Modbus _ RTU Communication

Description

Version: Version 1.0, December 2023

Communication data format

- During communication, the data is sent back in the form of word (WORD — 2 bytes). In each word sent back, the high byte is in the front and the low byte is in the back.If two words are sent back consecutively (such as long shaping), the high word is in the front and the low word is in the back.

Data type	Number of registers	Number of bytes	Explain
Character type	**1**	**1**	Send back two characters at a time, and use 0 to supplement less than two characters.
Integer	**1**	**2**	Send back once, high byte first, low byte last
Long	**2**	**4**	Send it back in two words, with the high word in the front and the low word in the back.

Frame format

- ### Register content query (function code 03H)

  The start address and end address of the query must be the start address and end address of a complete data block,Otherwise, the data returned is incorrect.For example, if the start address of the register of the device serial number is 186 and the length is 12, the start address cannot be between 186 and 198 during the query.Similarly, the end address (start address + number of registers read) cannot fall within this range.

Frame format sent by upper computer

Byte order	Code	Examples	Explain
0	Device address	**01H**	Device address (1 ~ 247)
1	**03H**	**03H**	Function Code
2	Start Register Address High Byte	**00H**	Upper 8 bits of register address
3	Start register address low byte	**10H**	Lower 8 bits of register address
4	Number of registers high byte	**00H**	Upper 8 bits of register number
5	Low byte of register number	**02H**	Number of registers Lower 8 bits
6	**CRC16 check high byte**	**C0H**	**High 8 bits of CRC16 check**
7	**CRC16 check low byte**	**CBH**	**CRC16 check lower 8 bits**

The lower computer parses the returned frame format successfully.

Byte order	Code	Explain
0	Device address	Device address (1 ~ 247)
1	**03H**	Function Code
2	Number of bytes of data sent back	**N = number of registers requested * 2**
3	1st register data high byte	
4	1st register data low byte	
……	**……**	
……	**……**	
	Nth register data high byte	
	Nth register data low byte	
N+3	**CRC16 check high byte**	**The bytes before the CRC are checked**
N+4	**CRC16 check low byte**	

Lower computer analysis error return frame format

Byte order	Code	Explain
0	Device address	Device address (1 ~ 247)
1	**03H**	Function Code
2	Number of bytes of data sent back	**N = number of registers requested * 2**
3	1st 0	A total of N zeros are looped back
4	2nd 0	
……	**……**	
……	**……**	
	Nth-1st 0	
	Nth 0	
N+3	**CRC16 check high byte**	**The bytes before the CRC are checked**
N+4	**CRC16 check low byte**	

Register reading example:

Read the data from the RMS value of the mains voltage (start register 202) to the average value of the mains power, where the mains voltage returns 220.0 V,Mains frequency returns 50.0 Hz and average mains power returns 1200 w

Host computer: 01 03 00 CA 00 03 25 F5

Lower computer: 01 03 06 08 FC 13 88 04 B0 F7 F3

- ## Register content setting (function code 10 H)

Frame format sent by upper computer

Byte order	Code	Examples	Explain
0	Device address	**01H**	Device address (1 ~ 247)
1	**10H**	**10H**	Function Code
2	Start Register Address High Byte	**01H**	Upper 8 bits of register address
3	Start register address low byte	**10H**	Lower 8 bits of register address
4	Number of registers high byte	**00H**	Upper 8 bits of the number of registers (constantly equal to 0)
5	Low byte of register number	**02H**	Number of registers Lower 8 bits
6	Number of bytes to be written		**N = Number of registers * 2**
7	1st register data high byte		
8	1st register data low byte		
.....	**.....**		
.....	**.....**		
	Nth register data high byte		
	Nth register data low byte		
N+7	**CRC16 check high byte**		**High 8 bits of CRC16 check**
N+8	**CRC16 check low byte**		**CRC16 check lower 8 bits**

The lower computer parses the returned frame format successfully.

