

Networking And Monitoring System

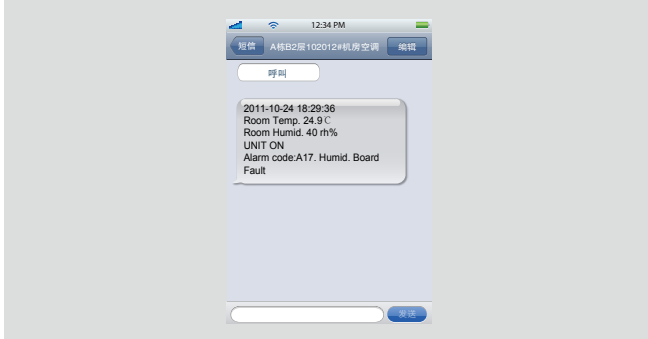
Communication, Monitoring And Remote Management System



INTRODUCTION

Networking and Monitoring for Air-conditioner is a subsystem of BMS(Building Management System), it provides centralized monitoring and management of all the air-conditioning equipment in this system.

Thanks to the years of experience in production and application of air-conditioning equipment, Airsys is able to provide the customer with a variety of network monitoring systems from the easy SMS alarm monitoring system to most sophisticated tERA cloud based GPRS wireless centralized monitoring system. These systems will meet the different needs of different customers.



GSM-SMS Alarm Monitoring System



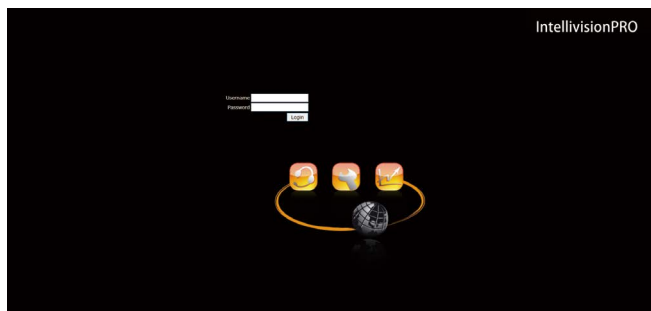
IntellivisionPLUS LAN Network Monitoring System



IntellivisionWeb Intranet or Internet Monitoring System



tERA Cloud based GPRS Wireless Centralized Monitoring System



IntellivisionPRO Internet Centralized Monitoring System

Comparisons of Network Monitoring Systems

Name	Network/ Communication	Remark
GSM SMS Alarm	GSM	Applicable to all air conditioning equipment from AIRSYS. Can use SMS alarm monitoring system for the sites inconvenient for network monitoring system.
IntellivisionPLUS	Local/RS232 Local/RS485 bus LAN/TCP/IP	Applicable to all air conditioning equipment from AIRSYS. Based on the serial interface RS232, RS422 / RS485 bus, can simply and easily connect air conditioning equipment to monitoring host by network, to remotely monitor all air conditioning equipment in this system. By using TCP / IP converter to access to LAN, wiring will be easier. Especially suitable for air conditioning equipment quantity no more than 200 and relatively concentrative distribution sites, such as data room, production plants, commercial buildings.
IntellivisionWeb	Local/TCP/IP LAN/TCP/IP	Applicable to all air conditioning equipment from AIRSYS. For the existing LAN, no need lot of wiring work, especially suitable for small air conditioning equipment quantity and convenient LAN access sites. Can use any computer in LAN as a client for remote monitoring.
tERA	GPRS Internet/TCP/IP	Applicable to all air conditioning equipment from AIRSYS. Especially suitable for the sites not convenient wiring, no available monitoring system and under GPRS network coverage. Customers also do not need to establish their own monitoring center, only need to install the tBOX GPRS wireless communication module to realize wireless internet remote monitoring.
IntellivisionPro	LAN/TCP/IP internet/TCP/IP	Applicable to all air conditioning equipment from AIRSYS. Especially suitable for large quantities, large enterprise LAN clients, such as telecom operators, banks, etc. By increasing the number of IntellivisionPRO application server number, can conveniently increase air conditioning equipment quantity in the management and monitoring system.

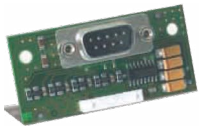
Communication Card/Converter/Module

In addition to application software and operating platform, network monitoring system also has hardware like communication card, converter and communication module.



RS485 Communication Card

Using an optional RS485 communication card, all models in pCO range can be connected to RS485 bus. In addition, through RS485 to RS232 converter or RS485 to TCP/IP converter, RS485 interface can be converted to RS232 interface or TCP/IP interface to communicate with monitoring host or other communication equipment.



RS232 Communication Card

Using an optional RS232 communication card, all models in the pCO range can be directly connected to a computer RS232 interface and GSM SMS module.



Web server Card

Using an optional web server card, all models in the pCO range can be communicated with the Ethernet interface of computer or other communication equipment, and as the web server to provide web services.



GSM SMS Module

Message sending device, is directly connected with monitoring computer RS232 interface, the monitoring computer can send GSM alarm information by GPRS. In addition, can be directly connected with the RS232 communication card in air conditioning controller to send and receive management service SMS information or send alarm information.



RS232 to RS485 Converter

Convert RS232 interface to RS485 interface. As a bridge connected RS485 bus and monitoring host, can make computer RS232 interface communicate with all equipment on RS485 bus.



RS485 to TCP/IP Converter

Convert RS485 interface to TCP/IP interface. As a bridge connected RS485 bus and monitoring host, can make computer Ethernet communication interface communicate with all equipment on RS485 bus . In addition, convert RS485 bus to TCP/IP interface to access into LAN. there are some type of model with 1 port, 4 ports, 8 ports, 16 ports .



