01 69 0D 0A

3.2.71 Get environment RSSI value

Head: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x64

Data: 0 byte

Check Code: 0x6C

End: 0x0d 0x0a

Function: Get the environment RSSI value of the reader

HYR820,HYM360 do not support the command.

Sheet 87 Get environment RSSI

Head		Length		Command	Data	Check Code	End
0xA5	0x5A	0x00	0x08	0x64	None	0x6C	0x0D
End							
0x0A							

Remark: None

Example: Get RSSI

Command: A5 5A 00 08 64 6C 0D 0A

3.2.72 Get environment RSSI value response

Head: 0xA5 0x5A

Length: 0x00 0x0B

Command: 0x65

Data: 3 bytes

Check code: 0xxx

End: 0x0d 0x0a

Function: get environment RSSI Value response

HYR820,HYM360 do not support the command.

Sheet 88 Get environment RSSI Value response

Head		Length		Command	Data		
0xA5	0x5A	0x00	0x0B	0x65	OK: 1 Fail: 0	Data1	Data0
Check Code	End						
0xxx	0x0D	0x0A					

Remark: RSSI defines with complement, total 16bit, equal actual value×10, for example -65.7dBm, RSSI=FD6F.

Example: Getting Succeeded, The RSSI is -65.7dBm.

Command: A5 5A 00 0B 65 01 FD 6F FD 0D 0A

3.2.73 Baud rate setting of reader module

Head: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x66

Data: 1 byte

Check code: 0xXX

End: 0x0d 0x0a

Function: Baud rate setting of reader-module

HYR820,HYM360 do not support the command.

Sheet 89 Baud rate setting of reader-module

Head		Length		Command	Data
0xA5	0x5A	0x00	0x09	0x66	Dbyte0
Check Code	End				
0xXX	0x0D	0x0A			

Remark : Dbyte0: =0x00 indicate baud rate setting is 9600

=0x01 indicate baud rate setting is 19200

=0x02 indicate baud rate setting is 38400

=0x03 indicate baud rate setting is 57600

=0x04 indicate baud rate setting is 115200

=0x05 indicate baud rate setting is 230400

=0x06 indicate baud rate setting is 460800

=0x07 indicate baud rate setting is 921600

Others are invalid values

Example: Set the baud rate is 19200

Command: A5 5A 00 09 66 01 6E 0D 0A

3.2.74 Baud rate setting response of reader module

Head: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x67

Data: 1 byte

Check code: 0xxx

End: 0x0d 0x0a

Function: Baud rate setting response of reader-module

HYR820,HYM360 do not support the command.

Sheet 90 Baud rate setting response of reader-module

Head		Length		Command	Data
0xA5	0x5A	0x00	0x09	0x67	Ok: 1

					fail: 0
Check Code	End				
0xxx	0x0D	0x0A			

Remark : After setting succeed, must restart the reader module to enable the new setting.

Example: Baud rate setting succeed

Command: A5 5A 00 09 67 01 6F 0D 0A

3.2.75 Software reset

Head: 0xA5 0x5A

Length: 0x00 0x08

Command: 0x68

Data: 0 bytes

Check code: 0xXX

End: 0x0d 0x0a

Function: Software reset

HYR820,HYM360 do not support the command.

Sheet 91 software reset

Head		Length		Command	Data
0xA5	0x5A	0x00	0x08	0x68	None
Check Code	End				
0x60	0x0D	0x0A			

Remark : Send software reset command can reset the reader

Example: Send software reset command

Command: A5 5A 00 08 68 01 60 0D 0A

3.2.76 Software reset response

Head: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x69

Data: 1 byte

Check code: 0xxx

End: 0x0d 0x0a

Function: Software reset response

HYR820,HYM360 do not support the command.

Sheet 92 software reset response

Head		Length		Command	Data
0xA5	0x5A	0x00	0x09	0x69	Ok: 1 fail: 0
Check Code	End				
0xxx	0x0D	0x0A			

Remark: None

Example: Reset succeed

Command: A5 5A 00 09 69 01 61 0D 0A

3.2.77 Dual and single mode setting

Head: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x6A

Data: 2 bytes

Check code: 0xXX

End: 0x0d 0x0a

Function: set the reader in the Dual mode or Single mode, default mode is Dual.

HYR820,HYM360 do not support the command.

