IT-ES605-IM-2D
Managed Industrial Ethernet Switch
User Manual

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Statement

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Agreement

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Revision History

Version No.	Date	Reason
V1.0.0	2014-12	Creating Documents

Notes

In reading this manual, please pay attention to the following symbols,

Information necessary to explain

Special attention

Content

CHAPTER 1 SUMMARIZE

1.1 Introduction

IT-ES605-IM-2D is an industrial, management, redundant industrial Ethernet switch and integrate 2 ports serial device server. It included
1. IT-ES605-IM-2D (RS-232)-P (12/48VDC),
Support 5 10/100Base T(X) Ethernet ports and 2 RS-232 serial ports,
2. IT-ES605-IM-2D (RS-485)-P (12/48VDC),
Support 5 10/100BaseT(X) Ethernet ports and 2 RS-485/422 serial ports,
3. IT-ES605-IM-1F-2D (RS-232)-P (12/48VDC),
Support 4 ports are 10/100BaseT(X) Ethernet, 1 port is 100Base-FX fiber port and 2 RS-232 serial ports
4. IT-ES605-IM-1F-2D (RS-485)-P (12/48VDC),
Support 4 ports are 10/100BaseT(X) Ethernet, 1 port is 100Base-FX fiber port and 2 RS-485/422 serial ports,
5. IT-ES605-IM-2F-2D (RS-232)-P (12/48VDC),
Support 3 ports are 10/100BaseT(X) Ethernet, 2 ports are 100Base-FX fiber port and 2 RS-232 serial ports,
6. IT-ES605-IM-2F-2D (RS-485)-P (12/48VDC).
Support 3 ports are 10/100BaseT(X) Ethernet, 2 ports are 100Base-FX fiber port and 2 RS-485/422 serial ports, it adopted SW-Ring redundant technology (Recovery time<20ms), users can set the redundant easily to increase network reliability, furthermore. It adopted no fan, low power consumption design, IP30, corrugate high strength iron shell, the performance is more steadily. It accorded with CE, FCC standard and Industrial 4 class, DIN rail installation and wide operating temperature (-40~85C), it can satisfied some kinds of industrial environment, it can provide reliable and quickly solution for your Ethernet device SW-Ring^{TM} is designed as rapid redundancy network arithmetic. It provided recover technology for fault of rapid redundant network, the recovery time<20ms.

1.2 Features

- Support IEEE802.3, IEEE802.3u, IEEE 802.3x
- 5 pieces 10/100Base-TX port or 100Base-FX fiber port
- Back panel bandwidth: 1.2 Gbps
- SW-Ring ring network patent technology (Fault recovery time<20ms）
- Support AT command
- Support DHCP
- Support 2 RS-232 serial ports or RS-485/ RS-422 serial ports
- Support applications accessing based on Socket
- Support Server , Client and UDP
- Support Windows serial driver model
- Support TCP, UDP, APR, ICMP and DHCP
- Support through the gateway, cross routing communication
- Serial port support adaptive function（Realcom）
- Support WEB configuration management function

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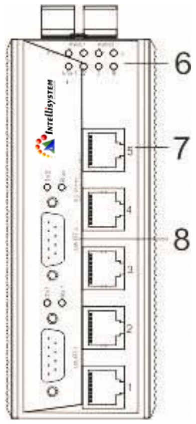
- 2K MAC address table
- Support redundant power supply , delay alarm output , heat radiation naturally and LED indicator front and back
- IP30 protection grade
- Industrial grade 4 design, -40~75℃ work temperature
- Power requirements 24VDC（12～48VDC）
- DIN-rail, hanging and panel mounting

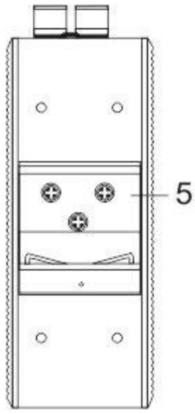
CHAPTER 2 HARDWARE DESCRIPTION

2.1 Panel design

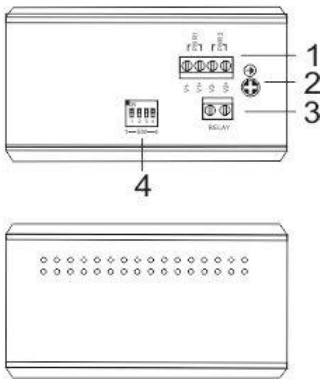
IT-ES605-IM-2D(RS-232)-P(12/48VDC)



Front panel



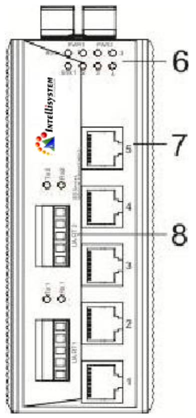
Back panel



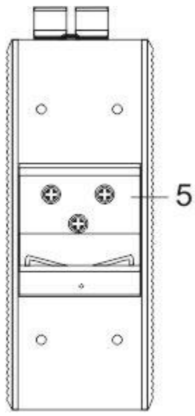
Top panel and Bottom panel

1. PWR1/PWR2 power supply
2. Ground screw
3. Relay output terminal block
4. DIP switch (4 bits)
5. DIN-Rail
6. LED indicator
7. 10/100Base-TX RJ45 port
8. RS-232 port

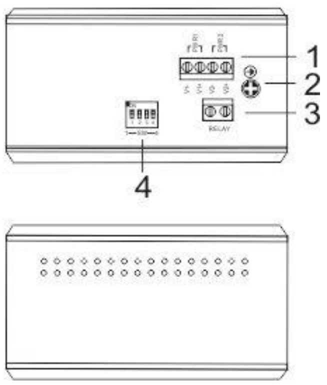
IT-ES605-IM-2D (RS-485)-P(12/48VDC)



Front panel



Back panel



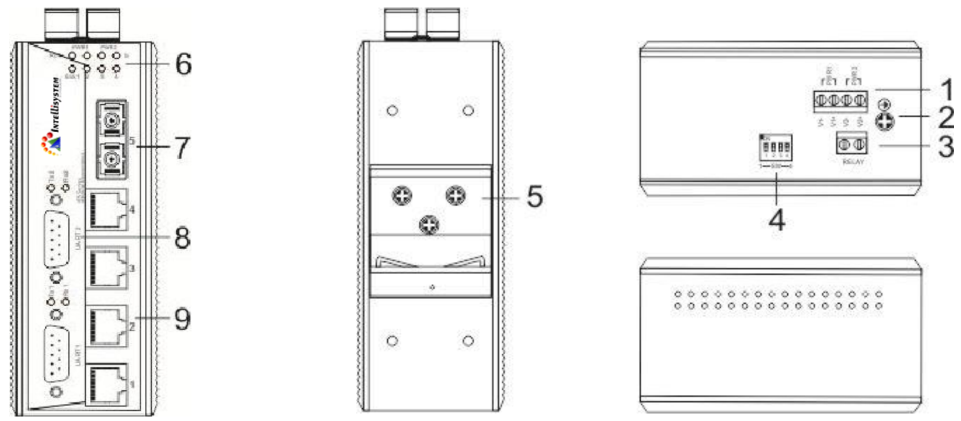
Top panel and Bottom panel

1. PWR1/PWR2 power supply
2. Ground screw

3. Relay output terminal block
4. DIP switch (4 bits)

5. DIN-Rail
6. LED indicator
7. 10/100Base-TX RJ45 port
8. RS-485/422 port

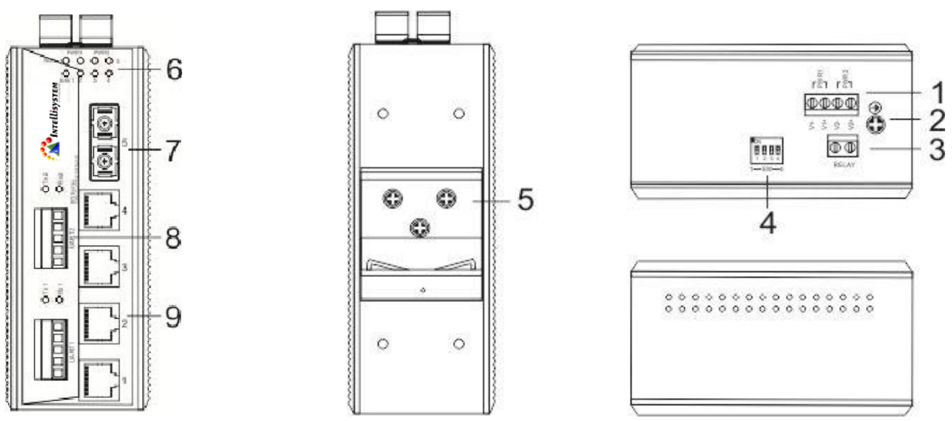
IT-ES605-IM-1F-2D (RS-232) -P(12/48VDC)



Front panel Back panel Top panel and Bottom panel

1. PWR1/PWR2 power supply
2. Ground screw
3. Relay output terminal block
4. DIP switch (4 bits)
5. DIN-Rail
6. LED indicator
7. 100Base-FX fiber port
8. RS-232 port
9. 10/100Base-TX RJ45 port

IT-ES605-IM-1F-2D(RS-485)-P(12/48VDC)

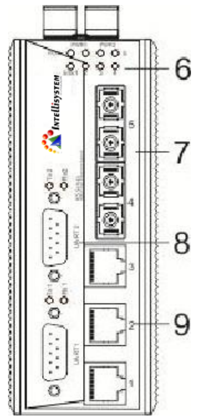


Front panel Back panel Top panel and Bottom panel

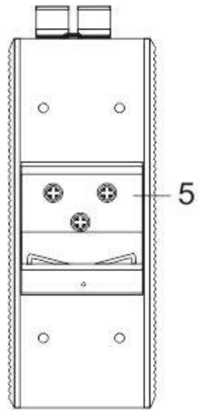
1. PWR1/PWR2 power supply
2. Ground screw
3. Relay output terminal block

4. DIP switch (4 bits)
5. DIN-Rail
6. LED indicator
7. 100Base-FX fiber port
8. RS-485/422 port
9. 10/100Base-TX RJ45 port

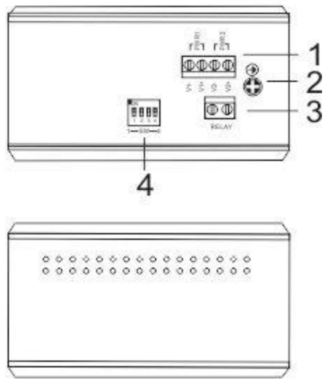
IT-ES605-IM-2F-2D (RS-232)-P(12/48VDC)