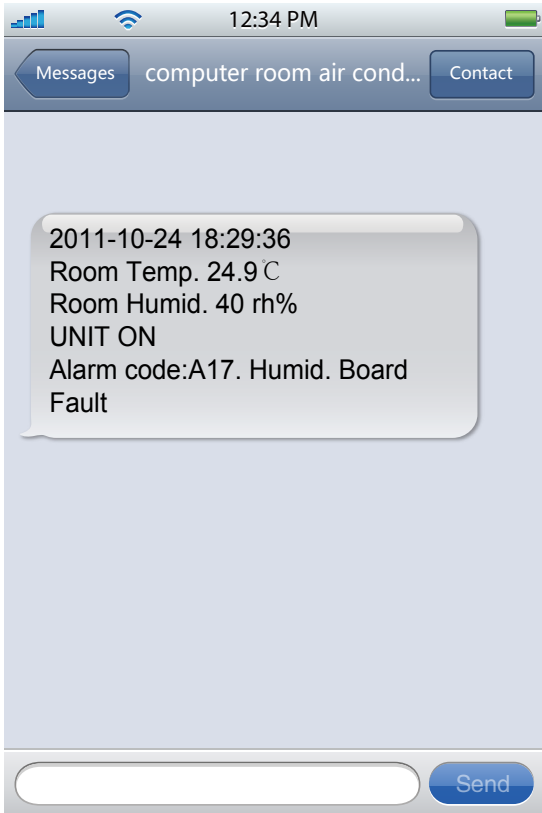
GPRS Wireless Communication Module

Each module can connect up to 10 devices. Through the GPRS network and tERA server system to establish a wireless communication system, is the special hardware for tERA centralized monitoring system. There should be GSM signal in the module installation area.

Communication Card/Converter/Module

Name	Code	Remark	
RS485 communication card	8453001280	Power supply: controller Data interface: 3Pin terminals Baud rate: 2400~19200bps Operation: -10~60 °C 90%rh Storage: -20~70 °C 90%rh ESD protection: 10KV	
RS232 communication card	8453001430	Power supply: controller Data interface: DB9 male type Operation: -10~60 °C 90%rh Storage: -20~70 °C 90%rh ESD protection: 10KV	
Web Server communication card	8453001480	Power supply: controller Ethernet interface: 10Mbit RJ45 Operating system: Linux 2.4.21 Processor: ARM7 74MHZ 16MB RAM 8MB flash	
GSM SMS module	8453513260	Power supply: 9~24Vdc Data interface: RS232 serial interface DB9 male type Antenna interface: 50/SMA Baud rate: 9600~115200bps Operation: -20 ~ +75 °C 95%rh Storage: -40 ~ +80 °C 95%rh	
RS232/RS485 converter	8453511700	Communication interface: RS232: DB9 male type and 3Pin terminal RS485: RJ45 and 5Pin terminals Power supply: 9Vdc 270mA ESD protection: 8KV Rate of communication: maximum 921.6kbps	
RS485/TCP/IP converter	8453513150	Ethernet interface: 10M/100M adaptive RJ45 RS232 interface: DB9 male type RS485/422interface: 5Pin terminal Serial port rate: 100bps – 230400bps Power supply: 5~20Vdc Operation: -20 ~ +75 °C 95%rh Storage: -40 ~ +80 °C 95%rh	
RS485/TCP/IP converter 4 Ports	8453513550	Ethernet interface: 10M/100M adaptive, RJ45 RS232/422/485 interface:DB9 male type Serial port rate: 50bps – 921.6kbps Power supply: 12~48 VDC 600mA Operation: -0 ~ +55 °C 95%rh Storage: -20 ~ +80 °C 95%rh ESD protection: 15KV	
RS485/TCP/IP converter 8/16 Ports	8 Ports: 8453513540 16 Ports: 8453513530	Ethernet interface: 10M/100M adaptive, RJ45 RS232/422/485 interface:RJ45 Serial port rate: 50bps – 921.6kbps Power supply: 12~48 VDC Operation: -0 ~ +55 °C 95%rh Storage: -20 ~ +80 °C 95%rh ESD protection: 15KV	
GPRS module	8453513520	Data interface: RS485 3Pin terminal Serial rate: maximum 115kbps Power supply: 12Vdc~30Vdc or 24Vac 6W Operation: -10~60 °C 90%rh Storage: -20~70 °C 90%rh GSM band: 850/900/1800/1900 MHz, GPRS class 10 Connecting device number: up to 10	

GSM SMS Alarm



Instant GSM signal sending, when malfunction occurs, sent to 4 service personnel' s mobile phones.



Instantly sending the alarm information and working status of the unit.



Sent to the information management platform, the information management platform software is responsible for collecting unit status and alarm information and providing summary data.