Sheet 93 Dual and Single mode setting

Head		Length		Command	Data	
0xA5	0x5A	0x00	0x0A	0x6A	Dybyte1	Dybyte0
Check Code	End					
0xxx	0x0D	0x0A				

Remark: Dybyte1 indicate the setting whether save power-off or not, 0x01 is positive, 0x00 is negative. When DByte0 is 0x00, meaning Dual mode, 0x01 meaning single mode. And the performance for the single mode is better than Dual when multi-tags.

Example: Set single mode, and save power-off.

Command: A5 5A 00 0A 6A 01 01 60 0D 0A

3.2.78 Dual and single mode setting response

Head: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x6B

Data: 1 byte

Check code: 0xxx

End: 0x0d 0x0a

Function: Dual and single mode setting response.

HYR820,HYM360 do not support the command.

Sheet 94 Dual and single mode setting response

Head		Length		Command	Data
0xA5	0x5A	0x00	0x09	0x6B	OK: 1 Fail: 0
Check Code	End				
0xxx	0x0D	0x0A			

Remark: None

Example: setting succeed

Command: A5 5A 00 09 6B 01 63 0D 0A

3.2.79 Get Dual and single mode

Head: 0xA5 0x5A

Length: 0x00 0x08

Command: 0x6C

Data: 0 byte

Check code: 0xXX

End: 0x0d 0x0a

Function: Get the reader working in Dual mode or Single mode

HYR820,HYM360 do not support the command.

Sheet 95 Get Dual and Single mode

Head		Length		Command	Data
0xA5	0x5A	0x00	0x08	0x6C	
Check Code	End				
0x60	0x0D	0x0A			

Remark: Get the reader working in Dual mode or Single mode

Example: send the command of get the reader working in Dual mode or Single mode

Command: A5 5A 00 08 6C 64 0D 0A

3.2.80 Get Dual and single mode response

Head: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x6D

Data: 2 bytes

Check code: 0xxx

End: 0x0d 0x0a

Function: Get the reader working in Dual mode or Single mode response

HYR820,HYM360 do not support the command.

Sheet 96 Get Dual and single mode setting response

Head		Length		Command	Data	
0xA5	0x5A	0x00	0x0A	0x6D	OK:1 fail:0	Dbyte0
Check Code	End					
0xxx	0x0D	0x0A				

Remark: DByte0 is 0x00 indicate dual mode, DByte0 is 0x01 indicate Single mode.

Example: Get the reader working in Dual mode or single mode response, when it is dual mode.

Command: A5 5A 00 0A 6D 01 00 66 0D 0A

3.2.81 Inventory filtering setting

Head: 0xA5 0x5A

Length: 0x00 0xxx

Command: 0x6E

Data: N bytes

Check code: 0xXX

End: 0x0d 0x0a

Function: Choose the range of the tags when inventory tags.

HYR820,HYM360 do not support the command.

Sheet 97 Inventory filtering setting

Head		Length		Command	Data			
0xA5	0x5A	0x00	0xxx	0x6E	DByte 0	MMB	MSA (MSB)	MSA (LSB)
Data								
MDL (MSB)	MDL (LSB)	MData (MSB)	....	....	....		MData (LSB)	

Check Code	End	
0xxx	0x0D	0x0A

Remark : When DByte0 is 0x01 save power-off setting, 0x01 negative. MMB is the bank No. of filtering, 0x01 is EPC, 0x02 is TID, 0x03 is USR, others are invalid values. MSA is the start address of the starting filtering operation, unit is bit; MDL is the data length of the starting filtering operation, unit is bit, 0x00 indicate no filtering; MData is data when start the filtering, unit is bytes, if MData less than integer multiples bytes, the low place is 0.

Example 1: Set inventory filtering rule, the filtering area is TID, the filtering address is the 0 bit of TID, the length is 96 bits, filtering data is 0xE2003414013301001038D2B5, also had saved power-off this setting.

Command: A5 5A 00 1A 6E 01 02 00 00 00 60 E2 00 34 14 01 33 01 00 10 38 D2 B5 A9 0D 0A

Example 2: Set inventory filtering rule, no filtering, had saved power-off this setting.

Command: A5 5A 00 0E 6E 00 00 00 00 00 61 0D 0A

3.2.82 Inventory filtering setting response

Head: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x6F

Data: 1 byte

Check code: 0xxx

End: 0x0d 0x0a

Function: Inventory filtering setting response

HYR820, HYM360 do not support the command.

