PC321 ZHA Clusters and Attributes

Version 1.2.4

Contents

1. Acronyms and Abbreviations

ID	Attribute/Command Identifier
Name	Attribute Name
Type	Data Type
M/O	Mandatory/Optional
MFG	Manufacture Specific
PER	Persistent
R/W	Read/Write
REP	Reportable

2. Endpoint Description

Endpoint 0x00	Profile ID: 0x0000 [ZigBee Device Profile]

Endpoint 0x01	Profile ID: 0x0104 [ZigBee Home Automation]
Device ID	0x000D (ZHA Consumption Awareness Deivce)
Clusters	0x0000 (Basic Server)
	0x0003 (Identify Server)
	0x000A (Time Client)
	0x0702 (Simple Metering Server)
	0xFFE0 (Clear Metering Server)

3. Basic(0x0000)

3.1.Server

3.1.1. Attributes

ID	Name	Type	M/O	MFG	PER	Default	R/W	REP	Descriptions
0x0000	*ZCLVersion*	uint8	M	No	Yes	-	R	No	Device dependent
0x0001	*ApplicationVersion*	uint8	O	No	Yes	-	R	No	Device dependent
0x0002	*StackVersion*	uint8	O	No	Yes	-	R	No	Device dependent
0x0003	*HWVersion*	uint8	O	No	Yes	-	R	No	Device dependent
0x0004	*ManufacturerName*	string	O	No	Yes	OWON Technology Inc.	R	No	
0x0005	*ModelIdentifier*	string	O	No	Yes	PC321	R	No	
0x0006	*DateCode*	string	O	No	Yes	-	R	No	Device dependent
0x0007	*PowerSource*	enum8	O	No	Yes	0x04	R	No	

3.1.2. Commands Received

None.

3.1.3. Commands Generated

None.

4. Identify(0x0003)

4.1.Server

4.1.1. Attributes

ID	Name	Type	M/O	MFG	PER	Default	R/W	REP	Descriptions
0x0000	*IdentifyTime*	uint16	M	No	No	0x0000	R/W	No	

4.1.2. Commands Received

ID	Description	M/O
0x00	Identify	M
0x01	Identify Query	M

4.1.3. Commands Generated

ID	Description	M/O
0x00	Identify Query Response	M

5. Time(0x000A)

5.1.Client

For periodically time synchronization.

6. Simple Metering(0x0702)

6.1.Server

6.1.1. Attributes

ID	Name	Type	M/O	MFG	PER	Default	R/W	REP	Descriptions
0x0000	current summation delivered	int48u	M	No	No	-	R	Yes	Current summation delivered of the 3 phases
0x0017	Inlet Temperature	Int24s	O	No	No	-	R	No	Temperature
0x0200	Status	map8	O	No	No	-	R	Yes	Reflect the current measurement error conditions 0: No error
0x0300	unit of measure	enum8	O	No	Yes	0x00	R	No	kWh
0x0301	Multiplier	Int24u	O	No	Yes	1	R	No	Multiplication factor
0x0302	Divisor	Int24u	O	No	Yes	1000	R	No	Divisor factor
0x0303	summation formatting	map8	O	No	Yes	0xFB	R	No	Fifteen decimal digits to the left of the decimal point, three to the right, without a leading zero. This format is suitable for 'current summation delivered'
0x0304	demand formatting	map8	O	No	Yes	0xFB	R	No	Fifteen decimal digits to the left of the decimal point, three to the right, without a leading zero. This format is suitable for 'Instantaneous Demand'
0x0306	metering device type	map8	O	No	Yes	0x00	R	No	Electric meter
0x0400	Instantaneous Demand	int24	M	No	No	-	R	Yes	Instantaneous energy consumed summation of the 3 phases
0x1000	report map	map8	O	Yes	No	0x0F	R/W	No	refer to 6.2.1
0x2000	L1 phase active power	int24	M	Yes	No	-	R	Yes	refer to 6.2.2
0x2001	L2 phase active power	int24	M	Yes	No	-	R	Yes	refer to 6.2.2
0x2002	L3 phase active power	int24	M	Yes	No	-	R	Yes	refer to 6.2.2
0x2100	L1 phase reactive power	int24	O	Yes	No	-	R	Yes	refer to 6.2.2