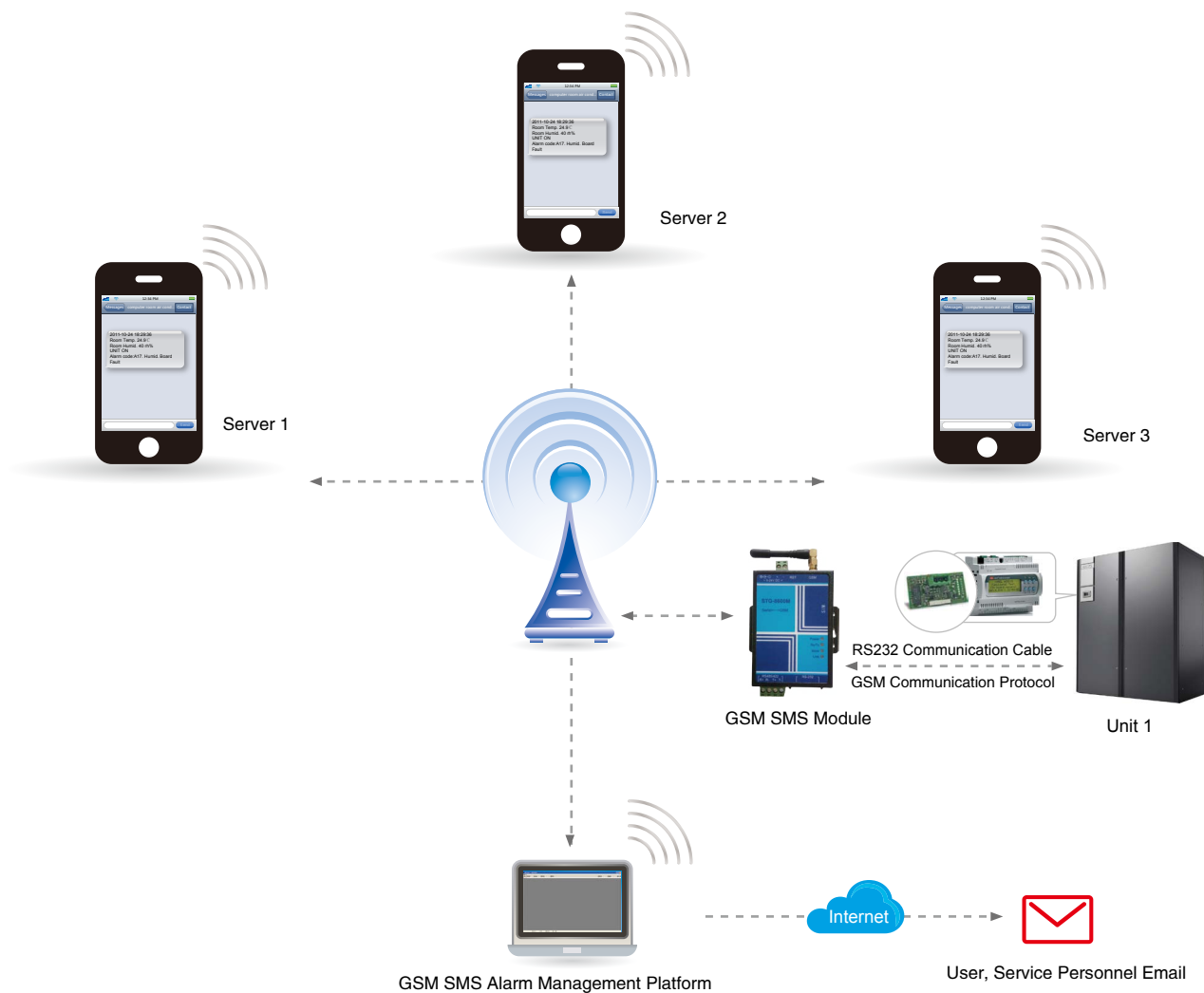
SMS management platform provides alarm email notification, timely dispatching.

Users only need to install the RS232 communication card and GSM SMS module in the air conditioning equipment, through setting the parameters on PGD terminal to achieve SMS alarm function.

Alarm information and the unit status information page are simultaneously sent to AIRSYS SMS alarm management platform, AIRSYS SMS alarm platform is responsible for collecting statistical alarm data to provide maintenance guidance to users. In addition, AIRSYS SMS management platform provides alarm information email forwarding service.

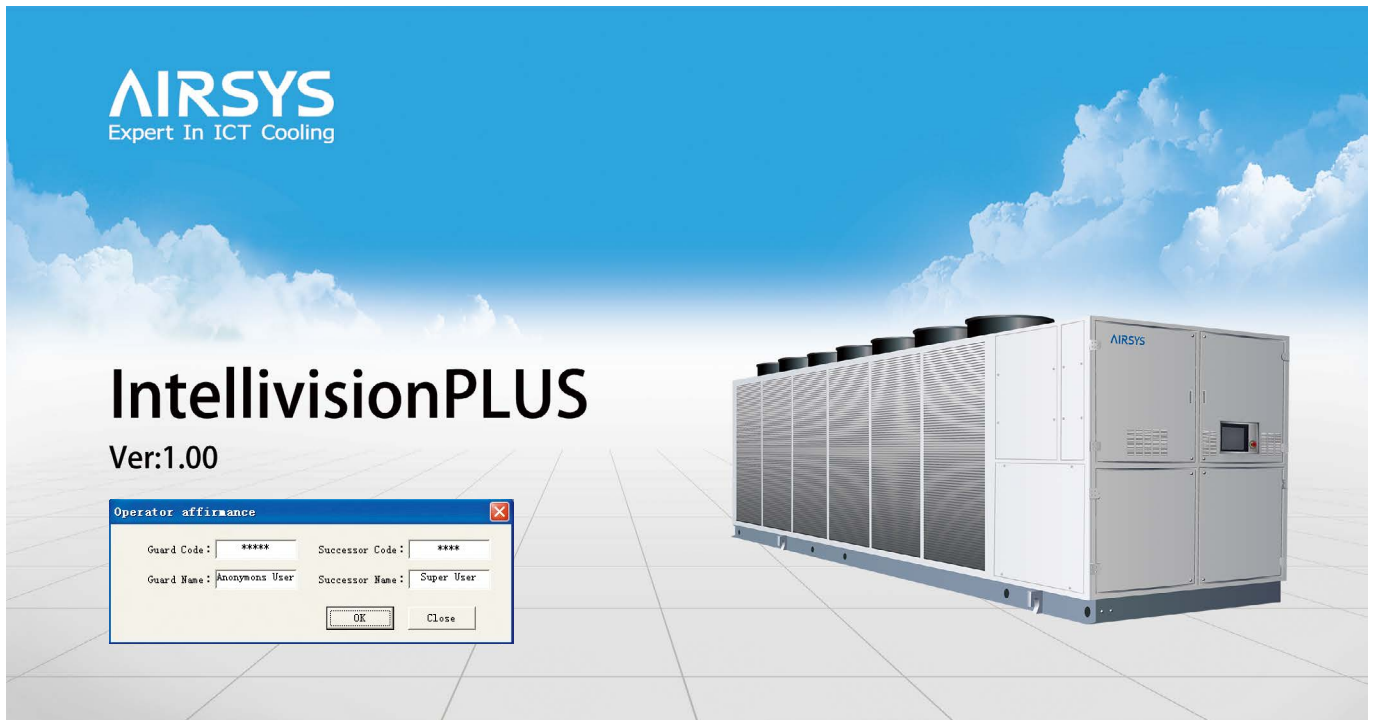
GMS SMS Alarm

GMS SMS Alarm Network Structure



GSM SMS Alarm Hardware Configuration

S/N	Name	Model	Remark
1	SMS alarm platform		provided by AIRSYS
2	GSM SMS module	STG-8600	One GSM SMS module for each unit
3	RS232 communication card	PCO100MDM0	One RS232 board for each unit
4	SIM card	GSM type	One SIM card for each GSM module



Site management



Data trend function



Maintenance authority management



SMS alarm notification function



Remote control unit On/Off



Alarm recording, data recording, providing ACCESS format data.



