



Document No. AK-WI-TH-050

Version No. V 2.0160125

 **Smart Home Gateway**
A9 Datasheet

Open Cooperation Win-win

Shenzhen ANYK Technology Inc.

**AK-A9 datasheet**

Document NO.V2.0160125.R4.0

Copyright©2015ANKY Corporation

All right reserved

No part of this documentation may be excerpted , reproduced , translated , annotated or duplicated in any form or by any means without the prior written permission of ANKY Corporation.

ANKY reserves the right to modify the technical parameters and specification of this datasheet . As the printing errors and discrepancies with recent data in the datasheet, we will improve in time. All of these changes are no longer advance notice, but will be into the new datasheet.

ANKY reserves the right of final interpretation of this datasheet.



Contents

1.	ANYK smart home solution.....	1
1.1.	Smart home overview	1
1.2.	ANYK smart home	2
1.3.	ANYK A9 smart home gateway system	3
1.4.	Reference Standard	4
2.	A9 description	6
2.1.	General Description	6
2.2.	Product advantages	6
2.2.1.	Open API	6
2.2.2.	Multi-services operation.....	7
2.2.3.	Super strong compatibility	7
2.2.4.	Convenient remote business auto-allocation, maintenance and management	7
2.2.5.	Home private storage.....	7
2.2.6.	powerful & security gateway	8
2.3.	Product functions	8
2.4.	Product features	9
2.5.	Product Specification	11
2.6.	Interface introduce	11
2.7.	LED Status Description	12
3.	Running environment	13
3.1.	Development environment.....	13
3.2.	Hardware.....	13
3.3.	Power supply and power consumption	13
3.4.	Others.....	13
4.	Instructions	14
4.1.	Electrical connection.....	14
4.2.	System start and off	14
4.3.	Configuration of the A9 home gateway	15
5.	Management and maintenance	16
6.	The do's and don'ts	17



1. ANYK smart home solution

1.1. Smart home overview

As the family is the smallest units of society, and with the development of cloud computing, big data, internet of things , communications networks, mobile internet technology, all kinds of intelligent terminal products which meet a single person's needs, gradually began to focus on this minimum unit, and tap its potential commercial value. In the space of actively promote the smart city construction in 2013 in all countries , smart home has been an unprecedented development in 2014, until 2015, the major of internet giants, home appliance giant, communications giant all have began to start the smart home business.

Market research firm Jupiter Research forecast that global smart home market size in 2017 will reach \$ 60 billion, and CAGR will be 19%. While another market research firm IDC believes that the smart home market will become a one trillion market.



Figure 1- 1 Smart home structure

Smart home refers to use the technology of internet of things to make home objects connect with any other objects easily, and then to remotely control home appliances through the internet technology, and the smart community which based on smart home, includes community security , intelligent management and communities O2O.



1.2. ANYK smart home

ANYK technology , based on many years C&D experience in the production of optical network product, continues to make breakthroughs and innovation, from the beginning to establish the connection between people to now to realize the connection between objects ,between people and objects ,this change means that it start its internet of things business actively. Especially ANKY propose the concept of “Optical , Cloud , Home +”, that is all optical-access , cloud platform for community , smart home and internet + ,and it is committed to providing open, compatible ,value-added operations ,customizable smart home solutions for its partners.

ANYK smart home includes smart optical networks establishment, smart home ecosystem establishment , smart home gateway system establishment and smart home cloud management platform.