Front panel



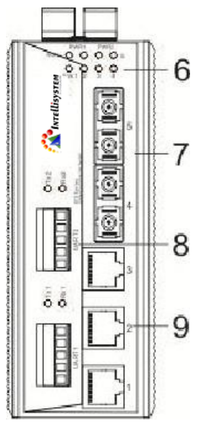
Back panel



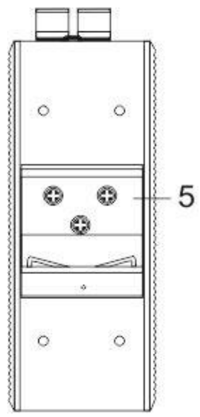
Top panel and Bottom panel

1. PWR1/PWR2 power supply
2. Ground screw
3. Relay output terminal block
4. DIP switch (4 bits)
5. DIN-Rail
6. LED indicator
7. 100Base-FX fiber port
8. RS-232 port
9. 10/100Base-TX RJ45 port

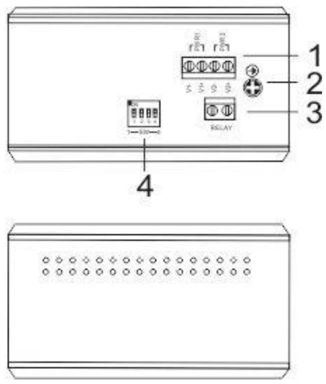
IT-ES605-IM-2F-2D (RS-485)-P(12/48VDC)



Front panel



Back panel

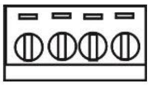


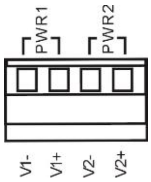
Top panel and Bottom panel

1. PWR1/PWR2 power supply
2. Ground screw
3. Relay output terminal block
4. DIP switch (4 bits)

5. DIN-Rail
6. LED indicator
7. 100Base-FX fiber port
8. RS-485/422 port
9. 10/100Base-TX RJ45 port

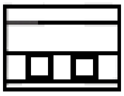
2.2 Power supply input





IT-ES605-IM-2D(RS-232) top panel provided 4 bit power supply input terminal block, support DC input. DC power supply input supported redundancy function, provided PWR1 and PWR2 power input, can use for single, and can connect 2 separately power supply system, use 1 pair terminal block connect the device at the same time. If one of the power systems broke, the device can work uninterruptible. Built-in over-current protection, Reverse connection protection.

2.3 Relay connection



The relay owns two contacts of the terminal block on the top pane of IT-ES605-IM-2D(RS-232). It is used to detect both power failure and port failure. The two wires attached to contacts form an open circuit when:

(1) IT-ES605-IM-2D(RS-232) has lost power supply from one of the DC power inputs.

(2) One of the ports is failure.

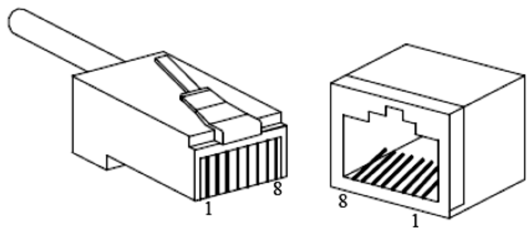
2.4 DIP switch

Top panel provided 4 bits DIP switch to do function configure（OFF is default factory）,1 and 2 keep for future function. 3 is AT command. 4 is recovery default factory. Please power off and power on when you change the status of DIP switch.

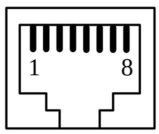
2.5 Communication port

10Base-T /100Base-TX Ethernet port

10Base-T/100Base-TX Ethernet port is located on front panel and the type is RJ45. The pinout of RJ45 port connects to UTP or STP. The distance is not more than 100m. 100Mbps Ethernet connector takes 120Ωof UTP 5, 10Mbps Ethernet connector takes 120Ωof UTP 3, 4, 5.



RJ45 port supports automatically MDI/MDI-X connection. It can connect PC, Server, Converter and HUB .Corresponding connection of Pin 1,2,3,6 is like this: 1→3, 2→6, 3→1, 6→2. The definition of Pin is displayed as below.

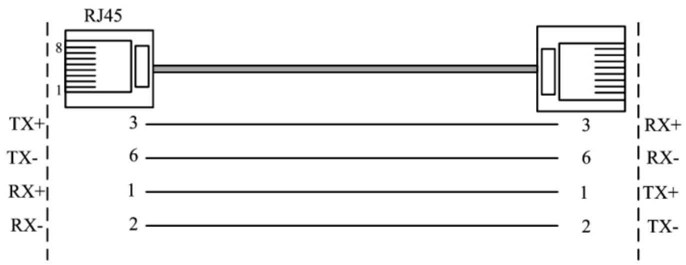


PIN	MDI	MDI-X
1	TX+	RX+
2	TX-	RX-
3	RX+	TX+
6	RX-	TX-
4, 5, 7, 8	—	—

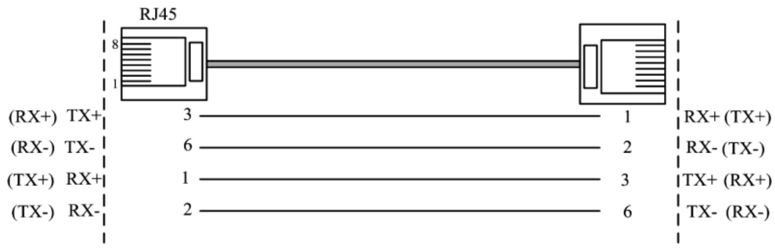
Information necessary to explain:

Note: “TX±”Transmitting data±, “RX±”receiving data±, “—”no use

MDI（**straight-through cable**）:



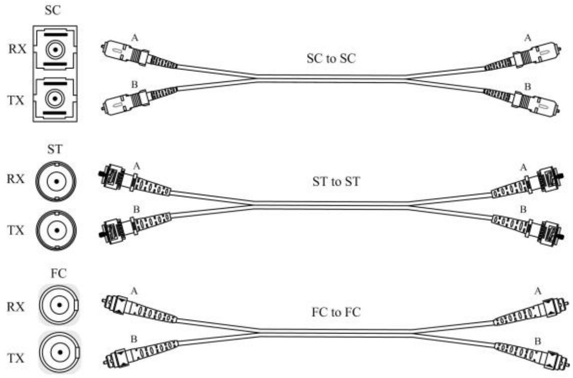
MDI-X（**Cross over cable**）:



100Base-FX fiber port

100Base-FX port works with full-duplex, SM or MM SC/ST/FC optional. The fiber port must be used in pair, TX (transmitting) port connects remote switch's RX (receive) port; RX (receiving) port connect remote switch's TX (transmitting) port.

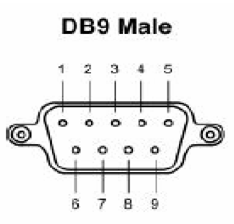
Suppose: If you make your own cable, we advise to label the two sides of the cable with the same letter (A-to-A and B-to-B, shown as below, or A1-to-A2 and B1-to-B2).



2.6 Serial port connection

RS-232 Serial port:

PIN	RS-232
1	DCD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	—



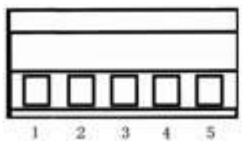
DB9 Male（RS-232）

RS-485 Serial port:

PIN	RS-485
1	D+
2	D-
3	/
4	/
5	/

RS-422 Serial port:

PIN	RS-422
1	T+
2	T-
3	GND
4	R+
5	R-



RS-485/422

2.7 LED Indicator

LED	Indicator	Description
PWR1	ON	P1 connection regularly
	OFF	P1 Power supply have no connection or unwonted
PWR2	ON	P2 connection regularly
	OFF	P2 Power supply have no connection or unwonted
Run	ON/OFF	Device unwonted
	Flashing	Device working steadily
Link/ACT	ON	Established effective network connection
	Flashing	Network in activity statues
	OFF	Did not established effective network connection
RX	Flashing	In receiving data
	OFF	None data receive
TX	Flashing	In transmitting data
	OFF	None data transmit

2.8 Installation

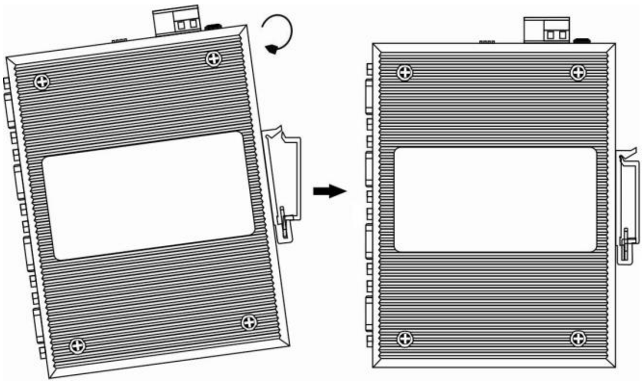
Before installation, confirm that the work environment meet the installation require, including the power needs and abundant space. Whether it is close to the connection equipment and other equipment are prepared or not.

1. Avoid in the sunshine, keep away from the heat fountainhead or the area where in intense EMI.
2. Examine the cables and plugs that installation requirements.
3. Examine whether the cables be seemly or not (less than 100m) according to reasonable scheme.
4. Screw, nut, tool provide by yourself.
5. Power: redundant 12~48VDC power input
6. Environment： working temperature -40～75℃
   Relative humidity 5%～95%

DIN-Rail Installation

In order to use in industrial environments expediently, IT-ES605-IM-2D adopts 35mm DIN-Rail installation, the installation steps as follows:

1. Examine the DIN-Rail attachment
2. Examine DIN Rail is firm or not and the position is suitable or not.
3. Insert the top of the DIN-Rail into the slot just below the stiff metal spring.
4. The DIN-Rail attachment unit will snap into place as shown below.