Sheet 98 Inventory filtering setting response

Head		Length		Command	Data
0xA5	0x5A	0x00	0x09	0x6F	OK: 1 Fail: 0
Check Code	End				
0xxx	0x0D	0x0A			

Remark : None

Example : Setting succeed

Command: A5 5A 00 09 6F 01 67 0D 0A

3.3. Tag application frames

3.3.1. Inventory for once

Header: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x80

Data: The unit for timeout (MSB first) is ms. If the module finds a tag (the first tag) or time is up, the module will stop and reply the response frame.

Check code: 0xxx

End: 0x0d 0x0a

Function: Just to find one tag or find if there are any tags in the field.

Sheet 99. Inventory for once command frame

Header		Length		Command	Data		Check code
0xA5	0x5A	0x00	0x0A	0x80	Timeout (MSB)	Timeout (LSB)	0xxx
End							
0x0D	0x0A						

Example: Inventory for once

Command: A5 5A 00 0A 80 00 64 EE 0D 0A

3.3.2. Inventory for once response

Header: 0xA5 0x5A

Length: 0x00 0xxx

Command: 0x81

Data: PC+EPC、RSSI

Check code: 0xxx

End: 0x0d 0x0a

Function: Just to find one tag or find if there are any tags in the field and get the response

Sheet 100. Inventory for once response

Header		Length		Command	Data		
0xA5	0x5A	0x00	0xxx	0x81	PC (MSB)	PC (LSB)	EPC (MSB)
Data							
EPC	EPC	EPC	EPC	EPC	EPC	EPC	EPC
Data					Check	End	

						code		
EPC	EPC	EPC (LSB)	RSSI (MSB)	RSSI (LSB)	Ant Num.	0xxx	0x0D	0x0A

Remark: RSSI express as complement code, total 16 bits, which is 10 times the real value. For example, the real value is -65.7dBm, then RSSI=FD6F

Notice: The frame length is different, because the EPC's Length is not sure which depends one PC's value from Gen2's protocol. After open the FastIF function, if reader the TID data of the tag, the EPC (LSB) of response frame will add 96bit TID data, then RSSI value

Example : Tag: PC=0x3000 , EPC=0xE2003411B802011383258566, RSSI=-65.7dBm, antenna 2 finds this tag

Command: A5 5A 00 19 81 30 00 E2 00 34 11 B8 02 01 13 83 25 85 66 FD 6F 02 12 0D 0A

3.3.3. Continue inventory

Header: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x82

Data: The number of times for continue inventory, all 2 Bytes.

Check code: 0xxx

End: 0x0D 0x0A

Function: Continue inventory

Sheet 101. Continue inventory command frame

Header		Length		Command	Data		Check code
0xA5	0x5A	0x00	0x0A	0x82	Num[1]	Num[0]	0xxx
End							
0x0D	0x0A						

Remark: The range of continue inventory is 1~0xFFFF. Set the number of inventory times to 0, it will be repeated infinitely.

Attention: The reader can not response other commands during continue inventory. **Must send the stop continue** inventory command first, after the reader response it, then send other commands.

Example: Number of searching times is 10000(0x2710)

Command: A5 5A 00 0A 82 27 10 BF 0D 0A

3.3.4. Continue inventory response

Header: 0xA5 0x5A

Length: 0x00 0x18

Command: 0x83

Data: PC+EPC、RSSI、 antenna number

Check code: 0xxx

End: 0x0d 0x0a

Function: response all the information of tags and reader module

Sheet 102. Continue inventory response frame

Header		Length		Command	Data		
0xA5	0x5A	0x00	0xxx	0x83	PC (MSB)	PC (LSB)	EPC (MSB)
Data							
EPC	EPC	EPC	EPC	EPC	EPC	EPC	EPC
Data					Check code	End	
EPC	EPC	EPC (LSB)	RSSI (MSB)	RSSI (LSB)	Ant Num.	0xxx	0x0D 0x0A

Remark: RSSI express as complement code, total 16 bits, which is 10 times the real value. For example, the real value is -65.7dBm, then RSSI=FD6F

Notice: The frame length is different, because the EPC's Length is not sure which depends one PC's value from Gen2's protocol. If get the TID data of the tags, the EPC (LSB) will add 96 bit of TID in response frame, and then is the RSSI value after activate the FastID function

Example : Tag: PC=0x3000 , EPC=0xE2003411B802011383258566, RSSI=-65.7dBm, antenna 2 finds this tag