Remotely set room temperature and humidity



Statements printing function



Check the running status and parameters of the unit



Open ACCESS database

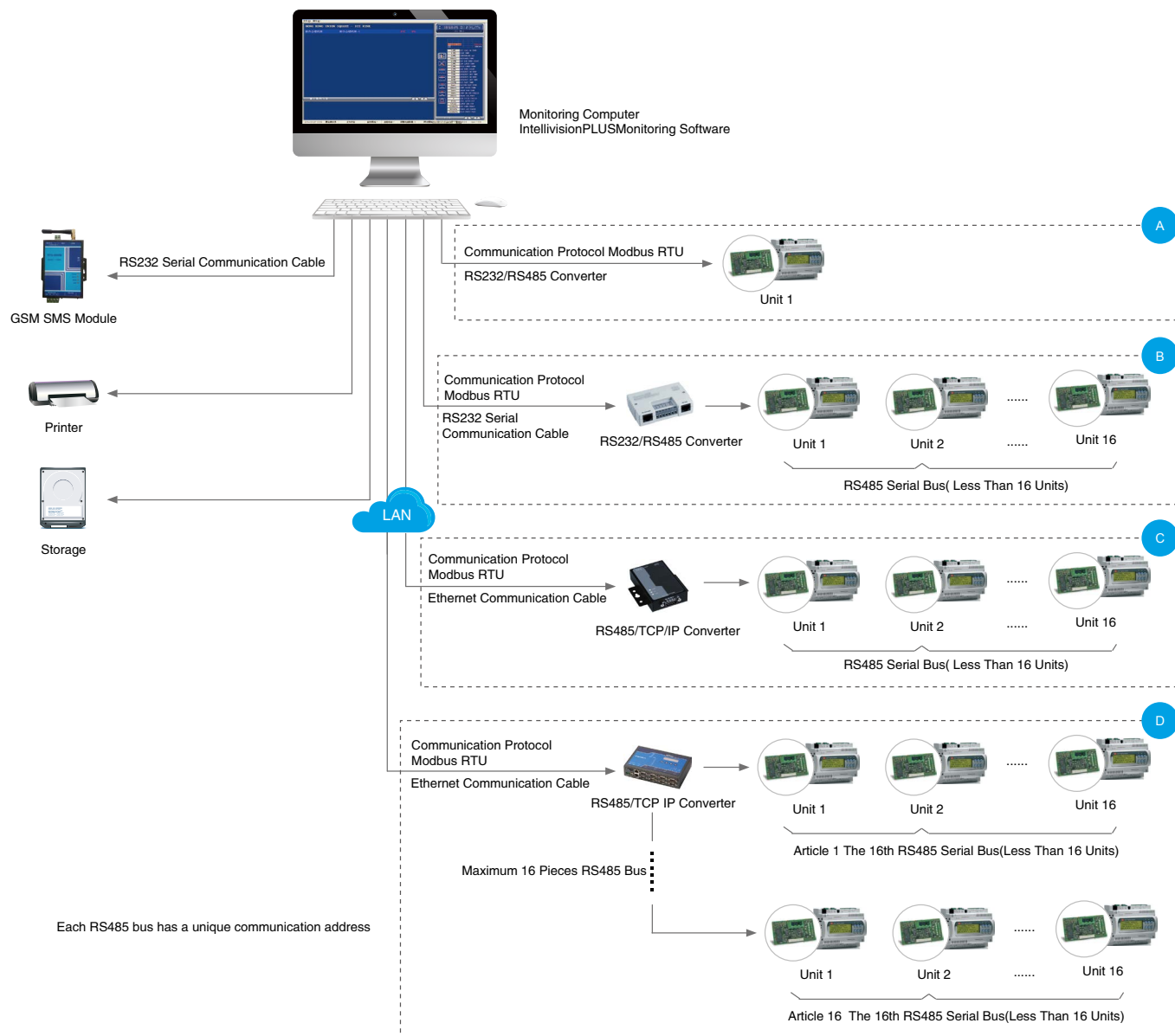


Display current alarm information
Instantly send alarm information SMS



The alarm information sent by email, can be sent up to 6 designated mailbox.

IntellivisionPLUS The Basic Field Bus Network



IntellivisionPLUS

Configuration A

Local single connection.RS232 interface. Applicable to the local network monitoring system for a single or a small number of units.

S/N	Name	Model	Remark
1	Monitoring host		CPU 1.2GHz 512M RAM 40 GB HDD 1024X768 resolution Windows XP operating system RS232 serial port number and air conditioning quantity are the same
2	Monitoring software	IntellivisionPLUS	Be used with security dog
3	RS232 communication card	PCO100MDM0	One RS232 card for each unit
4	GSM SMS module *	STG-8600	SIM card provided by user
5	RS232 communication cable		From RS232 communication card to monitoring computer
6	Printer *		Print statement

Note: * is optional.

Configuration B

Local multiple connection.RS232/485 interface. Applicable to the local network monitoring system for a number of units located in the same site. The number of units is no more than 16.