Wiring Requirements

Cable laying need to meet the following requirements,

1. It is needed to check whether the type, quantity and specification of cable match the requirement before cable laying;
2. It is needed to check the cable is damaged or not, factory records and quality assurance booklet before cable laying;
3. The required cable specification, quantity, direction and laying position need to match construction requirements, and cable length depends on actual position;
4. All the cable cannot have break-down and terminal in the middle;
5. Cables should be straight in the hallways and turning;
6. Cable should be straight in the groove, and cannot beyond the groove in case of holding back the inlet and outlet holes. Cables should be banded and fixed when they are out of the groove;
7. User cable should be separated from the power lines. Cables, power lines and grounding lines cannot be overlapped and mixed when they are in the same groove road. When cable is too long, it cannot hold down other cable, but structure in the middle of alignment rack;
8. Pigtail cannot be tied and swerved as less as possible. Swerving radius cannot be too small (small swerving causes terrible loss of link). Its banding should be moderate, not too tight, and should be separated from other cables;
9. It should have corresponding simple signal at both sides of the cable for maintaining.

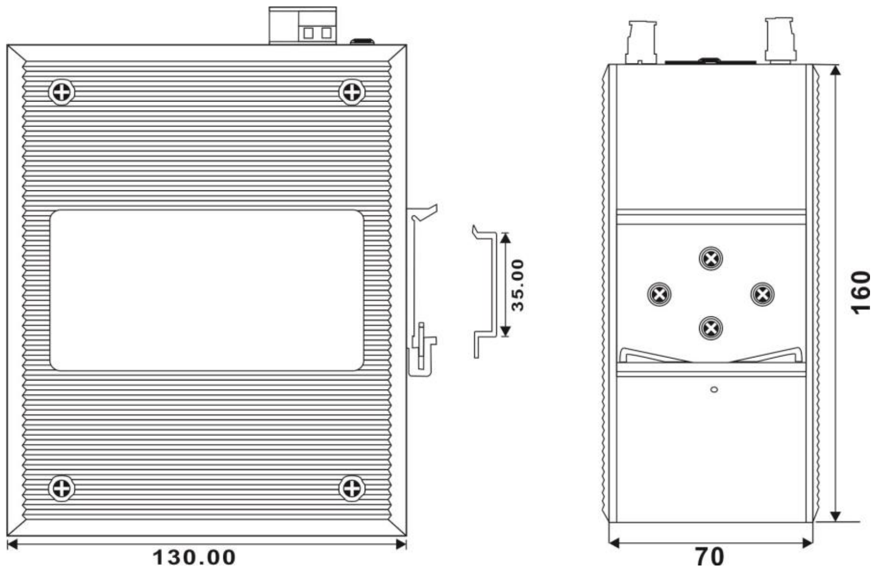
Chapter 3 Appearance and Dimensions

3.1 Appearance

IT-ES605-IM-2D (RS-232） IT-ES605-IM-1F-2D (RS-232) IT-ES605-IM-2F-2D（RS-232）

IT-ES605-IM-2D（RS-485） IT-ES605-IM-1F-2D（RS-485） IT-ES605-IM-2F-2D（RS-485）

3.2 Dimensions



CHAPTER 4 PACKLING LIST

Please check the packaging and accessories by your first using. Please inform us or our distributor if your equipment have been damaged or lost any accessories, we will try our best to satisfy you.

Description	Quantity
Intellisystem Industrial Ethernet switch	1
User manual	1
CD	1
Warranty card	1
Product Qualified Card	1

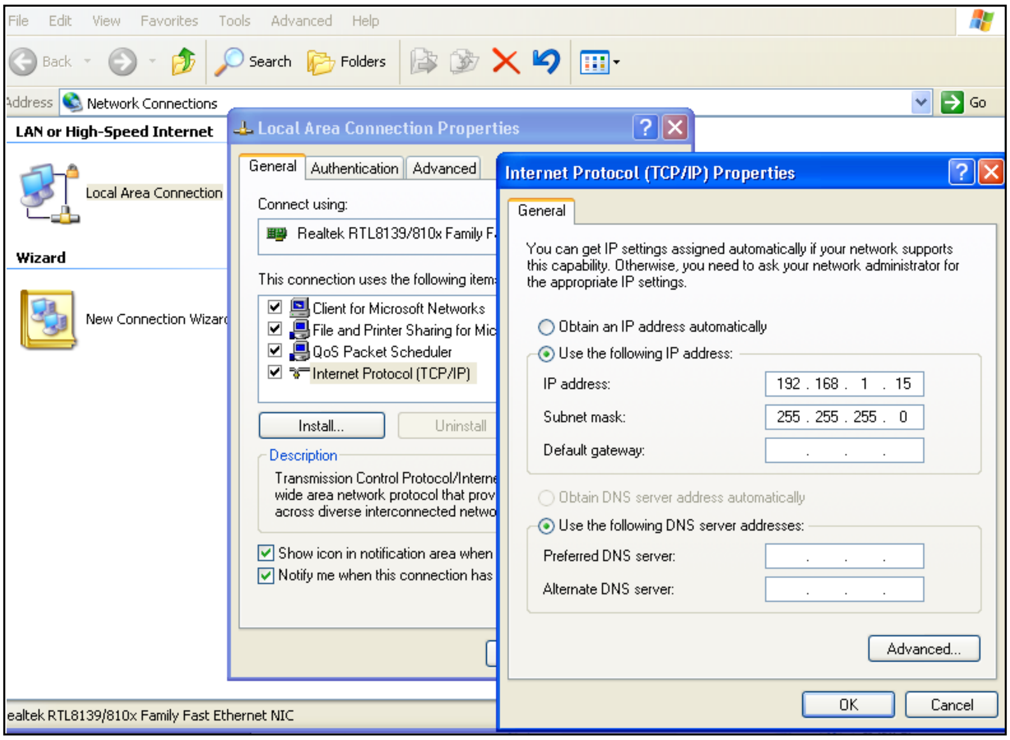
CHAPTER 5 Configure IT-ES605-IM-2D(RS-232) Ethernet switch

5.1 Modify IP address

IT-ES605-IM-2D(RS-232) default address is: 192.168.1.254, subnet mask is: 255.255.255.0. When entering into IT-ES605-IM-2D(RS-232) Web interface through internet explorer, the IP address of IT-ES605-2D(RS-232) and PC must be in the same Local Area Network.

You can modify PC's or IT-ES605-IM-2D(RS-232)'s IP address to make sure that they are in the same Local Area Network. Operating process can follow method 1 or method 2 as below, Method 1: Modify PC's IP address

- Click Start->Control panel->network connections->Local area Connection->Properties->Internet protocol（TCP/IP）Setting PC’s IP address: 192.168.1.X (X is less than 254, from 2 to 253).
- Click “OK”, IP address modifies successfully



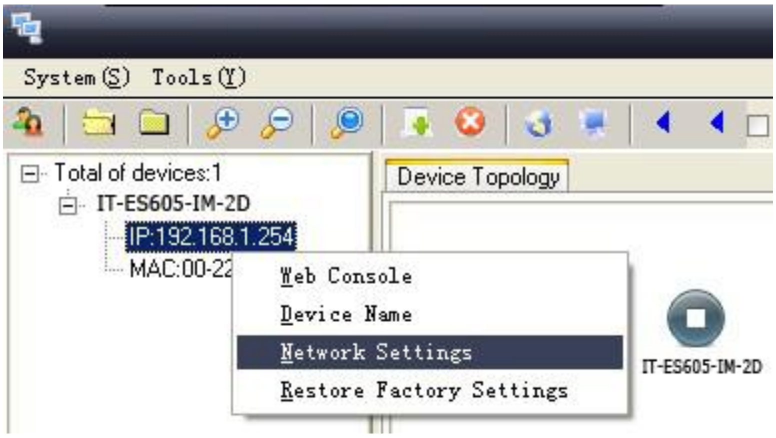
（Figure 5.1.1）

Method 2: Modify IT-ES605-IM-2D(RS-232)'s IP address through the management software.

- Install the management software on the PC.
- Enter into the management interface, click "Search" to search the device.

（Figure 5.1.2）

➢ After searching the device, move mouse to the device, click right key, modify the device's IP address, Please make sure the device and PC in the same Local Area Network.



（Figure 5.1.3）

This configuration example does not use the Advanced button in the last picture. In one and the same network card allows the use of multiple IP pseudo-address when use the advanced configuration of the IP address, at which does not change the original address can still access the switch device. But in the IGMP polling and IEEE 802.1x polling windows system cannot handle correctly, Unix-like system does not have this problem. The advanced users have to pay attention to this issue.

Configuration preparing

1. The lowest requirement for user's computer is as below:

◆ Install operating system (Windows XP/2000/7/8,etc)

◆ Install Ethernet card

◆ Install Web explorer (IE6.0 or higher version)

◆ Install and start TCP/IP protocol

2. Establish the correct network configuration

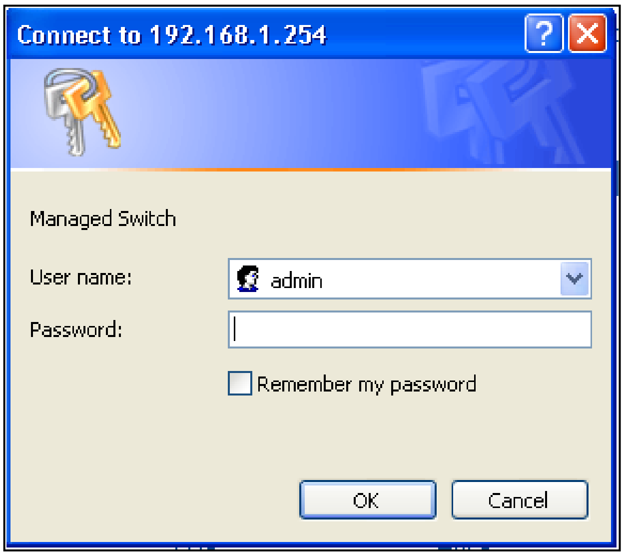
The default management IP address of IT-ES605-IM-2D (RS-232): 192.168.1.254, subnet mask as: 255.255.255.0. Before access to the configuration interface, the computer's IP address and the switch must be configured in the same subnet (IP address configuration, please refer to "5.1") if need local configuration; Computers and switches must be routed reach if for remote configuration.

How to log on to Web Server

Please type in the default IP of switch on the browser’s address bar, and then will pop-up a window by clicking the “enter” key which shows you have to enter your user name and password. The default username and password is “admin”. You can enter your username and password 3 times if you found the username and password is incorrect. If the 3 input error, the browser will display a "401 Unauthorized" error message. Refresh the page and then enter the correct user name and password, log on to the Web Server, it will recommend to modify the user name and password. Please contact our customer service center if you have more questions.