Command: A5 5A 00 19 83 30 00 E2 00 34 11 B8 02 01 13 83 25 85 66 FD 6F 02 10 0D 0A

3.3.5. Stop continue inventory

Header: 0xA5 0x5A

Length: 0x00 0x08

Command: 0x8C

Data: None

Check code: 0x84

End: 0x0d 0x0a

Function: Stop continue inventorying

Sheet 103. Stop continue inventorying command frame

Header		Length		Command	Data	Check code	End
0xA5	0x5A	0x00	0x08	0x8C	No	0x84	0x0D
End							
0x0A							

Example: Stop continue inventory

Command: A5 5A 00 08 8C 84 0D 0A

3.3.6. Stop continue inventorying response

Header: 0xA5 0x5A

Length: 0x00 0x09

Command: 0x8D

Data: Flag: Successful: 0x01; fail: 0x00

Check code: 0xxx

End: 0x0d 0x0a

Function: Stop continue inventorying response

Sheet 104. Stop continue inventory response frame

Header		Length		Command	Data	Check code	End
0xA5	0x5A	0x00	0x09	0x8D	Ok: 0x01 Fail:0x00	0xxx	0x0D
End							
0x0A							

Remark: None

Example: Successful stop

Command: A5 5A 00 09 8D 01 85 0D 0A

3.3.7. Read data

Header: 0xA5 0x5A

Length: 0x00 0xxx

Command: 0x84

Data: AP(access password)、PC、EPC、memory Bank、SA starting address(unit: words)、DL data length(unit: words) words means 2 Bytes in Gen2

Check code: 0xxx

End: 0x0d 0x0a

Function: read the specific address and specific length data of the specific tag

Sheet 105. Read data command frame

Header		Length		Command	Data		
0xA5	0x5A	0xxx	0xxx	0x84	AP (MSB)	AP	AP
Data							
AP (LSB)	MMB	MSA (MSB)	MSA (LSB)	MDL (MSB)	MDL (LSB)	MData (MSB)	MData
Data							
MData	...	...	...	...	MData	MData (LSB)	MB
Data				Check code	End		
SA (MSB)	SA (LSB)	DL (MSB)	DL (LSB)	0xxx	0x0D	0x0A	

Remark: AP is the AccPwd value of the tag, MMB is the bank No. of filtering, 0x01 is EPC, 0x02 is TID, 0x03 is USR, others are invalid values. MSA is the start address of the starting filtering operation, unit is bit; MDL is the data length of the starting filtering operation, unit is bit, 0x00 indicate no filtering; MData is the filtering data when start the filtering, unit is byte, if MDL less than integer multiples bytes, the low place is 0. MB is the memory bank which is the bank No. of data for user read; SA is the starting address of the data which need to read, unit is word; DL is the length of the data which need to read, unit is word.

Example1: No filtering, read data are 3 words from TID area, starting address is 2, the access password is 0x55555555

Command: A5 5A 00 18 84 55 55 55 55 00 00 00 00 00 02 00 02 00 03 91 0D 0A

Example2: TID area filtering, the starting address is the second bit of the TID, filtering length is 13bits, filtering data is 1110001000000 'b, read data are 6 words from EPC area, starting address is 2, the access password is 0x00000000

Command: A5 5A 00 18 84 00 00 00 00 02 00 02 00 0D 02 00 02 00 02 00 06 76 0D 0A

3.3.8. Read data response

Header: 0xA5 0x5A

Length: 0x00 0xxx

Command: 0x85

Data: Flag showing the data read is successful or not: OK: 0x01; fail: 0x00

Errflag: return to error flag after failed read data

Read the length of the data DL: unit: words

Check code: 0xxx

End: 0x0d 0x0a

Function: response data with specific address and length

Sheet 106 . Read data response frame

Header		Length		Command	Data		
0xA5	0x5A	0xxx	0xxx	0x85	Flag	Errflag	DL (MSB)
Data					Check code	End	
DL (LSB)	Data (MSB)	...	...	Data (LSB)	0xxx	0x0D	0x0A

Remark: The data been read is determined by the length of data in read data command; if read data failed, then the response frame shows no data; if the reading is OK, the error flag is 0x00

Example: Successfully read data with 3 words in bank TID: 0x123456789abc

Command: A5 5A 00 12 85 01 00 00 03 12 34 56 78 9A
BC BB 0D 0A

3.3.9. write data

Header: 0xA5 0x5A

Length: 0x00 0xxx

Command: 0x86

Data: AP(password)、MMB、MSA、MDL、MData、memory Bank、SA starting address (unit is word), DL (the length of data which need write in), Data (which need write in)

Check code: 0xxx

End: 0x0d 0x0a

Function: write data with specific length to specific address in the tag.