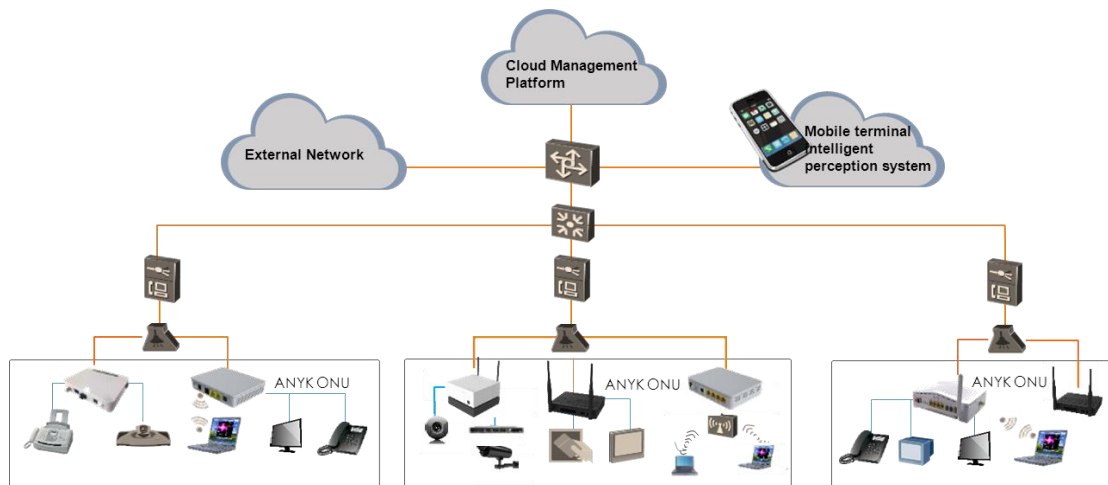


Figure 1- 2 ANYK smary optical networks structure

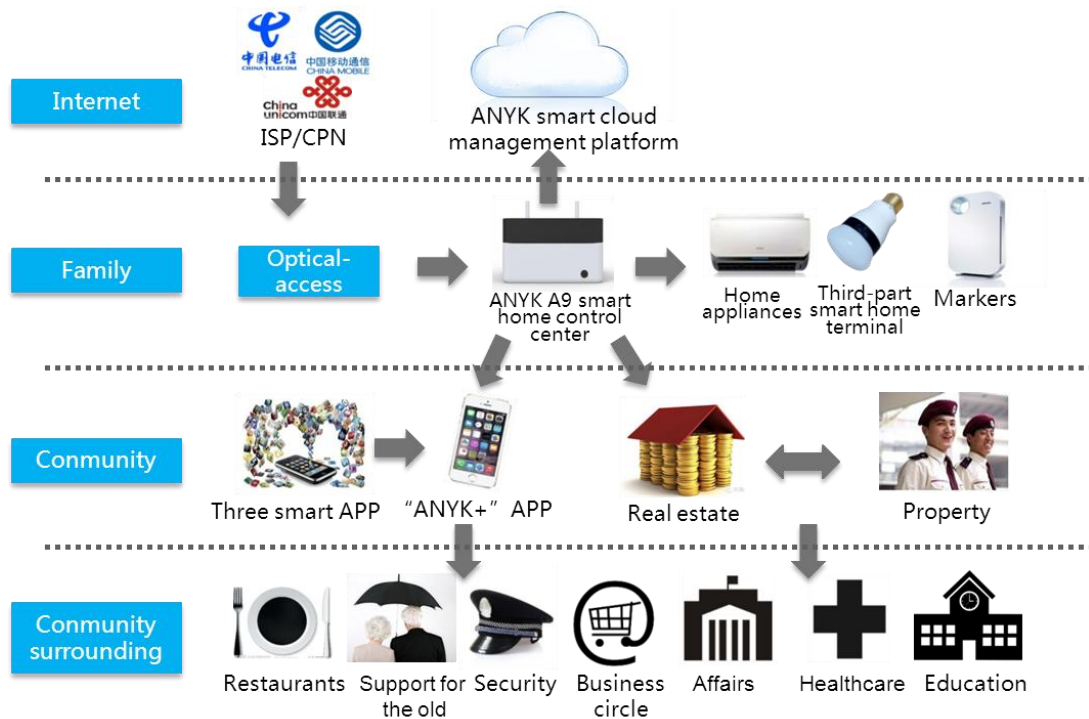


Figure 1- 3 ANYK smart home ecosystem

1.3. ANYK A9 smart home gateway system

ANYK smart home gateway A9 is a high-end gateway-based home-side device , with all the function of the router and modem, which is high cost-effective and flexible, which includes five parts, smart home gateway A9 ,smart home gateway cloud management platform, phone management client APP , ISP/CPN/Property RMS and third-part smart home terminal.