5.2 Login Web Server

Please type in the default IP of switch on the browser’s address bar, and then will pop-up a window by clicking the “enter” key which shows you have to enter your user name and password. The default username and password is “admin”. You can enter your username and password 3 times if you found the username and password is incorrect. If the 3 input error, the browser will display an "Access denied" error message. Refresh the page and then enter the correct user name and password, log on to the Web Server, it will recommend to modify the user name and password. Please contact our customer service center if you have more questions.



(Figure 5.2.1)

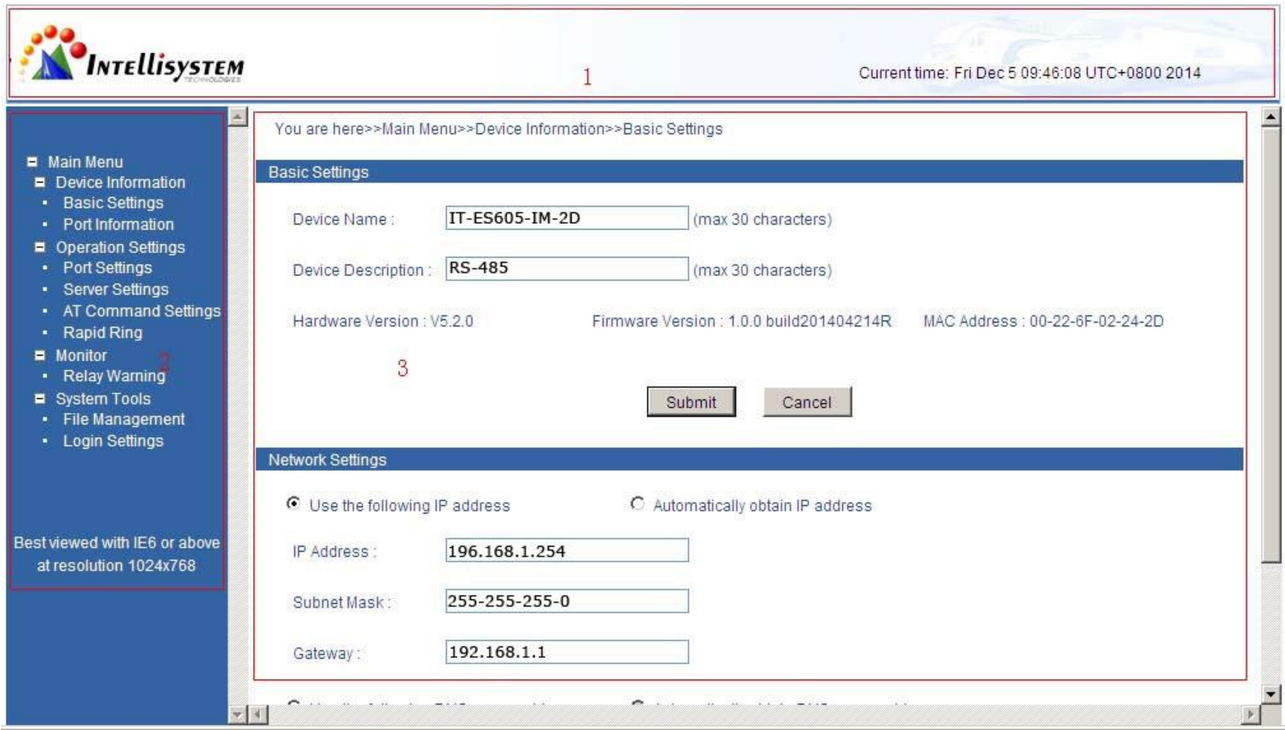
The default username and password is [admin], case sensitive for this series. The default password is with administrator privileges.

:

Before entering the IT-ES605-IM-2D (RS-232) switch Web Server, you must delete temporary IE files, and clear IE history, or perhaps because IE cookies due to an unknown error. The user name and password are case sensitive. Such as unclear devices IP address, can be obtained through the management software search. (attached)

5.3 Introduction configure interface

The Web configuration page is divided into: 1 titles, 2 main menu, 3 configuration menu bar area three parts. Click the menu item in the menu bar, you can enter the corresponding configuration interface, display device state information and data configuration. As shown in Figure 5.3.1.



（Figure 5.3.1）

5.3.1 Main menu

Menu Introduction:

Main Menu	Tag	Function
Device Information	Basic Settings	Display device information and network information such as software version, IP address, etc.
	Port Information	Port information such as connection, speed, flow control etc.
Operation Settings	Port Settings	Display and configure information of each port: such as connection status, configuration modes, flow status etc.
	Server Settings	Serial parameter and Working mode configuration
	AT Command Settings	AT command parameters and mode settings
	Rapid Ring	Configure the rapid ring network port and type.
Monitor	Relay Warning	Set relay alarm type (Power and Port)
System Tools	Files Management	Upload and download configuration files, system upgrade and factory default
	Login Settings	Modify user name and password

Web Timeout Treatment

The system timeout will cancel the login if the user did not login for a long time (The configuration of this login will be remained in the Web interface).

If user doesn't operate the Web interface for a long time, The system will be canceled this login.(but configuration change made in this login will be saved in Web configuration interface.). If the user wants to do any operating on Web configuration interface again, the system will remind user and returns to the login dialog box. Users need to log in again if operating is needed. The timeout time is 300s.

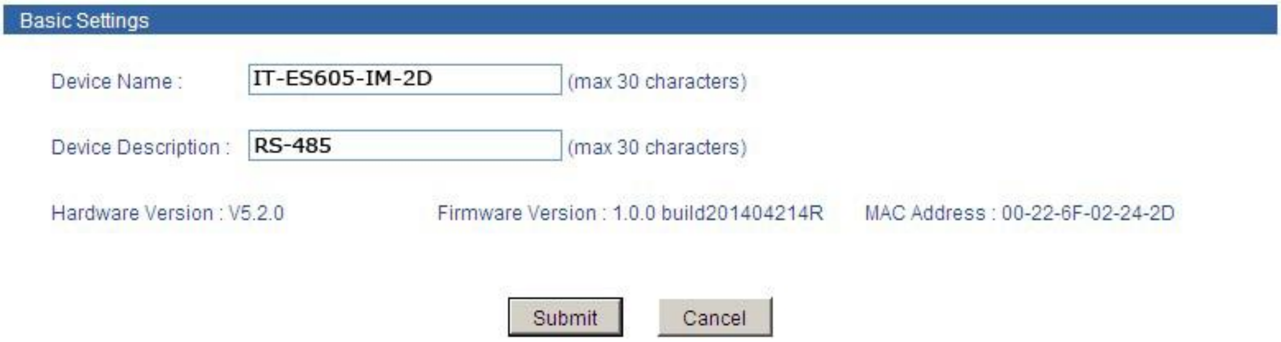
5.4 Device Informations

Enter the correct user name and password that the normal IT-ES605-IM-2D(RS-232) WEB interface display information about the state of the system, including: the main menu, equipment information, port information, and displayed in the upper left corner of the page's, the upper right corner of display is the current time, as shown in figure 5.4 show:

（Figure 5.4）

5.4.1 Basic Settings

Equipment information mainly display basic information, IT-ES605-IM-2D(RS-232) include: equipment name, description of the equipment, hardware version number, firmware version, the IT-ES605-IM-2D(RS-232) of MAC address. As shown in figure 5.4.1



（Figure 5.4.1）

5.4.2 Network Settings

Device configuration support two modes, DHCP and static IP address, can get the device's IP address via client when the DHCP function is running, if you need NTP that need to connect internet, please enter the available and correct gateway and DNS address.

IP Address

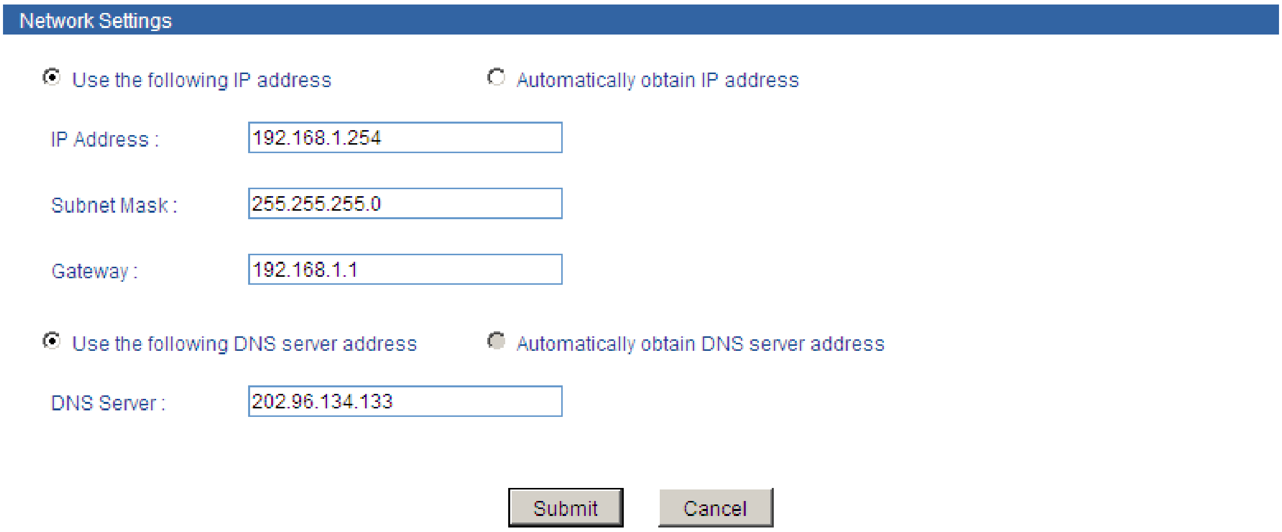
IP address is an address of 32 bits length which is assigned to the device on the internet. The IP address consists of two fields: the network number field (net-id) and the Host ID field (host-id). For can conveniently manage IP address, IP addresses are divided into five categories.

Subnet Mask

Mask is corresponding 32 bits number of IP address. Some are 1, the others are 0. These 1 and 0 can be combined arbitrary in principle, but the first continuous bits are 1 when designing subnet mask. IP address can be divided into 2 parts by subnet mask: subnet address and host address. 1 in IP address and subnet corresponds to subnet address, other bits are host address. A type of address corresponding mask is 255.0.0.0; mask of B type address is 255.255.0.0; mask of C type address is 255.255.255.0.

Gateway

Default gateway in the host PC is generally called default route. Default route refer to a kind of router that destination address of IP data packet will choose when it don't find other existing route. All data packets of destination address which don't exist in the list of router will choose default route.