Byte order	Code	Examples	Explain
0	Device address	**01H**	Device address (1 ~ 247)
1	**10H**	**10H**	Function Code
2	Start Register Address High Byte	**01H**	Upper 8 bits of register address
3	Start register address low byte	**10H**	Lower 8 bits of register address
4	Number of registers high byte	**00H**	Upper 8 bits of the number of registers (constantly equal to 0)
5	Low byte of register number	**02H**	Number of registers Lower 8 bits
6	**CRC16 check high byte**	**41H**	**High 8 bits of CRC16 check**
7	**CRC16 check low byte**	**F1H**	**CRC16 check lower 8 bits**

Lower computer analysis error return frame format

Byte order	Code	Explain
0	Device address	Device address (1 ~ 247)
1	**90H**	Function Code
2	Error code	Error code
3	**CRC16 check high byte**	**High 8 bits of CRC16 check**
4	**CRC16 check low byte**	**CRC16 check lower 8 bits**

Error code description

Code	Explain
01H	Read-only register operated on
03H	Write data that exceeds the acceptable range
07H	Registers that are not allowed to be modified in the current operating mode

Register write example:

Set the output voltage (start register 320) to 220V

Host computer: 01 10 01 40 00 01 02 08 98 BE 3A

Lower computer: 01 10 01 40 00 01 01 E1

Device register address

- **R: Indicates that the 03 H command is supported if it is readable. W: means writable, that is, supports 10 H commands. Int: Integer; Long: Long;UInt: unsigned integer; ULong: unsigned long integer; ASC: ASCII code Max: maximum value; Min: minimum value**
- Addresses in the following table are in decimal notation

Data name	Unit	Data format	Start address	Number of registers	Read and write	Remark
Equipment fault code		**ULong**	**100**	**2**	**R**	**32-bit fault code. Each bit corresponds to a fault code. See the fault code table for details. Fault code 1 corresponds to bit1, fault code 2 corresponds to bit2, and so on.**
Reserved			**102**	**2**		Reserved address
Obtain the warning code for unmasked processing			**104**	**2**		**The 32-bit warning code is described in the warning code description**
Reserved			**106**	**2**		Reserved address
Obtain the warning code after shield processing		**ULong**	**108**	**2**	**R/W**	**The 32-bit warning code is described in the warning code description**
Reserved			**110**	**61**		Reserved address
Device type		**UInt**	**171**	**1**	**R**	
Device name		**ASC**	**172**	**12**	**R/W**	Device name, written or read in ASCII
Invalid data		**UInt**	**184**	**1**	**R**	Agreement number, return 1 for this agreement
Reserved			**185**	**1**		Reserved address
Device serial number		**ASC**	**186**	**12**	**R**	
Reserved			**198**	**2**		Reserved address
Invalid data		**UInt**	**200**	**1**		Internal command

Working mode		**UInt**	**201**	**1**	**R**	**0: Power on mode** **1: Standby mode** **2: Mains mode** **3: Off-grid mode** **4: Bypass mode** **5: Charging mode** **6: Failure Mode**
Mains voltage effective value	**0.1v**	**Int**	**202**	**1**	**R**	
Mains frequency	**0.01Hz**	**Int**	**203**	**1**	**R**	
Average mains power	**1w**	**Int**	**204**	**1**	**R**	

Data name	Unit	Data format	Start address	Number of registers	Read and write	Remark
Effective value of inverter voltage	**0.1v**	**Int**	**205**	**1**	**R**	
Effective value of inverter current	**0.1A**	**Int**	**206**	**1**	**R**	
Inverter frequency	**0.01Hz**	**Int**	**207**	**1**	**R**	
Inverter power average	**1w**	**Int**	**208**	**1**	**R**	Positive indicates inverter output and negative indicates inverter input
Inverter charging power	**1w**	**Int**	**209**	**1**	**R**	
Effective value of output voltage	**0.1v**	**Int**	**210**	**1**	**R**	
Effective value of output current	**0.1A**	**Int**	**211**	**1**	**R**	
Output frequency	**0.01Hz**	**Int**	**212**	**1**	**R**	
Output active power	**1w**	**Int**	**213**	**1**	**R**	
Output apparent power	**1VA**	**Int**	**214**	**1**	**R**	
Average battery voltage	**0.1v**	**Int**	**215**	**1**	**R**	
Average battery current	**0.1A**	**Int**	**216**	**1**	**R**	

Average battery power	**1w**	**Int**	**217**	**1**	**R**	
Invalid data			**218**	**1**		Internal command
Average PV voltage	**0.1v**	**Int**	**219**	**1**	**R**	
Average PV current	**0.1A**	**Int**	**220**	**1**	**R**	
Reserved			**221**	**2**		Reserved address
Average PV power	**1w**	**Int**	**223**	**1**	**R**	
Average PV charging power	**1w**	**Int**	**224**	**1**	**R**	