0x2101	L2 phase reactive power	int24	O	Yes	No	-	R	Yes	refer to 6.2.2
0x2102	L3 phase reactive power	int24	O	Yes	No	-	R	Yes	refer to 6.2.2
0x2103	reactive power summation of the 3 phases	int24	O	Yes	No	-	R	Yes	refer to 6.2.2
0x3000	L1 phase voltage	int24u	O	Yes	No	-	R	Yes	refer to 6.2.2
0x3001	L2 phase voltage	int24u	O	Yes	No	-	R	Yes	refer to 6.2.2
0x3002	L3 phase voltage	int24u	O	Yes	No	-	R	Yes	refer to 6.2.2
0x3100	L1 phase current	int24u	O	Yes	No	-	R	Yes	refer to 6.2.2
0x3101	L2 phase current	int24u	O	Yes	No	-	R	Yes	refer to 6.2.2
0x3102	L3 phase current	int24u	O	Yes	No	-	R	Yes	refer to 6.2.2
0x3103	current summation of the 3 phases	int24u	O	Yes	No	-	R	Yes	refer to 6.2.2
0x3104	leakage current	int24u	O	Yes	No	-	R	Yes	refer to 6.2.2
0x4000	L1 phase energy consumption	int48u	M	Yes	No	-	R	Yes	refer to 6.2.2
0x4001	L2 phase energy consumption	int48u	M	Yes	No	-	R	Yes	refer to 6.2.2
0x4002	L3 phase energy consumption	int48u	M	Yes	No	-	R	Yes	refer to 6.2.2
0x4100	L1 phase reactive energy consumption	int48u	O	Yes	No	-	R	Yes	refer to 6.2.2
0x4101	L2 phase reactive energy consumption	int48u	O	Yes	No	-	R	Yes	refer to 6.2.2
0x4102	L3 phase reactive energy consumption	int48u	O	Yes	No	-	R	Yes	refer to 6.2.2
0x4103	reactive energy summation of the 3 phases	int48u	O	Yes	No	-	R	Yes	refer to 6.2.2
0x5000	the latest historical record time	int32u	O	Yes	No	-	R	No	The latest consumed energy record time The format refer to 6.2.3
0x5001	the oldest historical recorded time	int32u	O	Yes	No	-	R	No	The oldest consumed energy record time The format refer to 6.2.3
0x5002	set minimum cycle for report	int32u	O	Yes	No	10	R/W	No	10s ~ 600s, unit: s The shortest interval time for report
0x5003	set maximum cycle for report	int32u	O	Yes	No	60	R/W	No	10s ~ 600s, unit: s The longest interval time for report
0x5004	sent historical record state	int8u	O	Yes	No	0x00	R	No	0:Idle, no history record to sent

									1:historical record is sending
0x5005	frequency	int8u	O	Yes	No	50	R	No	Unit: Hz
0x5006	the accumulative threshold of energy	int8u	O	Yes	No	2	R/W	No	Unit: W The instantaneous energy below this wattage is displayed as 0 W, the current is displayed as 0 A, and the power is not accumulated
0x5007	report mode	int8u	O	Yes	No	0	R/W	No	0： In this mode, all data is reported if any of the following conditions are met A. The time since last report all data >= minimum cycle for report, And the power change >= Δ， Δ refer to attribute(0x5008) B. The time since last report all data > maximum cycle for report 1： System get into ”quick acquisition” mode， the device report all data by “minimum cycle”
0x5008	Set Z:percent change in power	int8u	O	Yes	No	1	R/W	No	0<= Z <=100 Δ =percent change in power*power data of last report
0x5009	Energy consumption when the current is negative	int8u	O	Yes	No	0	R/W	No	0: When the current is negative, the energy consumption is still accumulated in positive 1: When the current is negative, the energy consumption is accumulated in negative
0x6000	L1 phase reverse energy consumption	Int48u	O	Yes	No	-	R/W	Yes	refer to 6.2.2
0x6001	L2 phase reverse energy consumption	Int48u	O	Yes	No	-	R/W	Yes	refer to 6.2.2
0x6002	L3 phase reverse energy consumption	Int48u	O	Yes	No	-	R/W	Yes	refer to 6.2.2
0x6003	Reverse energy	Int48u	O	Yes	No	-	R/W	Yes	refer to 6.2.2