S/N	Name	Model	Remark
1	Monitoring host		CPU 1.2GHz 512M RAM 40 GB HDD 1024X768 resolution Windows XP operating system One RS232 serial port
2	Monitoring software	IntellivisionPLUS	Be used with security dog
3	RS485 communication card	PCOS004850	One RS485 card for each unit
4	RS232/RS485 converter	A53	Convert RS485 to RS232
5	GSM SMS module *	STG-8600	SIM card provided by user
6	RS232 communication cable	RS232 communication cable	From RS232/RS485 converter to the connection cable of monitoring host
7	RS485 communication cable	KVVRP 3*1mm2	A RS485 bus connects maximum 16 units. From unit to RS232/RS485 converter
8	Printer *		Print statement

Note: * is optional.

Configuration C

LAN multiple connection.TCPIP/RS485 interface.Applicable to the LAN network monitoring system for a group of units located in the same site. The number of units in this group is no more than 16. RS485/TCP/IP converter and host computer can be connected through a LAN, In addition, RS485/TCP/IP converter and host computer also can be directly connected together by a ethernet cable.

S/N	Name	Model	Remark
1	Monitoring host		CPU 1.2GHz 512M RAM 40 GB HDD 1024X768 resolution Windows XP operating system One Ethernet interface One RS232 serial port
2	Monitoring software	IntellivisionPLUS	Be used with security dog
3	RS485 communication card	PCOS004850	One RS485 card for each unit
4	RS485/TCP/IP converter	TD2000	Convert RS485 to TCP/IP
5	GSM SMS module *	STG-8600	SIM card provided by user
6	RS232 communication cable		From monitoring host to GSM SMS module
7	RS485 communication cable		A RS485 bus connects maximum 16 units, from host to RS485/TCP/IP converter
8	Ethernet communication cable		From RS485/TCP/IP converter to monitoring host
9	Printer *		Print statement

Note: * is optional.

Configuration D










LAN multiple connection.TCPIP/RS485 interface.Applicable to the LAN network monitoring system for no more than 16 groups of units. The number of units in each group is no more than 16. RS485/TCP/IP converter and host computer can be connected through a LAN, In addition, RS485/TCP/IP converter and host computer also can be directly connected together by a ethernet cable.

S/N	Name	Model	Remark
1	Monitoring host		CPU 1.2GHz 512M RAM 40 GB HDD 1024X768 resolution Windows XP operating system One Ethernet interface One RS232 serial port
2	Monitoring software	IntellivisionPLUS	Be used with security dog
3	RS485 communication card	PCOS004850	One RS485 card for each unit
4	RS485/TCP/IP converter	NPort 5450 NPort 5650	Convert RS485 to TCP/IP 4ports Convert RS485 to TCP/IP 8ports/16ports
5	GSM SMS module *	STG-8600	SIM card provided by user
6	RS232 communication cable		From monitoring host to GSM SMS module
7	RS485 communication cable		Maximum 16 peices of RS485 bus. Each RS485 bus connects maximum 16 units. From unit to RS232/RS485 converter
8	Ethernet communication cable		From RS485/TCP/IP converter to monitoring host
9	Printer *		Print statement

Note: * is optional.

IntellivisionWeb



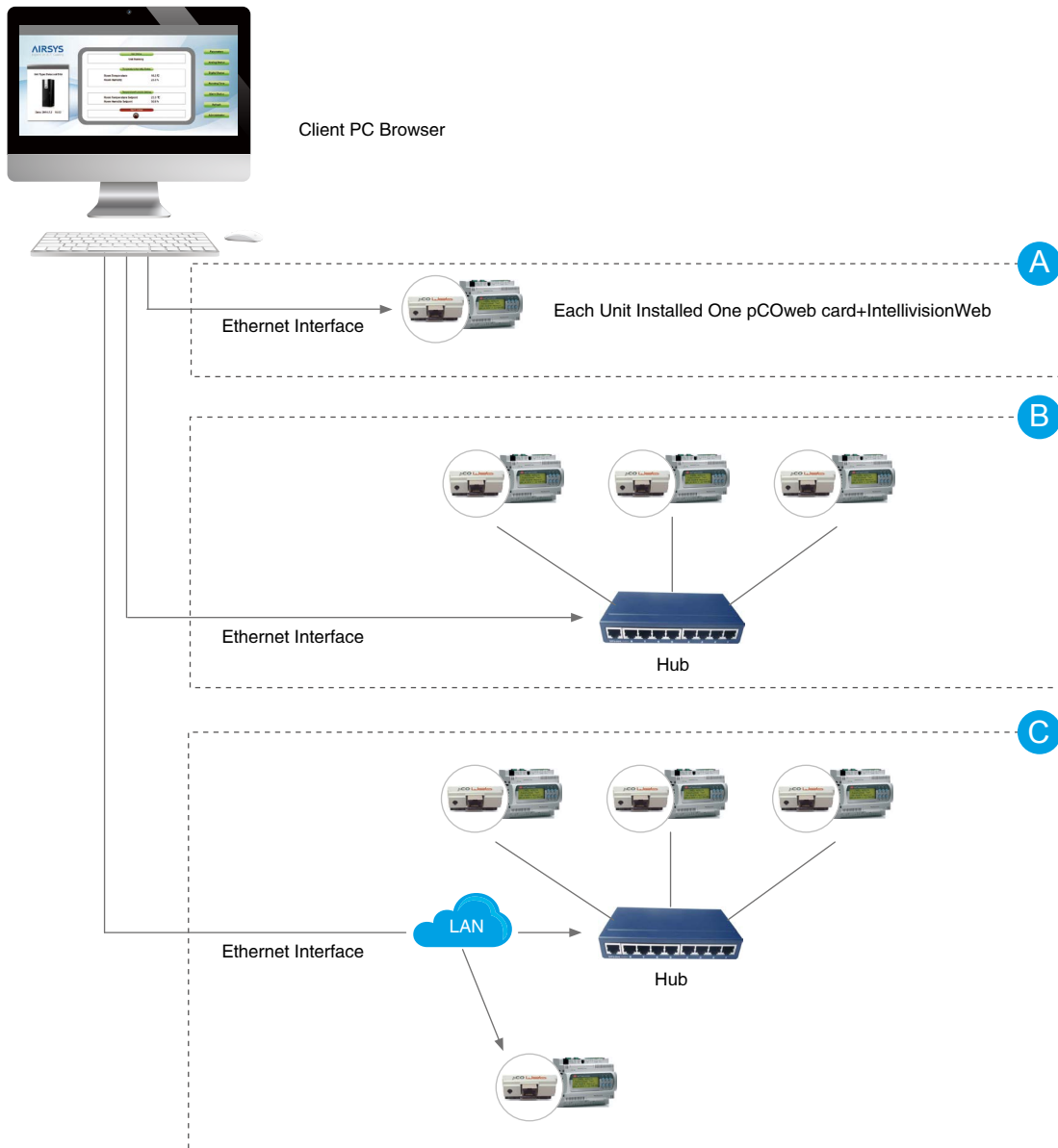
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|  | Web service |  | Provide data trend function of 10 parameters |
|  | Maintenance authority management, providing User, Guest, Administrator maintenance operation authority |  | Display current alarm information |
|  | Remote control unit On/Off |  | The alarm information sent by email, can be sent up to 6 designated mailbox. |
|  | Remotely set room temperature and humidity |  | Provide 10 variables CSV format data records |
|  | Check the running status and parameters of the unit | | |