Data name	Unit	Data format	Start address	Number of registers	Read and write	Remark
Percent of load	1%	Int	225	1	R	
DCDC temperature	1℃	Int	226	1	R	
Inverter temperature	1℃	Int	227	1	R	
Reserved			228	1		Reserved address
Battery percentage	1%	UInt	229	1	R	
Invalid data			230	1		Internal command
Power flow status		UInt	231	1	R	See the description of power flow flag bit for details.
Battery current filter average	0.1A	Int	232	1	R	A positive number indicates charging and a negative number indicates discharging.
Average value of inverter charging current	0.1A	Int	233	1	R	
Average PV charging current	0.1A	Int	234	1	R	
Invalid data			235	1		Internal command
Invalid data			236	1		Internal command
Reserved			237	63		Reserved address
Output mode		Uint	300	1	R/W	0: single machine; 1: parallel; 2: Three-phase combination-P1 3: Three-phase combination-P2 4: Three-phase combination-P3

Output priority		**Uint**	**301**	**1**	**R/W**	**0: Main-PV-Battery (UTI)** **1: PV-mains-battery (SOL) [priority inverter]** **2: PV-battery-mains (SBU)** **3: PV-Mains-Battery (SUB) [Priority Mains]**
Input voltage range		**Uint**	**302**	**1**	**R/W**	**0**：**APL**； **1**：**UPS**；
Buzzer mode		**Uint**	**303**	**1**	**R/W**	**0: mute in all cases;** **1: Sound when the input source changes or there is a specific warning or fault; 2: Sound when there is a specific warning or fault;** **3: Sound in case of fault;**

Data name	Unit	Data format	Start address	Number of registers	Read and write	Remark
Reserved			**304**	**1**	**R/W**	Reserved address
LCD backlight		**Uint**	**305**	**1**	**R/W**	**0: Timed closing; 1: Always on;**
LCD automatically returns to the home page		**Uint**	**306**	**1**	**R/W**	**0: Do not return automatically; 1: Automatic return after 1 minute;**
Energy saving mode switch		**Uint**	**307**	**1**	**R/W**	**0: Energy saving mode off; 1: Energy-saving mode on;**
Overload automatic restart		**Uint**	**308**	**1**	**R/W**	**0: Overload failure does not restart; 1: Automatic restart in case of overload;**
Over-temperature automatic restart		**Uint**	**309**	**1**	**R/W**	**0: No restart for over-temperature fault; 1: Automatic restart for over-temperature fault;**
Overload Bypass Enable		**Uint**	**310**	**1**	**R/W**	**0: forbidden; 1: Enable;**
Reserved			**311**	**2**		Reserved address
Battery Eq Mode Enable		**Uint**	**313**	**1**	**R/W**	**0: forbidden; 1: Enable;**
Warning Mask [I]		**ULong**	**314**	**2**	**R/W**	The warning corresponding to 1 is normally displayed, and the warning corresponding to 0 is shielded.
Dry contact		**Uint**	**316**	**1**	**R/W**	**0: normal mode; 1: Grounding box mode;**
Reserved			**317**	**3**		Reserved address

Output voltage	**0.1v**	**Uint**	**320**	**1**	**R/W**	**2200: 220V output;** **2300: 230v output;** **2400: 240v output;**
Output frequency	**0.01Hz**	**Uint**	**321**	**1**	**R/W**	**5000: 50Hz output;** **6000: 60Hz output;**
Battery type		**Uint**	**322**	**1**	**R/W**	**0**:**AGM**; **1**:**FLD**; **2**:**USER**; **3**:**Li1** **4**:**Li2** **5**:**Li3** **6**:**Li4**
Battery overvoltage protection point [A]	**0.1v**	**Uint**	**323**	**1**	**R/W**	Range: (B + 1V * J) ~ 16.5v * J