（Figure 5.4.2）

5.4.3 Port informations

IT-ES605-IM-2D (RS-232) a total of 5 ports, ports can confirm whether the port with the equipment complies with the information bar. Equipment at work, via the port status of the port information in the status view, for example in the figure below you can see port 3 is LINK and port connection status as FULL, speed is 100M and port type for the TX(RJ45). As shown in Figure 5.3.4.

LINK：Indicates that the port is in a connected state；

LOS：Indicates that the port is not connected；

FULL：Indicates that the port State is full duplex；

HALF：Indicates that the port State is half-duplex (if the ports are not connected, the port status is HALF).

Port	Media	Enable/Disable	Connection	Speed/Duplex	Flow Control
1	TX	Enable	LOS	10M Half-duplex	Disable
2	TX	Enable	LOS	10M Half-duplex	Disable
3	TX	Enable	LINK	100M Full-duplex	Disable
4	TX	Enable	LOS	10M Half-duplex	Disable
5	TX	Enable	LOS	10M Half-duplex	Disable

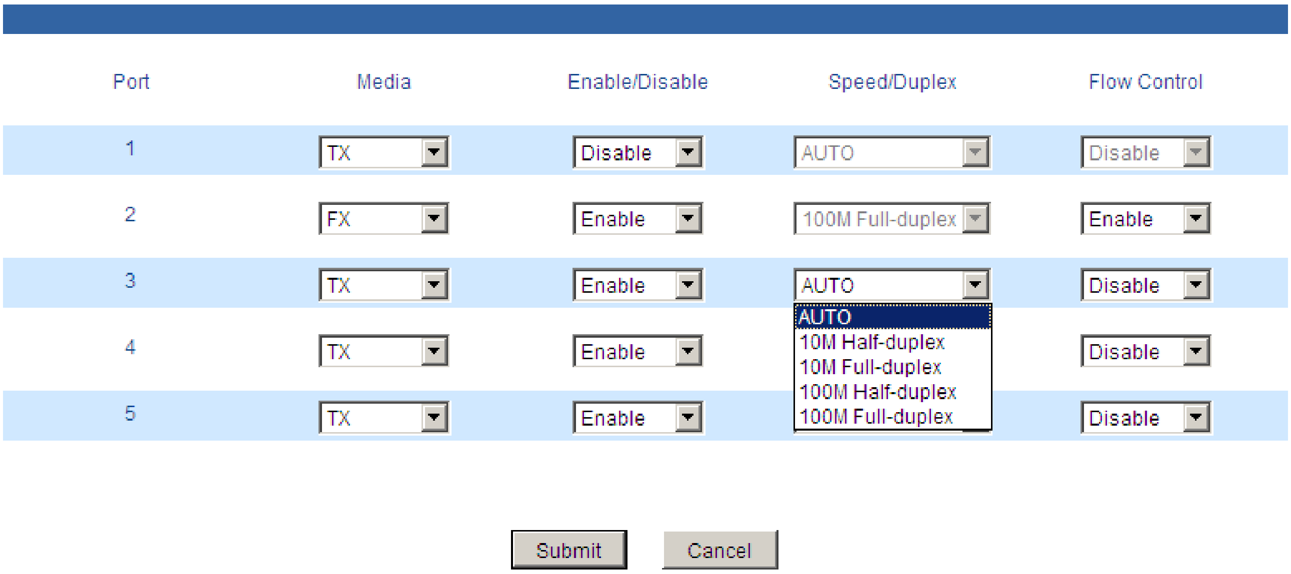
（Figure 5.4.3）

5.5 Operating Setting

5.5.1 Port Settings

The port configuration interface mainly includes port type (Electric port or optical port), setup speed mode and duplex mode, flow control. Only when the port is enabled for the port speed, duplex, flow control will work. Select auto-negotiation, speed, and duplex auto-negotiation.

Configuration Items	Description
Port	Port name, corresponding to mark in panel.
Type	Display port type (TX or FX).
Speed	Display configurable speed of port or auto-negotiation mode.
Duplex	Auto-negotiation（AUTO, full duplex（FULL）, half duplex（HALF）optional, default mode is auto-negotiation mode.
Enable	Configurable port enables or disable. Selecting square frame is for enable the corresponding port. It cannot transmit data if any port disable. The default is “Enable”.
Flow Control	Whether selecting flow control to the port. Only can selecting flow control when the port enable. The default is off.



（Figure 5.5.1）

Port setting interface, as shown in Figure 5.5.1

This feature is consistent with the port status of the port information, for example: set port 1 and port 2 is for the hundreds of megabytes rate half double work, use network cable connect port 1 and port 2, by port information for a query, you can view the status of port 1 and port 2, as shown in Figure 5.5.2. Port settings and restarts the device when you are finished. View port information column of the port State, rate, whether or not in accordance with reality.

Port	Media	Enable/Disable	Connection	Speed/Duplex	Flow Control
1	TX	Enable	LINK	100M Half-duplex	Disable
2	TX	Enable	LOS	10M Half-duplex	Disable
3	TX	Enable	LINK	100M Full-duplex	Disable
4	TX	Enable	LOS	10M Half-duplex	Disable
5	TX	Enable	LOS	10M Half-duplex	Disable

（Figure 5.5.2）

:

1. When one end is auto-negotiation, and the other end to force rate setting, according to the Ethernet standard consultation rate for corresponding obligatory rate for half-duplex mode
2. Port flow control auto-negotiation mode can be set only when other modes cannot be set
3. Optical port rate mode, duplex mode, flow control may not be installed. It defaults to full duplex, flow control closed. This feature is consistent with the port status of the port information.

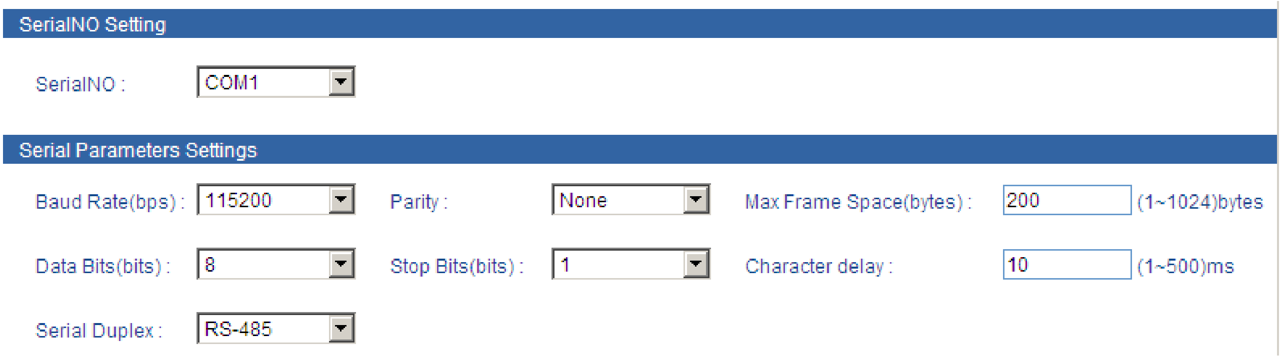
5.5.2 Server Settings

Server configuration includes the serial port configuration and mode of operation of the configuration parameters

5.5.2.1 Configure serial port parameter

Serial port configuration menu	Optional data	Description
Serial port working mode	RS-232 full duplex/RS-422 full duplex/RS-485 half duplex	Serial work mode
Baud rate（bps）	300-115200（10pcs band rate optional）	Baud rate choice
Parity	None, Even, Odd, Mark, Space	Checkout choice
Data bits（bits）	7,8	The parameter of serial
Stop bits (bits)	1,2	The last of the data package
Max frame space (bytes)	1-1460	The length of frame from serial data to Ethernet data.
Character delay（ms）	1-500	The time space from serial data to Ethernet data

Enter into IT-ES605-IM-2D(RS-232) WEB interface, knock [Serial Server/COM settings]; please choice necessary configuration in drop down list, the serial configuration interface is as follows:



（Figure 5.5.3）

Configuration option: [Baud rate], [Parity], [Data Bits], [Stop Bits], [Max Frame Space], [Character Delay] and [COM mode], the explaining is as follows:

[Baud rate]

It is a parameter to check the communication speed. It shows to transfer how many bits in 1 second.
For example, 300 baud rate means have 300 bits transferred in 1 second.

[Parity]

Parity bits: It is a simple method to checkout fault in serial communication,
have 4 types: Even, Odd, Mark, Space

[Data Bits]

It is a parameter to check the actual data bits in communication.
When PC send a Packet, actual data is not 8 bits, the standard is 5, 6, 7, 8.。

[Stop Bits]

The last bit of the single Packet. Typical value is 1, 1.5 and 2 bit.
When a data bit is 5, stop bit 1.5 and 1 option. When a data bit is 6, 7, 8, stop bit 1 and 2 option.

[Max frame space]

The frame length that serial interface data convert into Ethernet data, within the range of setting time, it forward when data is equal to or longer than the setting frames.

Available setting value ranged from1 to 1024.

[Character Delay]

The wait time when serial interface send data do not 1 data frames. If up to this time and do not have data, then send automatic. Can configure 1-500.

[COM mode]

Web interface default work mode if up to the model name, if the product is RS-485, it is RS-485 or RS422, If the product is RS-232, it is RS-232.

5.5.2.2 Configure working mode

Working mode configuration menu：

Configuration menu	Data option	Description
Sessions	1-4	

Working mode	TCP Client TCP Server UDP TcpAuto	Choice serial port working mode, default is not open
Local port	1-65535	COM1 default is 30000，COM4 default is 30003, between them, add step by step
Destination address	Default is192.168.0.254	
Destination port	1-65535	COM1 default is 31000，COM4 default is 31003, between them, add step by step
Connect mode	Connect immediately/data trigger	Default is connect immediately
Keep-alive	1-65535 s	Default is 300
RealCom	Open/Close	Default is Close

[Sessions]

Each serial port of serial device servers can support 1-4 sessions. It means serial port of serial device server send the received data to Ethernet through socket. More than one of the sessions means serial port of serial device server sends the received data to Ethernet through more than one socket. Sessions enable to use by checking the corresponding box.

1．TCP Client

As TCP Client side, serial device server will connect forwardly to TCP/IP network equipment, such as PC. It need to setup to tell serial device server to connect which network address and TCP port number when conditions is matched. After creating socket, serial device server will sent the data received from each serial port through socket On the contrary, the data received from socket will be sent to the corresponding serial port.