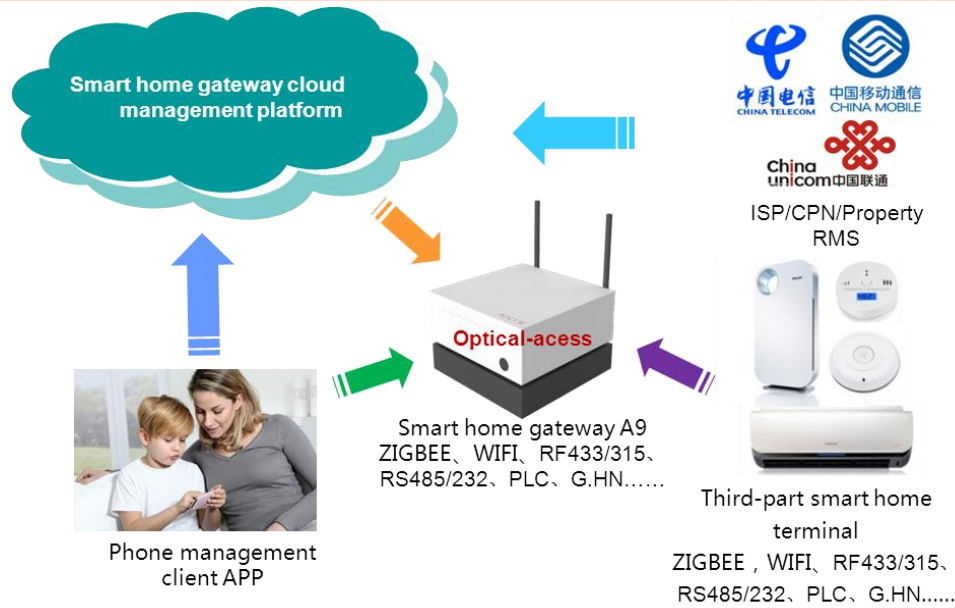


Figure 1- 4 ANYK A9 smart home gateway

Smart home gateway A9: Make many functions in one device, such as optical-access, routing, storage and smart control, to realize the control of home smart terminals, and to upload the family data to cloud management platform. It supports an open platform, compatible with a variety of standards of internet of things, and provides application access for makers and third-party hardware and software vendors.

Smart home gateway cloud management platform: Build family private storage space;

ISP/CPN/Property RMS: Provide the cloud management back-end platform;

Phone management client APP: Provide home real-time remote control through phone client APP;

Third-part smart home terminal: Provide smart life for family.

1.4. Reference Standard

China unicom home gateway custom standard V2.0.

China unicom smart "WO home" smart gateway management platform standard V1.0.

China unicom smart "WO home" smart gateway technology standard V1.0.

China unicom smart "WO home" smart gateway interface specification V1.0.

China telecom GPON equipment technical requirements.



China telecom 2014 “yue me” gateway central purchasing technical
specification-GPON uplink “yue me” gateway.



2. A9 description

2.1. General Description

ANYK launched the first maker-level intelligent hardware products in China-smart home gateway A9 , which will give the all-optical smart home one-stop solution based on PON, and it includes so many functions ,such as intelligent optical routing, private cloud storage, intelligent home control center and so on , not yet ,it uses core patent technology to ensure the systems efficient and stable.