Sheet 107. Write data command frame

Header		Length		Command	Data		
0xA5	0x5A	0xxx	0xxx	0x86	AP (MSB)	AP	AP
Data							
AP (LSB)	MMB	MSA (MSB)	MSA (LSB)	MDL (MSB)	MDL (LSB)	MData (MSB)	MData
Data							
MData	...	...	...	...	MData	MData (LSB)	MB

Data							
SA (MSB)	SA (LSB)	DL (MSB)	DL (LSB)	Data (MSB)	...	...	Data (LSB)
Check code	End						
0xxx	0x0D	0x0A					

Remark: AP is the AccPwd value of the tag, MMB is the bank No. of filtering, 0x01 is EPC, 0x02 is TID, 0x03 is USR, others are invalid values. MSA is the start address of the starting filtering operation, unit is bit; MDL is the data length of the starting filtering operation, unit is bit, 0x00 indicate no filtering; MData is the filtering data when start the filtering, unit is bytes, if MDL less than integer multiples bytes, the low place is 0. MB is the memory bank which is the bank No. of data for user write; SA is the starting address of the data which need to write, unit is word; DL is the length of the data which need to write, unit is word. Data is the data which write in, MSB first.

Example 1 : No filtering, write 6-word data into bank EPC , Data=0x00112233445566778899aabb, starting address is 2, access password is 0x12345678

*Command: A5 5A 00 22 86 00 00 00 00 02 00 00 00 01
00 02 00 06 00 11 22 33 44 55 66 77 88 99 AA BB A9
0D 0A*

Example 2: TID area filtering, the starting address is the 0 bit of the TID, filtering length is 96bits, write 6-word data into bank EPC, Data=0x00112233445566778899aabb, starting address is 2, the access password is 0x00000000

*Command: A5 5A 00 2E 86 00 00 00 00 02 00 00 00 60
E2 00 34 14 01 33 01 00 10 38 D2 B5 01 00 02 00 06
00 11 22 33 44 55 66 77 88 99 AA BB 71 0D 0A*

3.3.10. Write data response

Header: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x87

Data: Flag showing write data is successful or not: Errflag:

Check code: 0xxx

End: 0x0d 0x0a

Function: Write data response

Sheet 108. Write data response frame

Header		Length		Comman d	Data		Check code
0xA5	0x5A	0x00	0x0A	0x87	Ok: 0x01	Errflag	0xxx

					Fail:0x00		
End							
0x0D	0x0A						

Remark: If the write data is successful, error flag shall be 0x00

Example: Write data fails, the error flag is 0x03

Command: A5 5A 00 0A 87 00 03 8E 0D 0A

3.3.11. Lock tag

Header: 0xA5 0x5A

Length: 0x00 0xxx

Command: 0x88

Data: AP(access password), MMB, MSA, MDL, MData, LD(total 3 bytes)

Check code: 0xxx

End: 0x0d 0x0a

Function: Lock memory bank of the tag

Sheet 109. Lock tag command frame

Header		Length		Command	Data		
0xA5	0x5A	0x00	0xxx	0x88	AP (MSB)	AP	AP
Data							
AP (LSB)	PC (MSB)	MSA (MSB)	MSA (LSB)	MDL (MSB)	MDL (LSB)	MData (MSB)	MData
Data							
MData	...	...	...	...	MData	MData (LSB)	LD (MSB)
Data		Check code	End				
LD	LD (LSB)	0xxx	0x0D	0x0A			

Remark: AP is the AccPwd value of the tag, MMB is the bank No. of filtering, 0x01 is EPC, 0x02 is TID, 0x03 is USR, others are invalid values. MSA is the start address of the starting filtering operation, unit is bit; MDL is the data length of the starting filtering operation, unit is bit, 0x00 indicate no filtering; MData is data when start the filtering, unit is bytes, if MDL less than integer multiples bytes, the low place is 0. LD total 3 bytes 24 bits, but the high 4 bits are invalid, the 0~9th bit (total 10 bits) are action bits, the 10~19th (total 10 bits) are MASK bits.