TCP Client setting option: [Destination address], [Destination port] and [Connect mode]

The explanation of these setting is as follows

[Local port]

The configuration is the same TCP server, default is 1~65535.

[Destination address]

The IP address or domain name address that device will connect, both of them can correspond the host computer address on the Internet.

[Destination port]

The port that device will be connected, default is 1~65535.

[Connect mode]

Connection mode has 2 types: Immediately and Data trigger

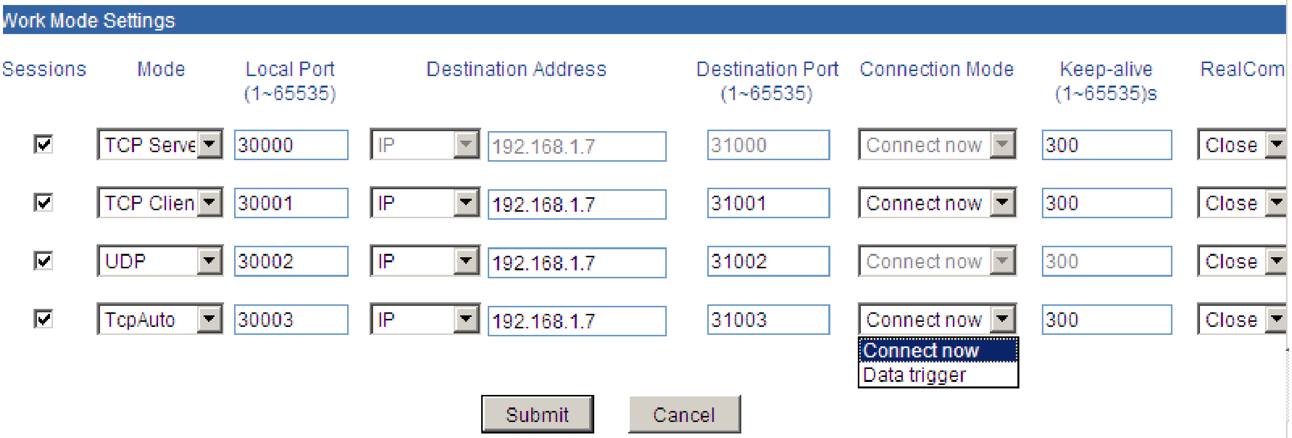
Immediately: When IT-ES605-IM-2D (RS-232) have power supply, it will connect immediately, if connection cut off, it will connect immediately.

Data trigger: Once IT-ES605-IM-2D (RS-232) receive the data, it will connect immediately.

[Keep-alive]

Setting the vacancy time for connection cut off automatic; if there do not have data transfer, the connection will cut off. If set “0”, means do not care how much time vacancy, IT-ES605-IM-2D do not cut off voluntary. The range is 1-65535s. Default is 300s

The figure below is the configuration interface of TCP Client Mode. Session 1 is setting to local address available for router. “192.168.2.168”, the “Destination Port” connected to serial port is host computer 192.168.2.168” 31000 port, Connection mode is Immediately, Disconnect Timeout time is 300 seconds, please pay attention to pure TCP Client, TCP Server, UDP or TcpAuto mode. Please close RealCom. Session 3 is setting to Internet address available for router “www.test.com” （the choice this time is DNS） the “Destination Port” connected to serial port is host computer “www.test.com” 31002 port，Connection mode is Immediately, Disconnect Keep-alive time is 300 seconds, click “Submit’, setting successful.



（Figure 5.5.4）

2． TCP server

TCP Server, Passive connect, one pivotal parameter is [Local port], have relationship with other setting, need combine setting

[Local port]

IT-ES605-IM-2D (RS-232) provided TCP port can be connect by other TCP/IP node, the TCP port have the relationship with the IT-ES605-IM-2D (RS-232)’s relevant serial interface. The figure as follows is TCP Server setting interface, Session 1 set local port is 30000, external TCP port connect IT-ES605-IM-2D (RS-232) through this port. Connection keep-alive time is 300 second. Click “Submit”, setting successful as figure 5.5.4

3． UDP

Under the UDP work mode. IT-ES605-2D is server and also client, the relevant setting is “Local port”, “Target address” and “Target port”. It can support point to point and multicast UDP, setting method is the same as TCP.

4． TCP Auto

In this Mode, serial device server can act as server or client. Before setting this Mode, please ensure related parameters are correct when you turn on the server mode, client mode is automatically disconnected.

5． RealCom

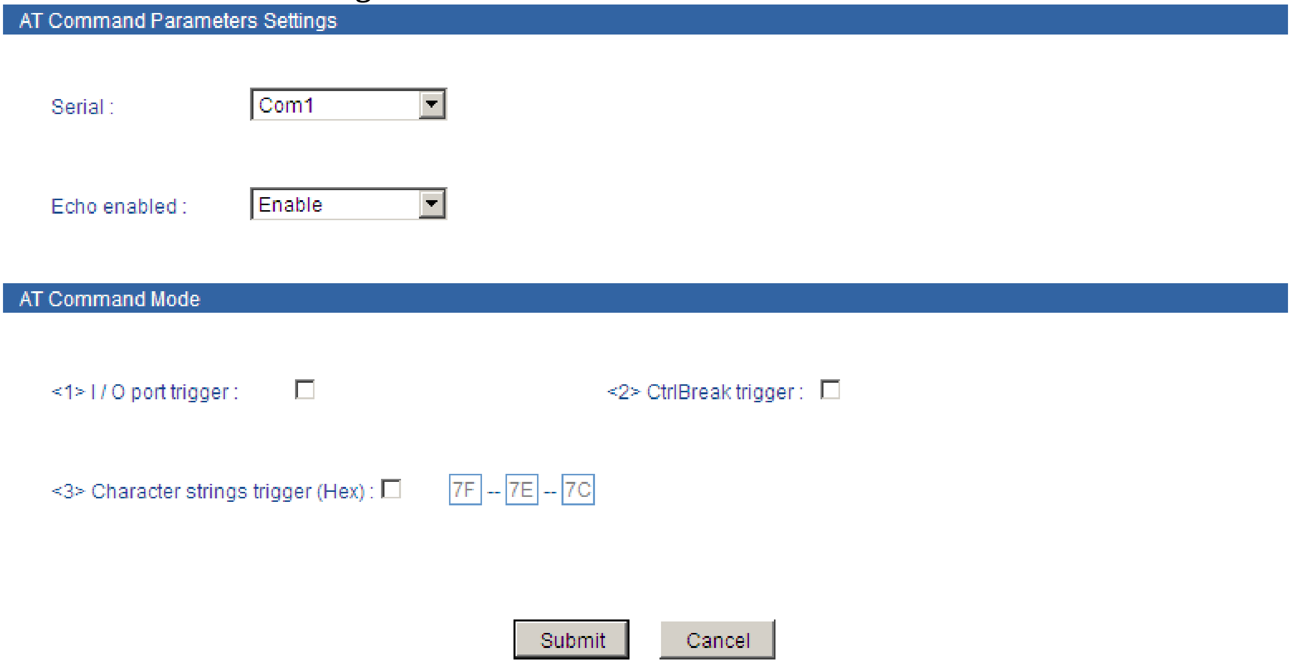
RealCom support TCP Server and TcpAuto, can choice open and close function in RealCom, figure 5.4.3.

When device open the RealCOM function, can cooperate with VSP Management Software create virtual COM port to communication, now, device’s work mode is server, the virtual COM port is client, how to create the Virtual COM port, please the VSP Management Software user manual.

⚠

1. Address pool just support Type A and type B address
2. Start address and end address must in the network segment.
3. Start address value must less than or equal to end address.

5.5.3 AT Command Settings



（Figure 5.5.5）

5.5.4 Rapid Ring

SwRing™ technology provides auto-recovery and re-connection mechanism for broken network. When network is broken, it has link redundancy and self-recovery capability and self-recovery time is less than 20ms. SW-Ring is a patented technology designed for industrial control network requiring high reliability.
SwRing™ technology support maximum 250 pieces switches, in which the **SwRing™** its self-recovery time is <20ms.
Each port of IT-ES605-IM-2D (RS-232) switch can be Ring Port to connect other switches. When network is broken, relay for failure alarm will be activated. Redundant organization of **SwRing™** enable backup link to recover network instantly.
Self-developed patented technology for SW-Ring network can realize the intelligent redundancy for industrial Ethernet switch, which can make you easily and conveniently establish redundant Ethernet, and can facilitate the quick recovery of any network section of automatic system disconnected from the network. IT-ES605-IM-2D (RS-232) supports maximum 4 ring groups. Each group set up 2 ports as Ring Port and a port cannot belong to several rings.
Hello_time setting is time interval of sending detecting packet to network at regular time. The unit is ms. Its main purpose is to detect network connection. It sends a detecting packet to next door devices by CPU. If they receive it, then reply a confirm packet to ensure network connection is active. If this setting will influence self-recovery time, we suggest advanced users can use it.

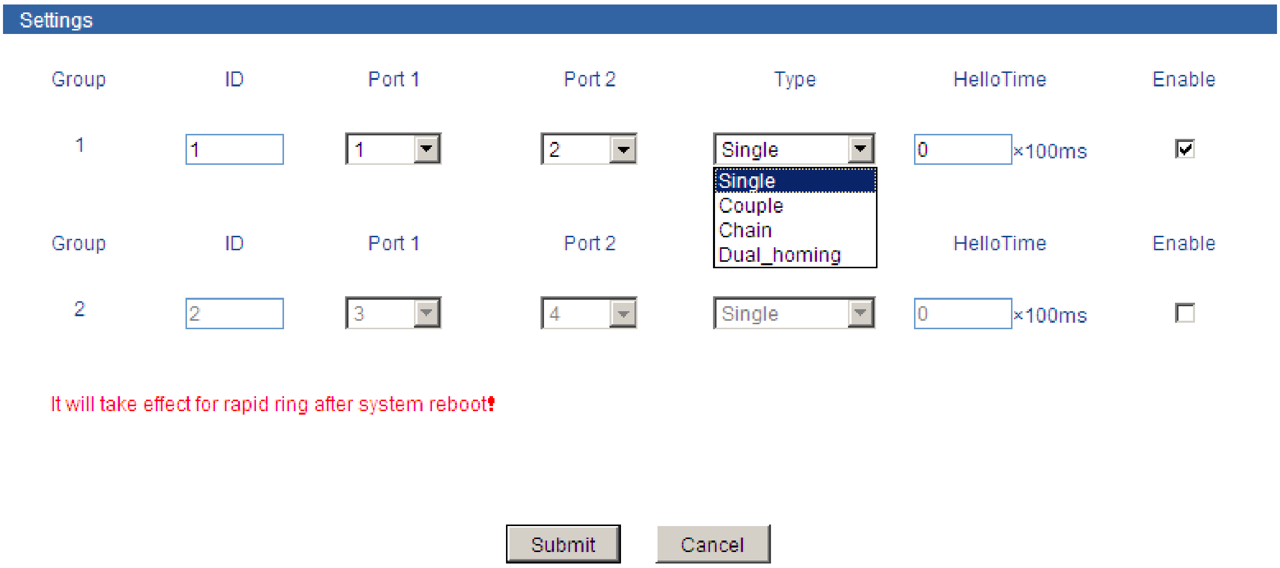
Basic interface of Rapid Ring as shown in figure 5.5.6:

（Figure 5.5.6）

Initial interface display redundancy protocol is SW-Ring V3. Ring V3 support Single ring, coupling ring, chain ring and Dual_homing.