IntellivisionWeb is a LAN-based remote monitoring system. Just need to install a Web Server Communication Card on the air conditioning equipment, and access into the LAN, users can open the IntellivisionWeb monitoring page on Web Server Communication Card via LAN to remote monitor air conditioning unit.

IntellivisionWeb provides simple, friendly and convenient browsing and user interface.

IntellivisionWeb

IntellivisionWeb Network Structure



Each Web Server Communication Card Has a Unique IP Address

IntellivisionWeb

Configuration A

Local single connection.Ethernet interface.Applicable tothe local network monitoring for a single unit without LAN.

S/N	Name	Model	Remark
1	Monitoring client computer		Ethernet Browser interface
2	Monitoring software	IntellivisionWeb	Installed on Web Server communication card
3	Web Server communication card	PCO1000WB0	One card for each unit, Each Web Server communication card should be allocated an IP address
4	Ethernet communication cable	Category5 FTP EIA/TIA 568A/B	If the monitoring computer Ethernet interface is not adaptive, there need a cross Ethernet cable.

Configuration B

Local multiple connection.Ethernet interface.Applicable tothe network monitoring system for a number of units located in the same site without LAN. Establish an IP web by connecting the monitoring computer and air conditioning equipment via hub.

S/N	Name	Model	Remark
1	Monitoring client computer		One browser Ethernet interface 1
2	Monitoring software	IntellivisionWeb	Installed on Web Server communication card
3	Web Server communication card	PCO1000WB0	One card for each unit, Each Web Server communication card should be allocated an IP address
4	Hub		Determined according to the number of air conditioning and Ethernet interface
5	Ethernet communication cable	Category5 FTP EIA/TIA 568A/B	Standard Ethernet communication cable

Configuration C

LAN connection.Ethernet interface. Applicable to the multiple unit networkmonitoring systemin a concentrative distribution LAN.

S/N	Name	Model	Remark
1	Monitoring client computer		Ethernet Browser interface
2	Monitoring software	IntellivisionWeb	Installed on Web Server communication card
3	Web Server communication card	PCO1000WB0	One card for each unit, Each Web Server communication card should be allocated an IP address
4	Hub		Determined according to the number of air conditioning and Ethernet interface
5	LAN		Local Area Network
6	Ethernet communication cable	Category5 FTP EIA/TIA 568A/B	Standard Ethernet communication cable



Centralized monitoring server



Check the running status and parameters of the unit



Maintenance authority management, providing User, Guest, Administrator maintenance operation authority



Provide data trend function



Remote control unit On/Off



Display current alarm information



Remote set room temperature and humidity



Provide data record

tERA is a specifically designed wireless Internet monitoring program for customers.

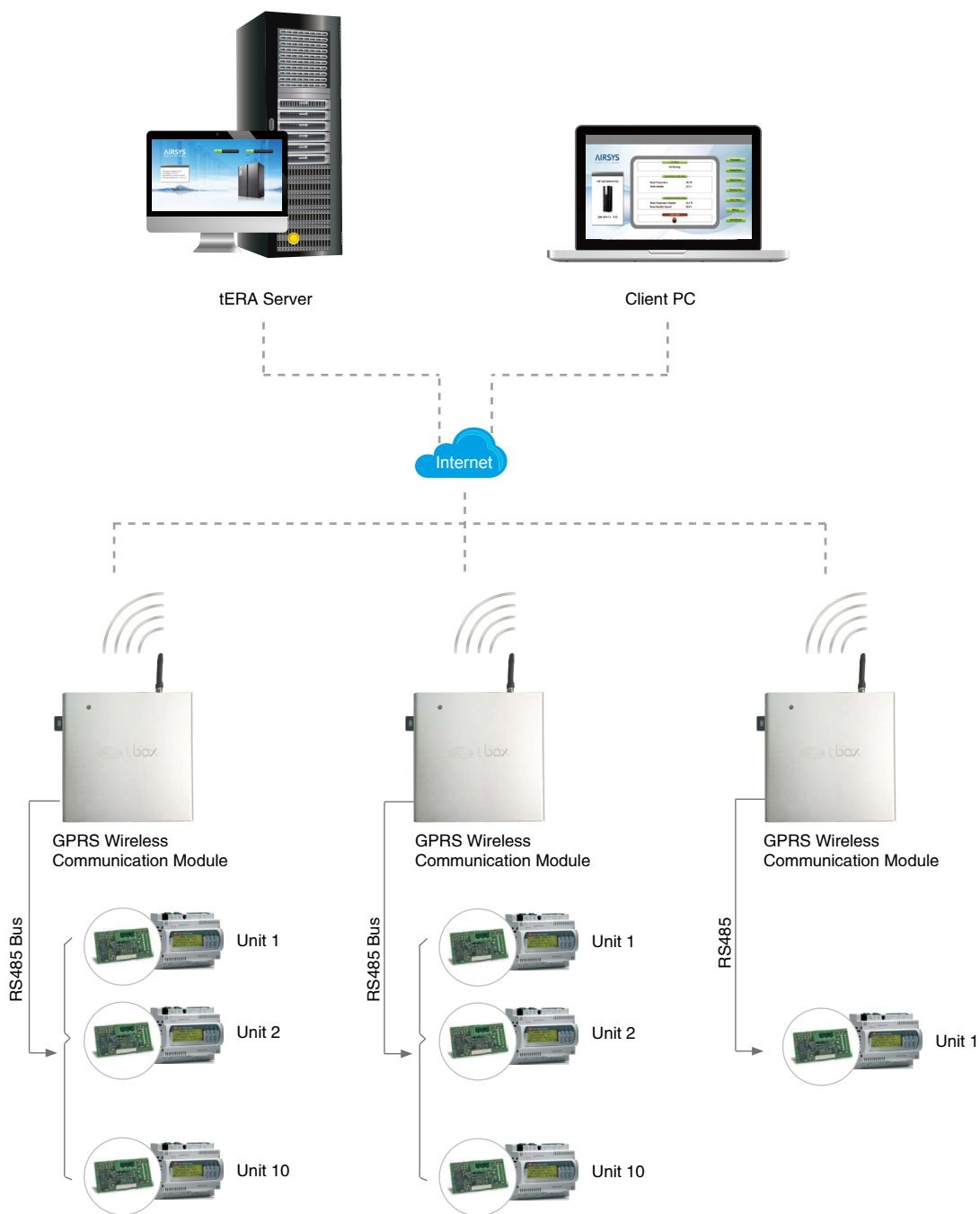
Carel or AIRSYS provides clients with tERA servers all around the world. Users only need to install tBOX GPRS communication module on the air conditioning equipment and purchase services, then via Internet can register on tERA system, tERA is responsible for the centralized data acquisition and management of air conditioning equipment. Via Internet, users can access and remotely monitor the air conditioning equipment at 24 hours anytime and anywhere.