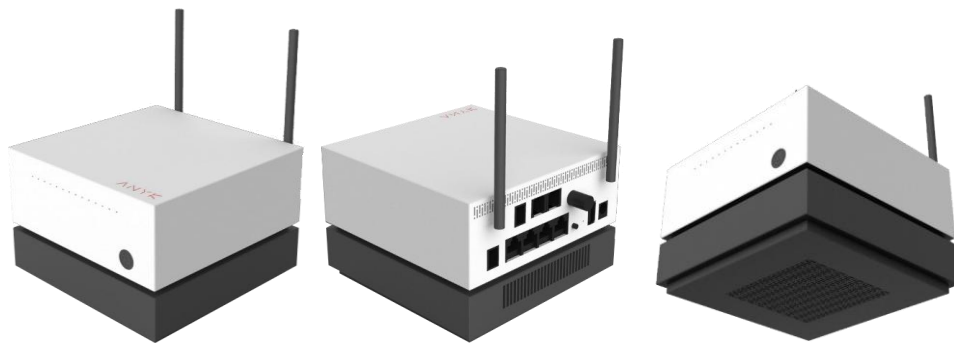


Figure 2- 1 ANYK A9

2.2. Product advantages

2.2.1. Open API

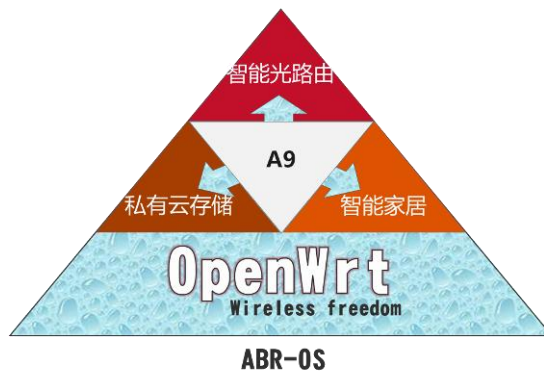


Figure 2- 2 A9 software frame

A9 uses an open API, supports smart home third-party hardware and software products access, effectively extends the range of product application, increase the



interactive scene with the user, and promote the sustained value-added of CPN business.

2.2.2. Multi-services operation

A9 can support multi-services operation, such as voice , hd-video, data and smart home , which can realize the remote control and management of smart gateway by smart phone APP .At the same time ,it provides the multiple ways of billing and authentication, can realize network monitoring and management of the whole CPN , effectively solved the industry value-added problem,such as CPN , real estate and so on.

2.2.3. Super strong compatibility

The system A9 supports more than 100 kinds of communication protocols, including ZigBee, WIFI, infrared, RF433 / 315, RS-485/232, PLC, GHN and other third-party smart home standards , which effectively compatible with multi-vendor peripheral appliances and intelligent terminal products, and supports smart home platform interface services.

2.2.4. Convenient remote business auto-allocation, maintenance and management

A9 managed by TR - 069 and OMCI ,and can manage terminal business without any additional IP network, which makes remote business auto-allocation, maintenance and management more convenient.

2.2.5. Home private storage

A9 provide USB interface,which can connect all devices with USB interface ,and provided convenient home network storage and file sharing services.

The characteristics of A9 USB storage as follows:

- ① USB interface can plug and play, support hot plug;
- ② USB function can be configured via a local Web page, which make the home network file sharing more convenient.
- ③ make the home storage FTP client realized, namely realized the file download from public FTP server to a storage devices with USB interface.



A9 NAS storage function has the following characteristics:

- ① The device comes with 1TB hard drive storage expansion, higher configuration can be customized;
- ② Private cloud storage content accessed through APP, and upload files to the hard disk, to realize file sharing and free access.

2.2.6. powerful & security gateway

A9 can be used as a home gateway ,with powerful & security gateway ability.

The characteristics of A9 gateway as follows :

- ① forwarding rate up to 900Mbit/s, meet the business needs of high quality;
- ② can be used as DHCP Server or DHCP Client, meet the needs of users in different scenarios;
- ③ support configure anti-DoS attacks, MAC address filtering, IP address filtering, URL address filtering, firewall and ONU access control rules ,make A9 as a gateway device more security.