Example: TID area filtering, the fileting starting address is the 0 bit of the TID,

filtering length is 96bit, filtering data is 0xE2003414013301001038D2B5, lock EPC+RFU area(LD=0x0FC2A0), password is 0x760039AD

Command: A5 5A 00 20 88 76 00 39 AD 02 00 00 00 60
E2 00 34 14 01 33 01 00 10 38 D2 B5 0F C2 A0 FB
0D 0A

3.3.12. Lock tag response

Header: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x89

Data: Flag showing tag locking is successful or not; Errflag

Check code: 0xxx

End: 0x0d 0x0a

Function: lock tag response

Sheet 110. Lock tag response frame

Header		Length		Command	Data		Check code
0xA5	0x5A	0x00	0x0A	0x89	Ok: 0x01 Fail:0x00	Errflag	0xxx
End							
0x0D	0x0A						

Remark: When tag locking is successful, the error flag is 0x00

Example: Tag locking successful

Command: A5 5A 00 0A 89 01 00 82 0D 0A

3.3.13. Kill tag

Header: 0xA5 0x5A

Length: 0x00 0xxx

Command: 0x8A

Data: KP(kill password)、MMB、MSA、MDL、MData

Check code: 0xxx

End: 0x0d 0x0a

Function: kill tag

Sheet 111. Kill tag command frame

Header		Length		Command	Data		
0xA5	0x5A	0x00	0xxx	0x8A	KP	KP	KP

					(MSB)		
Data							
KP (LSB)	MMB	MSA (MSB)	MSA (LSB)	MDL (MSB)	MDL (LSB)	MData (LSB)	MData
Data							Check code
MData	...	...	...	...	MData	MData (LSB)	0xxx
End							
0x0D	0x0A						

Remark: KP is the killPwd value of the tag, MMB is the bank No. of filtering, 0x01 is EPC, 0x02 is TID, 0x03 is USR, others are invalid values. MSA is the start address of the starting filtering operation, unit is bit; MDL is the data length of the starting filtering operation, unit is bit, 0x00 indicate no filtering; MData is data when start the filtering, unit is bytes, if MDL less than integer multiples bytes, the low place is 0. When the killpwd of the tag is 0x00000000, the tag will ignore the kill command, the kill command can not succeed.

Example: filtering for EPC area, the filtering address is the 32th bit of the EPC, filtering length is 96bit, filtering data is 0x00112233445566778899AABB, killpassword 0x760039AD

*Command: A5 5A 00 1D 8A 76 00 39 AD 01 00 20 00 60
00 11 22 33 44 55 66 77 88 99 AA BB 34 0D 0A*

3.3.14. Kill tag response

Header: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x8B

Data: Flag showing tag killing is successful or not; Errflag

Check code: 0xxx

End: 0x0d 0x0a

Function: kill tag response

Sheet 112. Kill tag response frame

Header		Length		Comman d	Data		Check code
0xA5	0x5A	0x00	0x0A	0x8B	Ok: 0x01 Fail:0x00	Errflag	0xxx
End							
0x0D	0x0A						

Remark: When tag killing is successful, the error flag is 0x00

Example: kill tag successfully

Command: A5 5A 00 0A 8B 01 00 80 0D 0A

3.3.15. Fast read TID

Header: 0xA5 0x5A

Length: 0x00 0x0C

Command: 0x8e

Data: SA、DL

Check code: 0xxx

End: 0x0d 0x0a

Function: read TID in one command and speed faster

HYR820,HYM360 do not support the command.

Sheet 113. Fast read TID

Header		Length		Command	Data			
0xA5	0x5A	0x00	0x0C	0x8e	SA (MSB)	SA (LSB)	DL (MSB)	DL (LSB)
Check code	End							
0xxx	0x0D	0x0A						

Remark: SA is the start address, unit is word; DL is the data length, unit is word.

Example: Fast read 3 words in TID bank which the SA is 2

Command: A5 5A 00 0C 8e 00 02 00 03 83 0D 0A

3.3.16. Fast read TID response

Header: 0xA5 0x5A

Length: 0x00 0xxx

Command: 0x8e

Data: Errflag, DL, Data

Check code: 0xxx

End: 0x0d 0x0a

Function: response the specific address and specific length data in TID area

HYR820,HYM360 do not support the command.

Sheet 114. Fast read TID response

Header		Length		Command	Data		
0xA5	0x5A	0xxx	0xxx	0x8f	Ok: 0x01 Fail:0x00	Errflag	DL (MSB)
Data					Check	End	

					code		
DL (LSB)	Data (MSB)	...	...	Data (LSB)	0xxx	0x0D	0x0A

Remark: The data which need read according to the data length of the reading command. If fail, there is no data in response frame. If succeed, the Errflag is 0x00.