Data name	Unit	Data format	Start address	Number of registers	Read and write	Remark
Maximum charge voltage [B]	**0.1v**	**Uint**	**324**	**1**	**R/W**	Range: C ~ (A-1v)
Floating charge voltage **[C]**	**0.1v**	**Uint**	**325**	**1**	**R/W**	Range: (12v * J) ~ B
Mains mode battery discharge recovery point [D]	**0.1v**	**Uint**	**326**	**1**	**R/W**	Range: (B-0.5V * J) ~ Max (12V * J, E) Set to 0 to indicate a full recovery
Battery low voltage protection point in mains mode [E]	**0.1v**	**Uint**	**327**	**1**	**R/W**	Range: Min (14.3v * J, D) ~ Max (11v * J, F)
Reserved			**328**	**1**		Reserved address
Off-grid mode battery low voltage protection point [F]	**0.1v**	**Uint**	**329**	**1**	**R/W**	Range: (10v * J) ~ Min (13.5v * J, E)
Waiting time from constant voltage to floating charge	**min**	**Uint**	**330**	**1**	**R/W**	Range: 1 ~ 900 min Set to 0 to default to 10 min
Battery charging priority		**Uint**	**331**	**1**	**R/W**	**0: mains supply is preferred; 1: PV priority; 2: PV is at the same level as mains supply; 3: PV charging only allowed**

Maximum charge current [G]	**0.1A**	**Uint**	**332**	**1**	**R/W**	Range: Max (10 A, H) ~ 80 A
Maximum mains charging current [H]	**0.1A**	**Uint**	**333**	**1**	**R/W**	Range: 2A ~ G
The charging voltage of Eq	**0.1v**	**Uint**	**334**	**1**	**R/W**	Range: C ~ (A-0.5v * J)**http://c/**
bat_eq_time	**min**	**Uint**	**335**	**1**	**R/W**	Range: 0 ~ 900
Eq timed out	**min**	**Uint**	**336**	**1**	**R/W**	Range: 0 ~ 900
Two-time Eq charge interval	**day**	**Uint**	**337**	**1**	**R/W**	Range: 1 ~ 90
Automatic Mains Output Enable		**Uint**	**338**	**1**	**R/W**	**0: No mains power output without pressing the power button 1: Automatic mains power output without pressing the power button**
Reserved			**339**	**2**		Reserved address

Data name	Unit	Data format	Start address	Number of registers	Read and write	Remark
Mains mode battery discharge SOC protection value [K]	**1%**	**Uint**	**341**	**1**	**R/W**	Range: 20% ~ 50%
Mains mode battery discharge SOC recovery value	**1%**	**Uint**	**342**	**1**	**R/W**	Range: 60% ~ 100%
Battery discharge SOC protection value in off-grid mode	**1%**	**Uint**	**343**	**1**	**R/W**	Range: 3% ~ Min (K, 30%)
Reserved			**344**	**7**		
Maximum discharge current protection	**1A**	**Uint**	**351**	**1**	**R/W**	Maximum discharge current protection value in stand-alone mode
Reserved			**352**	**54**		
Boot mode		**Uint**	**406**	**1**	**R/W**	**0: Can be powered on locally or remotely** **1: Only local boot** **2: Remote boot only**
Reserved			**407**	**13**		Reserved address
Remote switch		**Uint**	**420**	**1**	**R/W**	**0: Remote shutdown** **1: Remote power-on**
Invalid data			**421**	**1**		Internal command
Reserved			**422**	**3**		Reserved address
Forcing the charge of Eq		**Uint**	**425**		**W**	**1: Manually force Eq to charge once**

Exits the fail-locked state		**Uint**	**426**		**W**	**1: Exit the fault lock state (it will take effect only when the machine enters the fault mode)**
Invalid data			**427**	**1**		Internal command
Reserved			**428**	**22**		Reserved address
Invalid data			**450**	**7**		Internal command
Reserved			**457**	**3**		Reserved address
Clear the record			**460**	**1**	**W**	**0 xAA: clear the operation record and fault record (effective in non-off-grid mode)**
Reset user parameters			**461**	**1**	**W**	**0 xAA: User parameters are restored to default values (works in non-off-grid mode)**

