ISU-0016IA、ISU-006ID

智能串口采集器

用户手册

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ISU-0016IA And ISU-006ID

Intelligent Serial Port Monitoring Equipment

User Manual

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前言

本手册介绍 ISU-0016IA 和 ISU-0016ID 智能串口采集器（以下简称为采集器）的安装和使用，指导用户进行现场安装、接线、配置、调试以及简单的故障处理。

ISU-0016IA 和 ISU-0016ID 采集器的区别在于电源输入，ISU-0016IA 采集器支持双交流输入，ISU-0016ID 采集器支持 DC 48V 输入，其它功能都一样。本手册主要对 ISU-0016IA、ISU-0016ID 采集器的安装使用进行介绍，涉及到电源输入部分将单独进行说明。

目录

第一章 概述

本章简要介绍采集器的外观、指示灯、接口、技术指标和选配件。

1.1 产品介绍

采集器是一种智能型采集系统，主要应用于中小型机房、接入网和小模块局点等机房的环境监控。采集器提供 16 个串口，可外接门禁系统、电源系统、IPLU 环境监测仪、IPLU 电池监测仪、UPS 和空调等智能设备，并将所采集的各智能设备的信号通过透传或底端处理的方式上报至数据中心。采集器结构上采用 1U 设计，使产品满足于机柜、墙面等不同的安装环境。采集器的功能布局如图 1-1所示。