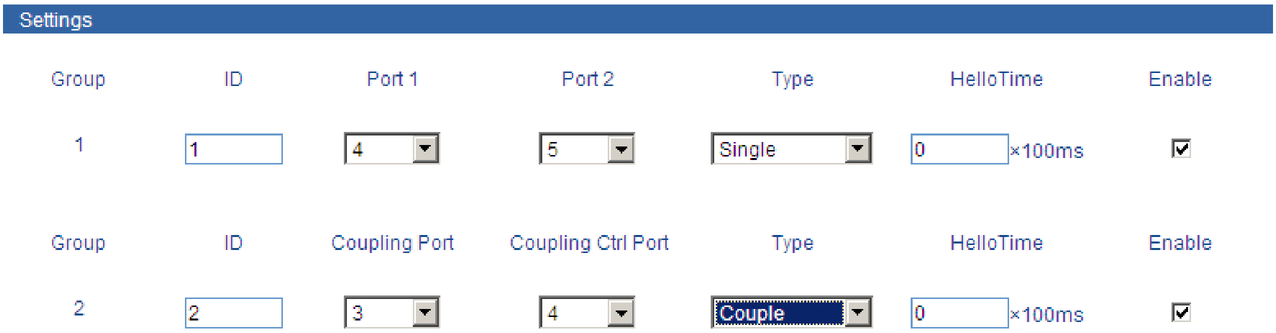
1. Configuration interface is as figure 5.5.7, we can see Ring V3 support 4 different ring group: Single,

Coupling, Chain and Dual_homing.



（Figure 5.5.7）

2. Enable Ring Group 1（or Group 2）, and enter into Network ID（support 0-255 number only）. Select Ring Port between Port 4 and Port 5.



（Figure 5.5.8）

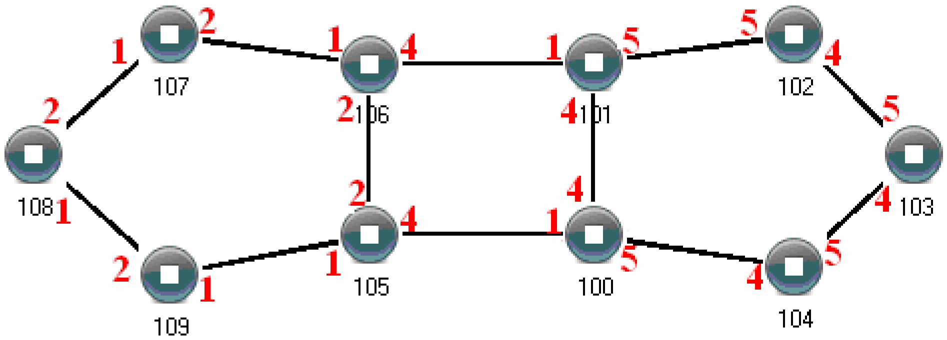
“Chain” refers to strengthen user’s capability of making any type of redundant topological structure with flexibility by taking an advanced software technology. In fact, Chain is to cascade several switches already set up to Ring and both sides of chain access to network.

“Dual Homing” refers to a fact that two Rings connect the same switch. This type of configuration is ideal choice for centralized management of several Rings.

Method to enable Chain and Dual Homing is similar to that to enable Single Ring and Coupling Ring. It only needs to select corresponding items in [Type].

Method to enable Ring V3 coupling ring

The architecture of coupling ring as figure 5.5.9



Coupling（Figure 5.5.9）

Operation method:

1. Select Ring V3, enable ring group 1 and 2. (Hello_time can be disable, if enable, time of sending Hello packet could not be very fast, it will influence CPU operate speed)；
2. Set 105, 106 device's ring port as port 1 and port 2 in ring group 1, network ID: 1, type: single ring. Set ring port as port 4 in ring group 2, Coupling ctrl port: 2, network ID: 3, type: coupling ring, figure as 5.5.10.

Group	ID	Port 1	Port 2	Type	HelloTime	Enable
1	1	1	2	Single	0 ×100ms	☑

Group	ID	Coupling Port	Coupling Ctrl Port	Type	HelloTime	Enable
2	3	4	2	Couple	0 ×100ms	☑

（Figure 5.5.10）

3. Set 100, 101 device's ring port as port 4 and port 5 in ring group 1, network ID: 2, type: single ring. Set ring port as port 1 in ring group 2, Coupling ctrl port: 4, network ID: 3, type: coupling ring, figure as 5.5.11.

Group	ID	Port 1	Port 2	Type	HelloTime	Enable
1	2	4	5	Single	0 ×100ms	☑

Group	ID	Coupling Port	Coupling Ctrl Port	Type	HelloTime	Enable
2	3	1	4	Couple	0 ×100ms	☑

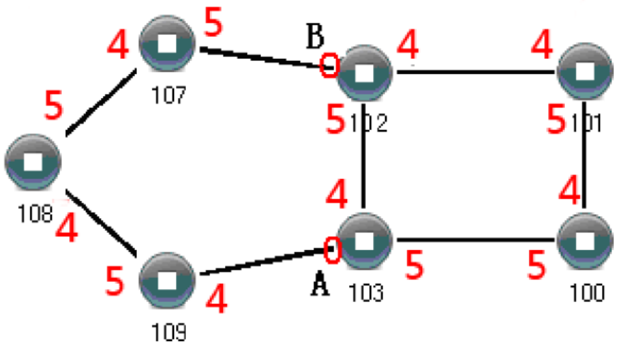
（Figure 5.5.11）

4. Set 107, 108, 109 device's ring port as port 1 and port 2 in ring group 1, network ID: 1, type: single ring. Set 102, 103, 104 device's ring port as port 4 and port 5 in group 1, network ID: 2, type: single ring.

5. Connect 100-104 devices' port 4 and port 5 with network cable. Connect 105-109 devices' port 1 and port 2 with network cable, Connect 101 device's port 1 to 106 device's port 4 with network cable, Connect 100 device's port 1 to 105 device's port 4 with network cable.

2. Method to enable Ring V3 Chain ring

The structure of Chain ring as figure 5.5.12



Chain（Figure 5.5.12）

Operating method:

1. Enable Ring Group 1: Hello time can be disable too, if it enable, time of sending Hello packet could not be very fast, or it will influence CPU dealing speed.
2. Set up Port 4 and 5 of Device 100, 101, 102 and 103 to be Ring Port in Ring Group 1, Network ID is1, Ring Type is Single; as shown in figure 5.5.13. Set up Port 4 and 5 of Device 107, 108 and 109 to be Ring Ports in Ring Group 1, Network ID is 2. Ring Type is Chain; as shown in figure 5.5.14.

Group	ID	Port 1	Port 2	Type	HelloTime	Enable
1	1	4	5	Single	0 ×100ms	☑

（Figure 5.5.13）

Group	ID	Port 1	Port 2	Type	HelloTime	Enable
1	2	4	5	Chain	0 ×100ms	☑

（Figure 5.5.14）

3. Use a wire to connect Port 4 and 5 of Device 107-109 in turn to make a chain. Use a wire to connect Port 4 and 5 of Device 100-103 in turn to make a Single Ring, Then use a wire to connect Port 5 of Device 107 and Port 4 of Device 109 to normal port of Device 102 and 103. Chain is finished.

⚠ :

1. Port cannot be trunking setting when it is already Ring port.
2. In the same single ring, identity must be consistent; otherwise it will not built a ring and cannot communicate.
3. All ring ports in the VLAN settings must be TRUNK tagged VLAN member, otherwise cannot communicate.
4. To form tangent ring or other complex rings, should pay attention to the ring identity whether is it consistent, different single ring identification must be different.

5.6 Monitor

5.6.1 Relay Warning

Warning had 2 types: Power alarm, port alarm. Main function: once the devices were in unusual status, can inform administrator in time and repair the status of device quickly, can avoid more lose

Relay warning input type: Close/Open. Once select close, the light will be bright when alarms have. Relay will be in open status.

Power alarm

IT-ES605-IM-2D(RS-232) provided dual DC power supply (AC power supply did not have alarm), if one power supply had problem, another will support power supply immediately, dual power supply hot back-up. Select to enable power alarm, If power supply was in unusual status, device will send alarm signal, inform power supply work unusual.

Port Alarm

Alarm when port disconnects. Enable port alarm, if port was in unusual status (Connect or disconnect), device will output a signal, inform the device work unusual.