2.3. Product functions

Network performance	Wifi-standard	2.4GHz: IEEE 802.11b/g/n; 5GHz: IEEE 802.11a/n/ac
	protrol	CSMA/CA, CSMA/CD, TCP/IP, DHCP, ICMP, NAT, PPPoE
	Maximum transmission rate	1167 Mbps (300 Mbps + 867 Mbps)
	Frequency range	2.4 GHz-2.4835 GHz, 5.15 GHz-5.25 GHz
	channel	1-13,36-48,149-165
	Modulation	CCK 、 BPSK、 QPSK、 OFDM
	Transmission power	20dBm (max)
	Wireless performance	20dBm(default)
Function introduce	ZIGBEE	Support
	PLC_BUS	Support
	RS-485/232 BUS	Support , 32 segments
	RF433/315	Support
	WIFI	Support
	Infrared control	Support
	Other private agreement	Support S-LINK , Rexbee , Wiscolud , 868,and so on



CATV	Support
IPTV	Support
Cloud storage	Support family private cloud storage
VPN inside	Support
Firewall	firewall inside
Relay function	Support WDS wireless relay
Wireless security	MAC filtering , wireless security switch , support WPA-PSK/WPA2-PSK
Network management	Chinese and English web management ,support soft update online
Plug-in installing and update	Support Plug-in installing and auto-update online
System update	Support auto-update online
Remote control	Support remote control by phone

2.4. Product features

Gateway	Support the static routing and default routes Support IPv4 and IPv6 and IPv4 / v6 double stack Support routing work mode, bridge work mode, bridge/routing hybrid mode, all can support both IPv4 and IPv6 packet forwarding
GPON	Meet ITU-T G.984 GPON standard Support Class B + optical power budget Download: 1490 ± 10nm wavelength, Uplink:1310 ± 20nm wavelength Support GPON physical layer maximum uplink speed 1.244Gbit / s, the
Ethernet	100/1000 Base-T Ethernet interface Meet IEEE 802.3ab standard
Multicast	Support IGMP V2 & V3 Snooping Support IGMP Proxy Support bridging WAN multicast Support 255 multicast groups at the most
VOIP	Supports preset signal parameters according the country code Support configuration & distribution defined signal Support SIP (Session Initiation Protocol) Protocol Support H. 248 protocol Support RTP/RTCP (RFC 3550)
WLAN	Meet IEEE 802.11 n, compatible with IEEE 802.11 b / 802.11 g Support four SSID (Service Set Identifier) to distinguish the network Support 13 working channel Support channel automatic selection and manual configuration Support 64 - bit and 128 - bit WEP encryption Support TKIP and AES + TKIP and AES encryption Support Open System, Shared key, WPA, connected, WPA wpa2-psk, and WPS recognition



USB	<p>Meet USB 1.1 / USB 2.0 / USB 2.0 standard</p> <p>Support USB storage devices plug and play ,and hot plug</p> <p>Support storage devices ,just like USB HUB and mass storage</p> <p>Support FAT32 / FAT/NTFS file system to read and write</p> <p>Support USB storage devices automatically mount/unloading</p> <p>Support USB fast backup and USB configuration file recovery</p>
OMCI	<p>Support OMCI configuration management (including GEM Port, T - CONT, CAR, VLAN configuration, etc.)</p> <p>Support OMCI query management (including equipment information, Ethernet port state information query, etc.)</p> <p>Supported distributing XML configuration files by OMCI</p> <p>Support OMCI alarm and alarm synchronization</p> <p>Support OMCI performance statistics</p>
Security	<p>Support the DoS attack</p> <p>Support the MAC address filtering</p> <p>Support URL filtering</p> <p>Support IP address filtering</p> <p>Supporting configuration ONU access control rules</p>
Zigbee	<p>Support the infinite extension</p> <p>Support multi-point communication</p> <p>Support large-scale ad-hoc network</p> <p>Support dynamic routing network</p> <p>Support Zigbee3.0 protocol</p> <p>Support ZigBee RF4CE</p>
Storage	<p>Support NAS network storage expansion, the machine with 1 TB hard disk, and can be customized</p> <p>Support USB storage extension, theoretically maximum stored unlimited</p>
CATV	<p>Support 40 to 870MHzRF bandwidth</p> <p>Support video signal switch</p> <p>Support AGC</p>
PLC_BUS	network capacity theory support 64000 devices
RS-485/232 BUS	<p>32 segments</p> <p>Can be expanded to 255</p>
RF433/315	<p>Support GFSK modulation</p> <p>Point to point communication</p> <p>Support terminal capacity expand</p>
WIFI	Support WIFI remote control
Infrared control	<p>Support remote Infrared control</p> <p>Support old home appliances control</p>
Other private agreement	Support S-LINK , Rexbee , Wiscolud , 868,and so on