	consumption of the 3 phases								

6.1.2. Commands Received

ID	Description	M/O	MFG	Descriptions
0x20	get history record	O	Yes	Carry the data in turn after the command ID： the start time(4 Bytes), the end data(4 Bytes) After the gateway sends command to PC321,it will return the historical energy consumption in that period one by one, the format refer to 6.2.3
0x21	stop sending historical record	O	Yes	Interrupt the PC321 to sent historical record

6.1.3. Commands Generated

ID	Description	M/O	MFG	Descriptions
0x20	sent historical record	O	Yes	refer to 6.2.4

6.2.Descriptions

6.2.1. report map

name	bit	Descriptions
report map	bit8~bit5	reserve
	bit4	1: enable to report L3 phase all parameters 0: disable
	bit3	1: enable to report L2 phase all parameters 0: disable

	bit2	1: enable to report L1 phase all parameters 0: disable
	bit1	1: enable to report all parameters of the 3 phases 0: disable

note：All parameters of each phase are included in turn as：active energy consumption, active power, voltage, current, reactive energy consumption, reactive power, power factor

All parameters summated by the 3 phases are included in turn as: active energy consumption, active power, current, reactive energy consumption, reactive power, meter status

6.2.2. Power, Voltage, Current, Electric energy format

- The conversion of voltage: Real = Trans/10 (‘Real’ is the actual value, ‘Trans’ is the transmission value)
  Voltage unit: V
  Voltage format: Precision to one decimal place
- The conversion of Current/Energy consumption/Instantaneous power consumption: Real = Trans/1000 (‘Real’ is the actual value, ‘Trans’ is the transmission value)
  Current unit: A
  Current format: Precision to three decimal places
  Energy consumption unit: kWh
  Energy consumption format: Precision to three decimal places
  Instantaneous power consumption unit: kW
  Instantaneous power consumption format： Precision to three decimal places
- Power factor: Real = Trans/100 (‘Real’ is the actual value, ‘Trans’ is the transmission value)
  Power factor format: Precision to two decimal places

6.2.3. Time

Format: timestamp, 4 Bytes. Timestamp is begin with 2000-1-1 00:00

6.2.4. Sent historical record

Historical record data for sending is included in turn as： command status, record status, time, active energy, reactive energy, sent in 2s interval, only sent a piece of data every time

Command status（1 Byte）	bit8~bit5	reserve
	bit4	1: No historical record during this time
	bit3	1: The starting time and the ending time are both wrong
	bit2	1: The starting time is wrong
	bit1	1: The ending time is wrong
Record status（1 Byte）	-	0: Sending record is over 1: There are still records not sent, and PC321 will keep sending at this time
Time（4 Bytes）	-	record energy consumed, the format reference to 6.2.3
A/L1 phase active energy consumption（6 Bytes）	-	The format refer to 6.2.2
B/L2 phase active energy consumption（6 Bytes）	-	The format refer to 6.2.2
C/L3 phase active energy consumption（6 Bytes）	-	The format refer to 6.2.2
A/L1 phase reactive energy consumption（6 Bytes）	-	The format refer to 6.2.2
B/L2 phase reactive energy consumption（6 Bytes）	-	The format refer to 6.2.2
C/L3 phase reactive energy consumption（6 Bytes）	-	The format refer to 6.2.2

note：All the above data without indicating the sending order are send in low bit.

7. Clear Metering(0xFFE0)

7.1.Server

7.1.1. Attribute

None.

7.1.2. Commands Received

ID	Description	M/O	MFG
0x00	clear measurement data	O	Yes

7.1.3. Commands Generated

None.