tERA provides customers with different levels of management authority for access and operation.

AIRSYS can assist big customers to build their own tERA server. Users can conduct comprehensive management and maintenance on the air conditioning equipment monitoring system.

tEAR

tERA Wireless Network Structure

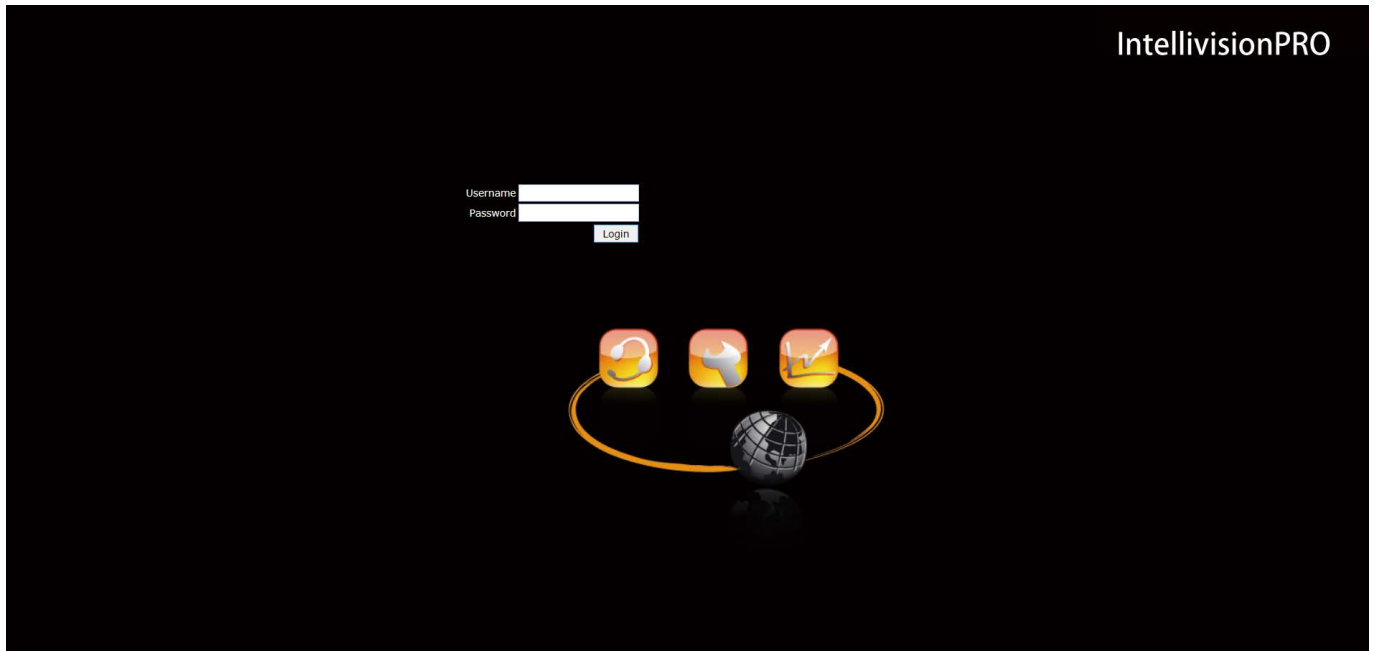














Each RS485 Bus Communication Card Has a Unique IP Address

tERA System Configuration

S/N	Name	Model	Remark
1	RS485 communication card	PCOS004850	One card for each unit
2	GPRS wireless communication module	tBOX	One tBOX can connect maximum 10 sets air conditioning equipment
3	tERA Server		Provided by AIRSYS, or built for users.
4	Monitoring client PC *		Brower, can access to Internet

Note: * is optional.