2.5. Product Specification

Format	Physical parameters	134*134*92mm
	weight	~600g
Interface	Power interface	1
	USB	1
	LAN	4, ETH1/2/3/4
	FXSi	2, FXS1/2
	CATV	1
	PON	1, Triplexer access (or two, CATV dual fiber 3 to access)
	Reset key	1
	A key accelerated	1
Fitting	Power adapter	1
	RJ45 cable	1, 2m×1
	detasheet	1
	certificate	1
	Warranty Card	1
	host	1
Working enviroment	Working temperature	0-40℃
	Working humidity	5%-95%RH (non condensation)
	Storge temperature	-40-70℃
	Storge humidity	0%-95%RH (non condensation)
	Atmosphere	86-106KPa

2.6. Interface introduce

Interface/key	Description
PON	Home gateway network interface, through optical-fiber to connect with isp
LAN	Enternet port, adaptive 10/100/1000M Base-T (RJ-45) , connect with computer or STB
FXS1/2 VOIP	VoIP interface, (RJ-11) ,connct with telephone
Power DC 12V/2A	Power interface
USB3.0	Connect with USB storage devices , compatible with USB2.0, improve the data transmission rate, smart power manngement
Reset key	6-12s effective, restore factory settings
A key accelerated	6-12s effective, a key to accelerate network speed
CATV	connect with the community antenna television cable



2.7. LED Status Description

Name	Color	Logo	function
Power	green	PWR	<ul style="list-style-type: none"> ● Off: means no power ● Flash :means starting ● Lights: means running normally
PON	green	PON	<ul style="list-style-type: none"> ● Off: means ONU is not register to the GPON OLT ● Flash: means ONU is registering to the GPON OLT ● Lights: means ONU registered to the GPON OLT
LOS	red	LOS	<ul style="list-style-type: none"> ● Off: means optical power received is normal ● Flash: means optical power received is lower than optical receiving sensitivity or not connecting with optical fiber
WAN	green	WAN	<ul style="list-style-type: none"> ● Flash: means data transmission is normal ● Lights: means the RJ45 connect with the cable
WiFi connetion	green	WiFi	<ul style="list-style-type: none"> ● Off: means wifi function is close ● Flash: means wifi function is registering ● Lights: means wifi function is normal
FXS1/2 VoIP	green	FXS1、 FXS2	<ul style="list-style-type: none"> ● Off: means failed to register or connection is incorrect ● Flash: means data transmission is normal ● Lights: means register successfully and waiting for data transmission
LAN	green	Eth1/2/ 3/4	<ul style="list-style-type: none"> ● Flash: means data transmission is normal ● Lights: means the RJ45 connect with the cable
SATA storage	green	SATA	<ul style="list-style-type: none"> ● Off: means the system maybe no power or not connect with any SATA devices ● Flash: means data transmission is normal ● Lights: means SATA device connection is normal, but not data transmission



3. Running environment

3.1. Development environment

Chip solutions: Marvell6660;

Development system : linux-3.4.69;

gcc compiling environment :ubuntu 12.04;

System supporting : Android, IOS.