Data name	Unit	Data format	Start address	Number of registers	Read and write	Remark
Invalid data			**462**	**6**		Internal command
Reserved			**468**	**32**		Reserved address
Invalid data			**500**	**34**		Internal command
Reserved			**534**	**66**		Reserved address
Invalid data			**600**	**34**		Internal command
Program version		**ASC**	**626**	**8**	**R**	
Reserved			**634**	**7**		Reserved address
Rated power	**w**	**UInt**	**643**	**1**	**R**	
Rated number of cells [J]	**PCS**	**UInt**	**644**	**1**	**R**	
Reserved			**645**	**55**		Reserved address
Fault record storage information [K]		**ULong**	**700**	**2**	**R**	Upper 16 bits: the position of the latest record; Lower 16 bits: total number of existing fault messages
Fault Information Query Index		**Uint**	**702**	**1**	**R/W**	Set the fault information index to be queried, range: 0 ~ total number of existing fault information
Fault Record [M]			**703**	**26**	**R**	See the fault record format for details.
Run the log			**729**	**16**	**R**	See the operation log description for details
Reserved			**745**	**5**		Reserved address

Fault code table

Fault code	Explain
bit1	Inverter overtemperature
bit2	**DCDC overtemperature**
bit3	Battery overvoltage
bit4	**PV overtemperature**
bit5	The output is shorted
bit6	Inverter overvoltage
bit7	Output overload
bit8	Busbar overvoltage
bit9	Bus soft start timeout
bit10	**PV overcurrent**
bit11	**PV overpressure**
bit12	Battery overcurrent
bit13	Inverter overcurrent
bit14	Busbar low voltage
bit15	Reserved
bit16	Inverter DC component is too high
bit17	Reserved
bit18	Output current zero bias is too large
bit19	Inverter current zero bias is too large
bit20	Excessive zero bias of battery current
bit21	**PV current zero bias is too large**
bit22	Inverter low voltage
bit23	Inverter negative power protection
bit24	Loss of parallel system host
bit25	Abnormal synchronization signal of parallel system
bit26	Incompatible battery type
bit27	Incompatible parallel version

Warning code description

A system warning is a 32-bit unsigned long integer, one for each bit,Each bit can also be masked by a warning mask I. After masking, the corresponding warning will not be read on the LCD or by a command.

- ## Warning code table

Warning Code	Explain
bit 0	Mains supply zero-crossing loss
bit 1	Mains waveform is abnormal
bit 2	Mains overvoltage
bit 3	Mains undervoltage
bit 4	The mains supply is too frequent
bit 5	Mains underfrequency
bit 6	**PV undervoltage**
bit 7	Overtemperature
bit 8	Low battery voltage
bit 9	Battery is not connected
bit 10	Overload
bit 11	Charge the battery Eq
bit 12	The battery is discharged to a low voltage and has not been charged back to the recovery point
bit 13	Output power derating
bit 14	The fan is blocked
bit 15	**PV energy too low to use**
bit 16	Parallel communication is interrupted
bit 17	Inconsistent single parallel output mode
bit 18	Excessive voltage difference of parallel battery
bit19	Abnormal lithium battery communication
bit20	Battery discharge current exceeds the set value
bit 21~31	Reserved

Description of power flow signs

The power flow has a 16-bit unsigned integer representation, and the meaning of each bit is as follows:

```
0x80 , 0x41 , 0x00 , 0xC1 , 0x81 , 0x40 , 0x00 , 0xC1 , 0x81 , 0x40 ,
0x01 , 0xC0 , 0x80 , 0x41 , 0x01 , 0xC0 , 0x80 , 0x41 , 0x00 , 0xC1 ,
```

- Power flow level table

Bit	Explain
bit0~1	**0: PV is not connected to the system** **1: PV is connected to the system**
bit2~3	**0: The mains supply is not connected to the system** **1: The mains supply has been connected to the system**
bit4~5	**0: The battery will not be charged or discharged** **1: Battery charging** **2: Battery discharge**
bit6~7	**0: The system does not output on-load** **1: System output with load**
bit8	**0: Mains power is not charged** **1: Mains charging**
bit9	**0: PV not charged** **1: PV charging**
bit10	**0: Battery icon is on** **1: Battery icon off**
bit11	**0: PV icon is on** **1: PV icon off**
bit12	**0: The electric map of the city lights up** **1: Mains icon off**
bit13	**0: The load icon is on** **1: Load icon off**