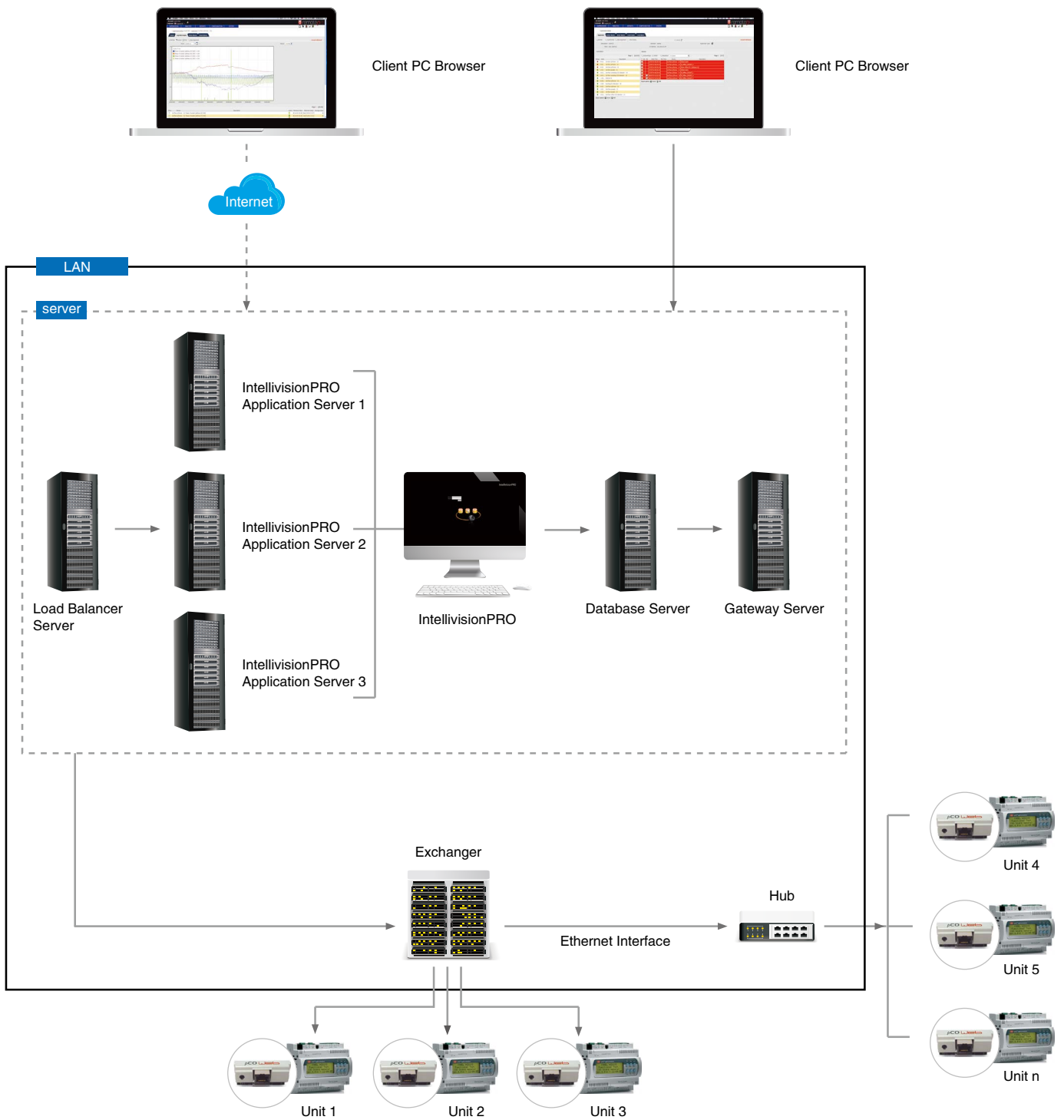
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|  | Centralized monitoring service |  | Provide data trend function |
|  | Maintenance authority management, providing User, Guest, Administrator maintenance operation authority |  | Alarm information acquisition and management, instantly display of the current alarm information, statistic of alarm data. |
|  | Remote control unit On/Off |  | Alarm information and history data sent by email |
|  | Remote set room temperature and humidity |  | Data storage |
|  | Check the running status and parameters of the unit |  | Data acquisition and analysis, providing KPI analysis report |
|  | Support 8 people online at the same time |  | Gateway, upload data to the third party monitoring system |

IntellivisionPro is a brand new, perfect, powerful centralized monitoring and management solution.

Via LAN, connect the air conditioning equipment to IntellivisionPRO server. IntellivisionPRO is responsible for centralized management of all devices. Via Internet, users can anytime and anywhere log on to the IntellivisionPRO server to remotely monitor all devices. Through increasing the number of IntellivisionPRO servers can conveniently expand the number of air conditioning equipment in the centralized monitoring system.

IntellivisionPRO

IntellivisionPro Basic Network Structure



Each Web Server Communication Card Has a Unique IP Address

IntellivisionPRO IntellivisionPRO System Configuration

S/N	Name	Model	Remark
1	Monitoring client PC *		Browser,access to Ethernet
2	Monitoring client PC *		Browser,access to LAN
3	Monitoring software	IntellivisionPRO	Installed on IntellivisionPRO Application Server
4	Server communication card	PCO1000WB0	One card for each unit, Each Web Server communication card should be allocated an IP address
5	Gateway *		Be used to send data to the third party monitoring system Variable number: maximum 10
6	Server **		Hardware configuration requirement(lowest) CPU 2.66GHz 2GB RAM 500 GB HDD resolution 1024 x 768 MIN Operating system WIN XP SP3 WIN SERVER 2003 / 2008 WIN VISTA BUSINESS EDITION WIN 7 PROFESIONAL Server number 1 Balance Server IntellivisionPRO Application Server (Application ServerOne Application Server for per 500sets units) Database Server 1set Gateway Server 1set
7	LAN		For the equipment scattered, the user need to provide cross regional LAN
8	Exchanger		
9	Hub		Be used to increase the Ethernet interface
10	Ethernet communication cable	Category5 FTP EIA/TIA 568A/B	If the LAN access port is not adaptive interface,there need a cross Ethernet cable. From Web Server communication card to LAN Ethernet access port.

Note: * is optional

**provided for users.



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