3.2. Hardware

A9 hardware configuration is as follows:

Hardware configuration	CPU	1GHz
	RAM	1G Byte, dual-core
	Flash	512MB
	Antenna	5dBi (2.4G/5G)

3.3. Power supply and power consumption

A9 equipped with power adapter, the inputs of adapter with the way of AC power supply, outputs with DC, equipment insulation resistance between the shell and the power cord is 50 M Ω , detail power supply and power parameters is as follows:

- ① Inputs of the power adapter: AC, single-phase 220 V, 50 Hz;
- ② Outputs of the power adapter: DC, 12 V, 2.5 A.
- ③ Current limiting range of the power adapter: 1.8 ~ 3 A, With overcurrent and overvoltage and short circuit protection ability;
- ④ Maximum power consumption of the machine (including the power adapter) : 20 W.

3.4. Others

A9 has electromagnetic compatibility, with anti-electromagnetic interference capability ,and with over-voltage over-current protection;At the same time, the power equipment has 4 kv (differential mode and common mode) protection ability;With 0.5 KV (differential mode and common mode) protection ability in the user side and network side interface, you can use without worry.



4. Instructions

4.1. Electrical connection

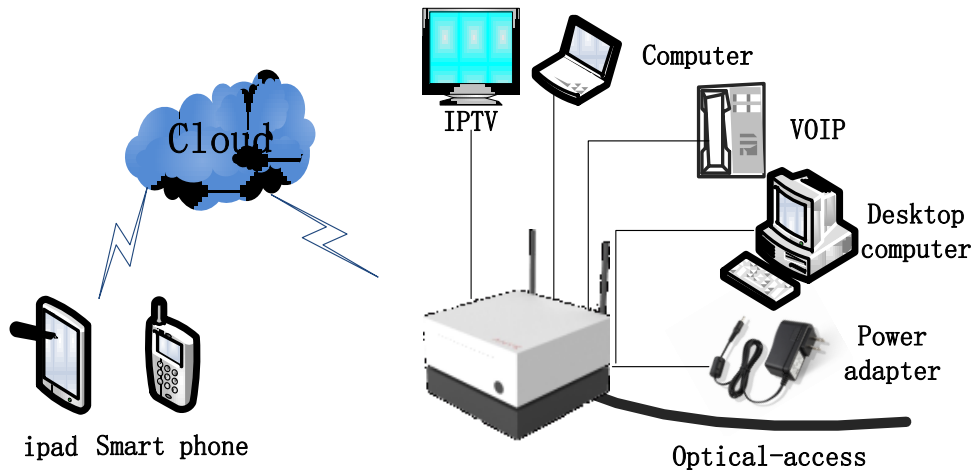


Figure 4- 1 A9 electrical connection map

The figure of A9 electrical connection as above ,and the detaile operation steps just as follows:

- ① Make sure the broadband access way, then make the optical one end connect with home optical interface, another end connect with A9 GPON interface.
- ② If you need to connect with VoIP, you should make one end of the telephone line connect with telephone ,and another connect with A9 FXS1/2 interface.
- ③ If you need to connect with computer, you should make one end of the cable connect with LAN interface of computer ,another end connect with A9 LAN interface.
- ④ If you need to connect with CATV ,make the CATV cable connector connect with A9 CATV interface.
- ⑤ Make one end of the power adapter connected with A9 power interface, and another connect with home 100V AC power socket.
- ⑥ Open GPRS, downloading the A9 APP form smartphone android market.

4.2. System start and off

System start and off include the start and off of the mobile phone APP and the A9



home gateway .and the start and off of the mobile phone APP can't influence the whole system work,it just remote control ,so ,you can choose whether to use the APP to remote control the A9 home gateway system. The detailed steps are as follows.