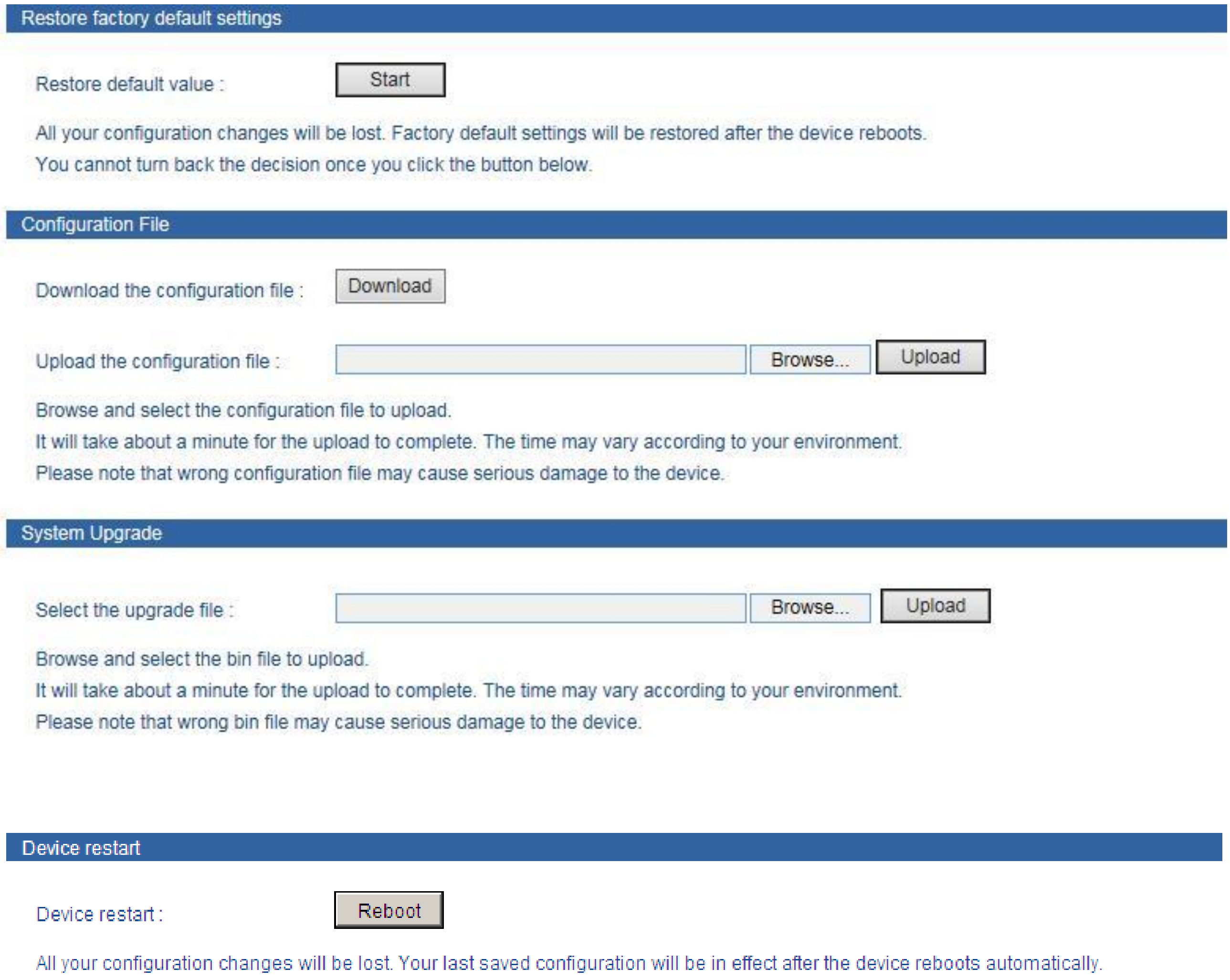
（Figure 5.6.1）

In default status, the type of relay output is open, the alarm light is OFF, and have no alarm, relay always open.
When the device have alarm, the light is ON, relay close.

5.7 System Tools

5.7.1 Files Management

The menu included 4 functions: Restore factory default settings, Configuration file, System upgrade and Device restart.



（Figure 5.7.1）

1. Factory Default

If you know the IP address of the device, user name and password:

Use IE to login Web interface.

Click "System Tools"

Click “Files Management”

Choose “Restore factory default settings”

Click “Start”

Notice: the IP address will be "192.168.1.254".

Open a new interface, input "192.168.1.254" to make a new configuration.

2. Download Configuration

If you know the IP address of the device, user name and password:

Use IE to login Web interface.

Click "System Tools"

Click “Files Management”

Choose "Configuration file”

Click "Download"

Choose the name of the file and the place to save.

3. Upload Configuration

If you know the IP address of the device, user name and password:

Use IE to login Web interface.
Click "System Tools"
Click "Files Management"
Choose "Configuration file"
Click "Upload"

4. Upgrade Firmware

If you know the IP address of the device, user name and password:

Use IE to login Web interface.
Click "System Tools"
Click "Files Management"
Choose "System upgrade"
Click "Browse" and find the place of uploading the file.
Click "Upgrade"
A suggestion" interruption of power is not allowed during uploading", confirm it.

5. Device reboot

If you know the IP address of the device, user name and password:

Use IE to login Web interface.
Click "System Tools"
Click "Files Management"
Choose "Device restart"
Click "Reboot"

⚠ :

1. Load factory default will result in all status be in factory default settings, the IP could be static IP address "192.168.1.254".
2. Upload the configuration file, in the new configuration if static IP is not in the same network segment, the website will not be opened.
3. Use dynamic IP settings, but there is no DHCP server on the network segment, that will result in the relevant part of the IP will not be updated in the new configuration when upload configuration.
4. Before reboot, please save all configurations. Otherwise, all configuration will be lost

5.7.2 Login Settings

You can modify the switching of the user name and password.

Login's name

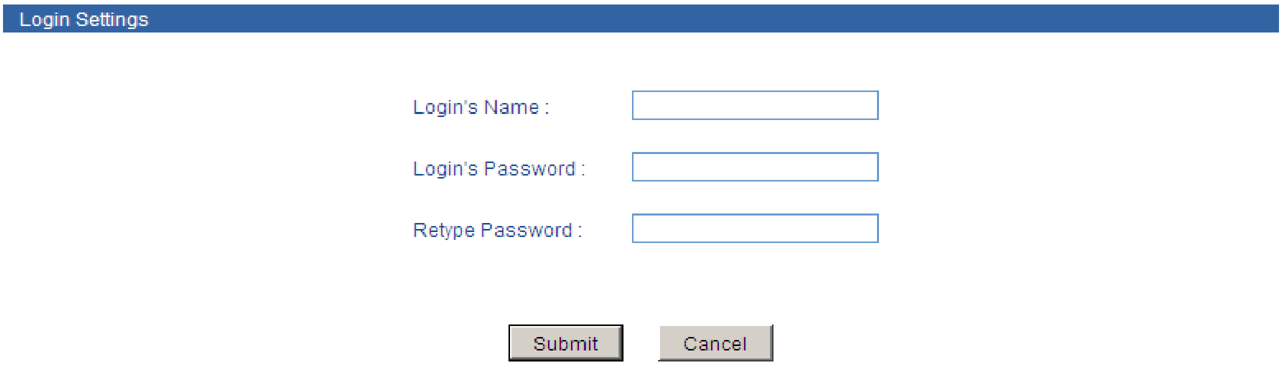
The identity of visitor with the letter combination is no more than 16 bytes

Login's Password:

Visitor use password, user authority allows the letter combination no more than 16 bytes

Retype password

Make sure the last time input password is correct.



（Figure 5.7.2）

1.Please contact our online technical support if you forget login name and password 2. Set same user mane, the front settings of user name/password will be available.

Appendix 1 Glossary table

	Glossary	Description
A	ARP (Address Resolution Protocol)	An IP address to physical address protocol
	Auto-Negotiation	Switches at both ends of the device in accordance with the maximum performance to auto-negotiate the speed and duplex mode
B	Broadcast Storm	A port send excessive broadcast frame meantime on the network, accumulate the respond to send messages on the network , consume too much network resources or cause the network timeout
	Broadcasting	A forwarding way send data to all branch of network
D	DHCP (Dynamic Host Configuration Protocol)	Information for the network to assign dynamically IP address, subnet mask and gateway
	DSCP (Diff Serve Code Point)	Packaged in IP packet header of 6 bit domain, can classify packets into 64 level with the value 0~63 range
E	Ethernet	Ethernet uses a bus or star-shaped topology and supports transmission rates up to 10Mbps orders of magnitude. A new version called fast Ethernet speeds of up to 100Mbps
F	Flow Control	Flow control allows low-rate devices communicate with high-rate, the flow control can match high rate port contracting speed with low rate port reception speed according to the way of high rate port pause contract
	Frame	Packets contain the header and tail message of physical media layer
	Full-Duplex	Receive and send data in progress at one moment meantime on IEEE802.3x standard
H	Half-Duplex	Receive or send data in one direction at one moment in progress on Backpressure standard.
I	IGMP (Internet Group Management Protocol)	Define the mechanism among hosts and three layers multicast device to establish and maintain the relationship between multicast group members.
U	UDP (User Datagram Protocol)	Face to disconnected unreliable transmission layer protocol
	UTP (Unshielded Twisted Pair)	Not shielded media out of twisted pair

Appendix 2 Default factory

Main Menu	Tag	Function	Main Menu
Device Informations	Basic Settings	Name	IT-ES605-IM-2D
		Description	RS-485 (Intellisystem)
		IP	192.168.1.254
		Subnet mask	255.255.255.0
		Default gateway	192.168.1.1
		DNS	202.96.134.133
	Port Information		Disable
Operation Settings	Port Settings		Disable
	Server Settings	Serial port working mode	Disable
		Baud rate（bps）	115200
		Parity	none
		Data bits（bits）	8
		Stop bits (bits)	1
		Max frame space (bytes)	200
		Character delay（ms）	10
	AT Command Settings		Disable
	Rapid Ring	Ring V3	Disable
Monitor	Relay Warning		Disable
System Tools	Files Management		Disable
	Login Settings	User name.	admin
		Password	admin

Appendix 3 Treatment of common problems

1. Why the page is not normal when configured by a web browser?
Before the access to WEB interface, please clear the IE cache and cookies. Otherwise, the WEB interface may be not normal.

2. How to do if you forgot password?
You can load factory default to get the initial password if forgot the password, the exact method you can search in the management software. The initial user name and password is “admin”.

3. Whether the effects are equivalent that make the configuration via web and by the management software?
Configuration of both is the same, are not in conflict.

4. What kind of alarms will be informed to technical except displayed in the management software?
The computer buzzer of monitoring host will continue to make alarm sound when got alarm information.

5. How to deal the problem that some of ports cannot access?
When some of ports cannot access, that may be line fault, network card failure and switch port failure, by the following test to find faults:
1. Only change a new Ethernet cable.
2. Use the same Ethernet cable and switch port, to replace the computer.
3. Use the same Ethernet cable and computer, to access other ports.
4. If have confirmed switch fault, please contact manufacture to repair.

6. What about the order of port adaptive status detection?
Port to detect the status in the following order: 100Mbps full duplex, 100Mbps half duplex, 10Mbps full-duplex, 10Mbps half duplex, in descending order to detect and automatically connect with the highest speed.