CRC check algorithm

```
0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40,
0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0,
0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40,
0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0,
0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40,
0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0,
0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41,
0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0,
0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41,
0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0,
0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40,
0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1,
0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41,
0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0,
0x80, 0x41, 0x00, 0xC1, 0x81, 0x40
} ;

const char auchCRCLo[] = {
0x00, 0xC0, 0xC1, 0x01, 0xC3, 0x03, 0x02, 0xC2, 0xC6, 0x06,
0x07, 0xC7, 0x05, 0xC5, 0xC4, 0x04, 0xCC, 0x0C, 0x0D, 0xCD,
0x0F, 0xCF, 0xCE, 0x0E, 0x0A, 0xCA, 0xCB, 0x0B, 0xC9, 0x09,
0x08, 0xC8, 0xD8, 0x18, 0x19, 0xD9, 0x1B, 0xDB, 0xDA, 0x1A,
0x1E, 0xDE, 0xDF, 0x1F, 0xDD, 0x1D, 0x1C, 0xDC, 0x14, 0xD4,
0xD5, 0x15, 0xD7, 0x17, 0x16, 0xD6, 0xD2, 0x12, 0x13, 0xD3,
0x11, 0xD1, 0xD0, 0x10, 0xF0, 0x30, 0x31, 0xF1, 0x33, 0xF3,
0xF2, 0x32, 0x36, 0xF6, 0xF7, 0x37, 0xF5, 0x35, 0x34, 0xF4,
0x3C, 0xFC, 0xFD, 0x3D, 0xFF, 0x3F, 0x3E, 0xFE, 0xFA, 0x3A,
0x3B, 0xFB, 0x39, 0xF9, 0xF8, 0x38, 0x28, 0xE8, 0xE9, 0x29,
0xEB, 0x2B, 0x2A, 0xEA, 0xEE, 0x2E, 0x2F, 0xEF, 0x2D, 0xED,
0xEC, 0x2C, 0xE4, 0x24, 0x25, 0xE5, 0x27, 0xE7, 0xE6, 0x26,
0x22, 0xE2, 0xE3, 0x23, 0xE1, 0x21, 0x20, 0xE0, 0xA0, 0x60,
0x61, 0xA1, 0x63, 0xA3, 0xA2, 0x62, 0x66, 0xA6, 0xA7, 0x67,
0xA5, 0x65, 0x64, 0xA4, 0x6C, 0xAC, 0xAD, 0x6D, 0xAF, 0x6F,
0x6E, 0xAE, 0xAA, 0x6A, 0x6B, 0xAB, 0x69, 0xA9, 0xA8, 0x68,
0x78, 0xB8, 0xB9, 0x79, 0xBB, 0x7B, 0x7A, 0xBA, 0xBE, 0x7E,
0x7F, 0xBF, 0x7D, 0xBD, 0xBC, 0x7C, 0xB4, 0x74, 0x75, 0xB5,
0x77, 0xB7, 0xB6, 0x76, 0x72, 0xB2, 0xB3, 0x73, 0xB1, 0x71,
0x70, 0xB0, 0x50, 0x90, 0x91, 0x51, 0x93, 0x53, 0x52, 0x92,
0x96, 0x56, 0x57, 0x97, 0x55, 0x95, 0x94, 0x54, 0x9C, 0x5C,
0x5D, 0x9D, 0x5F, 0x9F, 0x9E, 0x5E, 0x5A, 0x9A, 0x9B, 0x5B,
0x99, 0x59, 0x58, 0x98, 0x88, 0x48, 0x49, 0x89, 0x4B, 0x8B,
0x8A, 0x4A, 0x4E, 0x8E, 0x8F, 0x4F, 0x8D, 0x4D, 0x4C, 0x8C,
0x44, 0x84, 0x85, 0x45, 0x87, 0x47, 0x46, 0x86, 0x82, 0x42,
0x43, 0x83, 0x41, 0x81, 0x80, 0x40
} ;

unsigned short sModbusCrc16(INT8U *chMsg, INT16U dataLen)
{
```

```
unsigned char ubCRCHi = 0xFF;
unsigned char ubCRCLo = 0xFF;
unsigned char duwIndex; while
(dataLen --)
{
    duwIndex = 0xff&(ubCRCHi ^ *chMsg++);
    ubCRCHi = 0xff&(ubCRCLo ^ auchCRCHi[duwIndex]);
    ubCRCLo = auchCRCLo[duwIndex];
}
return (ubCRCHi << 8 | ubCRCLo);
```

```
}
```