Example: Successful fast read 3 words in TID bank, the data is 0x123456789abc

*Command: A5 5A 00 12 8F 01 00 00 03 12 34 56 78 9A
BC B1 0D 0A*

3.3.17. Time frame inventory

Header: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x90

Data: Time frame, 10ms—30000ms

Check Code: 0xxx

End: 0x0d 0x0a

Function: Inventory during a period of time. User can set the reader inventory during the period of Timeout. After waiting for Timeout, reader will report the tag No. Which were read in that time, and if the user need the EPC data, only need send the command ‘Get Time frame Inventory Result’.

HYR820,HYM360 do not support the command.

Sheet 115 Time frame inventory Command

Header		Length		Command	Data		Check Code
0xA5	0x5A	0x00	0x0A	0x90	Timeout (MSB)	Timeout (LSB)	0xxx
End							
0x0D	0x0A						

Remark: The range of the time frame is 0x000A~0x7530 (10—30000ms)

Example: 500ms for the time frame

Command: A5 5A 00 0A 90 01 F4 6F 0D 0A

3.3.18. Time frame Inventory Response

Header: 0xA5 0x5A

Length: 0x00 0x0C

Command: 0x91

Data: Tag population

Check Code: 0xxx

End: 0x0d 0x0a

Function: Time frame Inventory Response gets the quantity of the tags which will be read in the time frame

HYR820,HYM360 do not support the command.

Sheet 116 Time frame Inventory Response

Header		Length		Command	Data		
0xA5	0x5A	0x00	0x0C	0x91	Tag population (MSB)	Tag population	Tag population
Data	Check code	End					
Tag population (LSB)	0xxx	0x0D	0x0A				

Remark : Define the quantity of the tag with 4 bytes, the range is 0x00000000—0xFFFFFFFF (0-- 4294967295)。

Example: Read 10 pcs tags in the time frame

Command: A5 5A 00 0C 91 00 00 00 0A 97 0D 0A

3.3.19. Get Time frame Inventory Result

Header: 0xA5 0x5A

Length: 0x00 0x08

Command: 0x92

Data: None

Check Code: 0xxx

End: 0x0d 0x0a

Function: Get the result (tags's EPC) of time frame inventory

HYR820,HYM360 do not support the command.

Sheet 117 Get the time frame inventory result

Header		Length		Command	Data	Check Code	End
0xA5	0x5A	0x00	0x08	0x92	None	0xxx	0x0D
End							
0x0A							

Remark: None

Example: Get the time frame inventory result

Command: A5 5A 00 08 92 9A 0D 0A

3.3.20. Block write tags

Header: 0xA5 0x5A

Length: 0x00 0xxx

Command: 0x93

Data: AP(password), MMB, MSA, MDL, MData, memory Bank, SA: starting address (unit is word), DL: the length of data which need write in (unit is word), Data: which need write in

Check Code: 0xxx

End: 0x0d 0x0a

Function: Block write the specific length of data in specific address of the tag

HYR820,HYM360 do not support the command.

Sheet 118 Block write command frame

Head		Length		Command	Data		
0xA5	0x5A	0xxx	0xxx	0x93	AP (MSB)	AP	AP
Data							
AP (LSB)	MMB	MSA (MSB)	MSA (LSB)	MDL (MSB)	MDL (LSB)	MData (MSB)	MData
Data							
MData	...	...	...	...	MData	MData (LSB)	MB
Data							
SA (MSB)	SA (LSB)	DL (MSB)	DL (LSB)	Data (MSB)	...	...	Data (LSB)
Check code	end						
0xxx	0x0D	0x0A					

Remark: AP is the AccPwd value of the tag, MMB is the bank No. of filtering, 0x01 is EPC, 0x02 is TID, 0x03 is USR, others are invalid values. MSA is the start address of the starting filtering operation, unit is bit; MDL is the data length of the starting filtering operation, unit is bit, 0x00 indicate no filtering; MData is data when start the filtering, unit is bytes, if MDL less than integer multiples bytes, the low place is 0. MB is the memory Bank which is the bank No. of data for user write; SA is the starting address of the data which need to write, unit is word; DL is the length of the data which need to write in, unit is word, Data is the data which write in, MSB first.