① Make the A9 home gateway connect according to the system electrical connection way of section 4.1;

② Press the home gateway power button PWR, to complete the system start of the A9 home gateway;

③ Configure A9 home gateway on the WEB,when you finished ,you can surf in internet with high-speed, the A9 home gateway configuration detailed in section 4.3.

④ When you finished installing A9 APP in smart phone or ipad,just binding the A9 home gateway,you can remote control the start and off of the A9 home gateway system.

⑤ Press the home gateway power button PWR once more,to complete the system off of A9 home gateway.

4.3. Configuration of the A9 home gateway

At the status of system start,configure the A9 home gateway through computer.The detail configuration steps are as follows:

① Open the browser,enter 192.168.1.1 in the address bar,and press “Enter” button to the WEB configuration page;

② According to the guide book and enter your home account and password to finish the configurations of A9 home gateway.

The default factory Settings:

Items	Defaults
WEB Login Username	admin
WEB Login Password	admin
Defaults IP address	192.168.1.1



5. Management and maintenance

ANKY has a perfect after-sales service system, with multiple offices in china and abroad, to comply with "with advanced technology, to guide the customers, enhance customer value space; with cost control, to reduce customer acquisition cost, increase profit space for customers, with quality control, to rest customers heart" the development of the core, and resist product is the fundamental, service just by the heart, with 101% warmheartedness to the customer 100% satisfaction.

At the same time, as described in section 2.2 in chapter 2, smart home gateway management client APP is configured by the smart home gateway management platform in the cloud, customers just configure and remote control multi-smart-home-gateway through the smart home gateway management platform in the cloud, which reduces the management and maintenance costs of ISP.

After-sales service ANKY provided for customers are as follows, ensure to provide quality customer management and maintenance experience:

- ① Multi-offices can provide convenient and rapid after-sales service experience;
- ② Perfect after-sales process and professional product manager and after-sale service staff is continuously follow-up with product pre-sales and after-sales;
- ③ Provide product lifetime technical support services.

A9 product maintenance method is as follows:

Maintenance items	Maintenance cycle	Methods	Notes
Equipment cleanliness	1 week	With a soft dry cloth to wipe the equipment surface dust, and remove surrounding possible dangerous goods	Before cleaning, please cut off power supply
Equipment temperature check	1 day	Be careful to touch equipment with the hands, if too hot, stop using for some time	Start using after the equipment cooling



6. The do's and don'ts

When use A9 , you should pay attention to the safety issues as follows:

- ① please do not use equipment under the environment of high temperature for a long time, to prevent equipment going wrong or burning due to overheating;
- ② please use the power adapter which matches with the equipment, and ensure the power interface connecting with A9 smart home gateway meet the standard ,otherwise it will influence or even damage the equipment operation;
- ③ Please do not place the equipment in the environment that more than product running environment use,otherwise it will shorten the sevice life of equipment, seriously can cause permanent equipment damage;
- ④ Please do not make the liquid, gas and water ,which has the chemical properties ,close to the equipment, in order to avoid accident to damage the equipment, if unfortunately, please cut off power supply at once;
- ⑤ Do not place heavy things on the equipment, and keep dry and ventilated, clean, avoid direct sunlight, water spray;
- ⑥ Please take good care of your children,to avoid them contacting,playing the equipment and small accessories with no one watch,to avoid danger because of the behavior such as swallowing;
- ⑦ Please backup equipment validation information, in order to avoid information loss caused by equipment accidental damage;
- ⑧ Please shut-down equipment power after using,to avoid the performance degradation because of a long time running caused the high temperature;
- ⑨ After correctly installing the equipment, please do not modify configuration parameters frequently
- ⑩ Please do not disassemble equipment by yourself,when it was something wrong,connect with the designated maintenance station.

Note: if the device continuously works for a long time , the shell will have a certain degree of fever, please don't worry, this belongs to the normal phenomenon, the equipment can still work normally.