Example: Tag PC=0x3000, EPC=0xE2003411B802011383258566, write 6-word of EPC area, Data=0x00112233445566778899aabb, starting address is2, password is 0x74290fd8

Command: A5 5A 00 2B 93 74 29 0f d8 30 00 E2 00 34 11 B8 02 01 13 83 25 85 66 01 00 02 00 06 00 11 22

33 44 55 66 77 88 99 AA BB 2D 0D 0A

3.3.21. Block write tags response

Header: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x94

Data: Block write data whether succeed or not flag: Succeed: 0x01. Fail: 0x00.

Errflag meaning is error.

Check Code: 0xxx

End: 0x0d 0x0a

Function: Block write data response

HYR820,HYM360 do not support the command.

Sheet 119 Block write response frame

Head		Length		Command	Data	
0xA5	0x5A	0x00	0x0A	0x94	flag	errflag
Check code	end					
0xxx	0x0D	0x0A				

Remark: Operation succeed, the errflag is 0x00

*Example: Data is written to failure, errflag is 0x01**Command: A5 5A 00 0A 94 00 01 9F 0D 0A*

3.3.22. Block Erase tags

Header: 0xA5 0x5A

Length: 0x00 0xxx

Command: 0x95

Data: AP(password)、MMB、MSA、MDL、MData、memory Bank、SA: starting address (unit is word), DL: the length of data which need erase(unit is word)

Check Code: 0xxx

End: 0x0d 0x0a

Function: Block erase the specific length of data in specific address of the tag

HYR820,HYM360 do not support the command.

Sheet 120 Block erase command frame

Head		Length		Command	Data		
0xA5	0x5A	0xxx	0xxx	0x95	AP (MSB)	AP	AP

Data							
AP (LSB)	MMB	MSA (MSB)	MSA (LSB)	MDL (MSB)	MDL (LSB)	MData (MSB)	MData
Data							
MData	...	...	...	...	MData	MData (LSB)	MB
Data				Check code		end	
SA (MSB)	SA (LSB)	DL (MSB)	DL (LSB)	0xxx		0x0D	0x0A

Remark: AP is the AccPwd value of the tag, MMB is the bank No. of filtering, 0x01 is EPC, 0x02 is TID, 0x03 is USR, others are invalid values. MSA is the start address of the starting filtering operation, unit is bit; MDL is the data length of the starting filtering operation, unit is bit, 0x00 indicate no filtering; MData is data when start the filtering, unit is bytes, if MDL less than integer multiples bytes, the low place is 0. MB is the memory Bank which is the bank No. of data for user write; SA is the starting address of the data which need to write, unit is word; DL is the length of the date which need to write in, unit is word.

Example: Tag PC=0x3000, EPC=0xE2003411B802011383258566, write 6-word of EPC area, starting address is2, password is 0x74290fd8

Command: A5 5A 00 1F 95 74 29 0f d8 30 00 E2 00 34
11 B8 02 01 13 83 25 85 66 01 00 02 00 06 1F 0D 0A

3.3.23. Block Erase tags response

Header: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0x96

Data: Block erase data whether succeed or not flag. Succeed: 0x01. Fail: 0x00.

Errflag meaning is error.

Check Code: 0xxx

End: 0x0d 0x0a

Function: Block erase data response

HYR820,HYM360 do not support the command.

Sheet 121 Block erase response frame

Head		Length		Command	Data	
0xA5	0x5A	0x00	0x0A	0x96	flag	errflag
Check code	end					
0xxx	0x0D	0x0A				

Remark: Operation succeed, the errflag is 0x00

Example: Data erase succeed, errflag is 0x00

Command: A5 5A 00 0A 96 01 00 9D 0D 0A

3.4. Operation failed response frame

3.4.1. Operation failed response frame

Header: 0xA5 0x5A

Length: 0x00 0x0A

Command: 0xFF

Data: Error type, all 2 Bytes

Check code: 0xxx

End: 0x0D 0x0A

Function: Operation failed response

Sheet 87. Operation failed response frame

Header		Length		Command	Data		Check code
0xA5	0x5A	0x00	0x0A	0xFF	Err code (MSB)	Err Code (LSB)	0xxx
End							
0x0D	0x0A						

Remark: Return to error flag after operation failed

Err code: 0001-- Inventory failed

0002--Check code error

0003-- Temperature so high

0004--Reflect power so high

Example: Err Code is 0x0001

Command: A5 5A 00 0A FF 00 01 F4 0D 0A