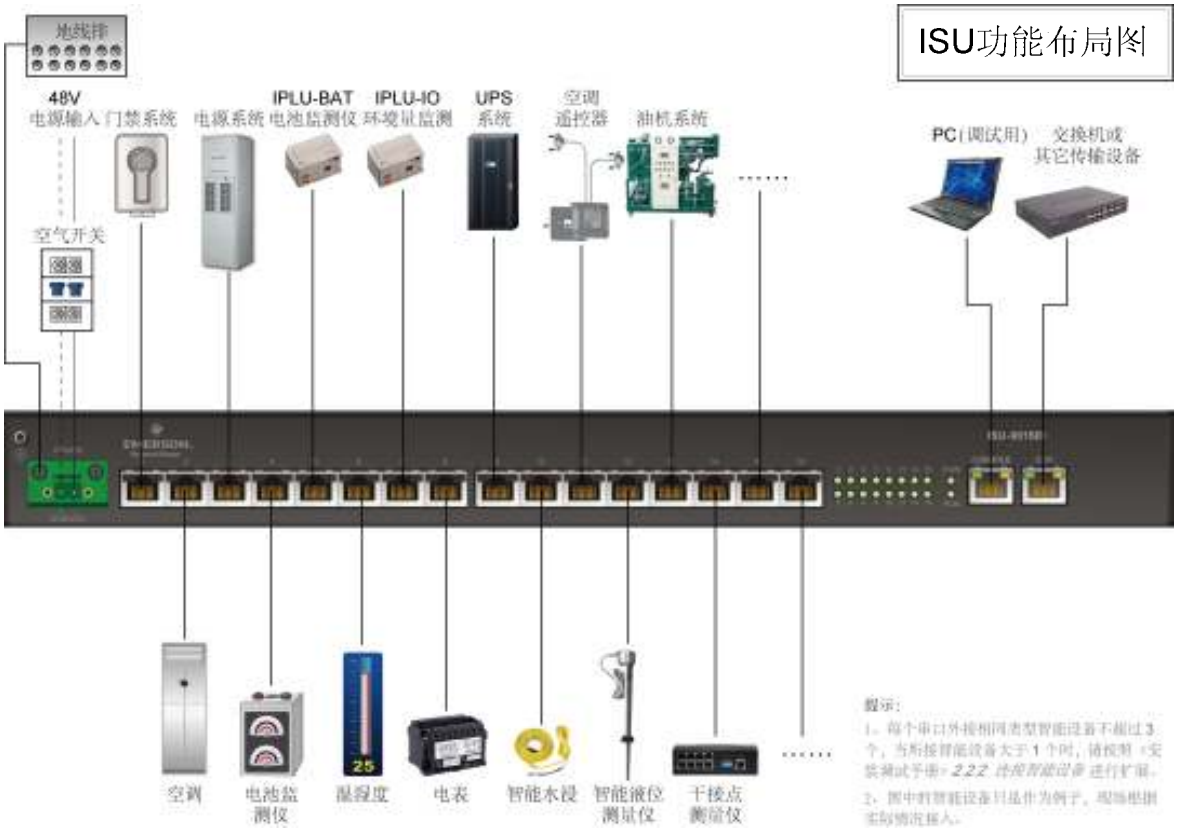


图1-1　采集器功能布局图

外观

采集器外观分别如图 1-2和图 1-3所示。

图1-2　ISU-0016IA 采集器外观

图1-3　ISU-0016ID 采集器外观

指示灯

采集器共有 20 个指示灯，分别位于前面板和后面板上。

采集器的前面板右上角有 2 个指示灯，分别为电源指示灯和运行指示灯（见图 1-4），指示灯的具体说明见表 1-1。

图1-4　电源指示灯和运行指示灯

表1-1　前面板和后面板指示灯说明

丝印	定义	颜色	功能	状态	说明
PWR	电源指示灯	绿色	指示采集器电源状态	亮	采集器上电
				灭	采集器没有上电
RUN	运行指示灯	绿色	指示采集器运行状态	灭	采集器异常运行
				闪烁	采集器正常运行
1/2/3..15/16	串口 1/2/3..15/16 指示灯	绿色	指示串口状态	闪烁	串口接收或发送数据
				灭	串口无数据收发

后面板上各有 18 个指示灯，如图 1-5所示。指示灯的具体说明见表 1-1。

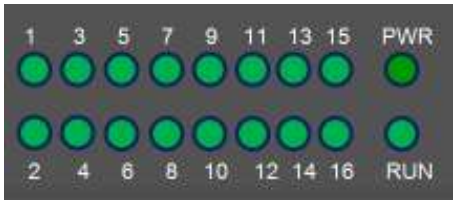


图1-5　后面板指示灯

以太网口和调试口为 RJ45 接口，每个接口上有 2 个指示灯用以指示接口的工作状态。以太网口指示灯如图 1-6所示（调试口的指示灯没有起作用），具体说明见表 1-2。

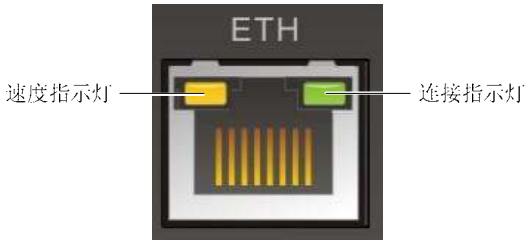


图1-6　以太网口指示灯

表1-2　以太网口指示灯说明

丝印	定义	颜色	功能	状态	说明
ETH	连接指示灯	绿色	指示接口连接状态	闪烁	有数据收发
				灭	无数据收发
	速度指示灯	黄色	指示接口速度状态	亮	速度为 100M
				灭	速度为 10M 或未连接

接口

采集器的所有接口都位于后面板上，分别如图 1-7和图 1-8所示。

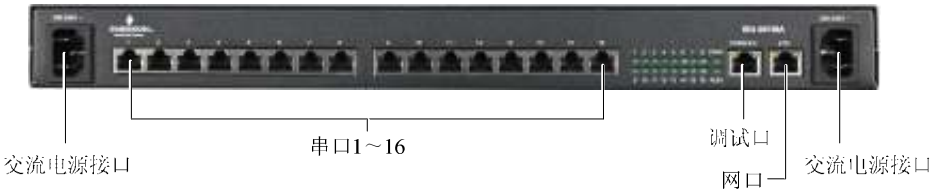


图1-7　ISU-0016IA 采集器接口位置

图1-8　ISU-0016ID 采集器接口位置

采集器接口的具体定义、功能和说明见表 1-3。

表1-3　接口描述

丝印	定义	说明
⏚	保护地端子	连接大地
POWER 20-60VDC	直流电源输入口	输入电源范围：20Vdc～60Vdc
200-250~	交流电源输入口	输入电源范围：200VAC～250VAC
1/2/3/4/5/6/7/8/9/10/11/12/13/14/15/16	串口 1~16 接口	RS485 通讯方式
CONSOLE	调试口	接口标准：RS232；波特率：115200bps，N，8，1；不隔离
ETH	以太网口	10M/100M 自适应以太网口
注： 1：仅 ISU-0016IA 采集器有交流电源输入接口。 2：仅 ISU-0016ID 采集器有直流电源输入接口		

1.2 技术指标

通讯参数指标

采集器的串口通讯参数指标见表 1-4。

表1-4　串口通讯参数指标

端口	类型	通讯参数	接口	协议	用途
COM1~COM16	RS485	支持 1200bps、2400bps、4800bps、9600bps、19200bps，字长 6～8 位；校验方式为 None、奇、偶、Mark 或 Space，停止位 1、2 位。	RJ45	智能设备协议，现场加载	采集智能设备数据，隔离

环境指标

采集器的环境指标见表 1-5。

表1-5　环境条件

项目	要求
使用场所	室内
工作温度*	－10℃～＋55℃
相对湿度	5%～95%，无冷凝
使用环境	尘埃满足 GR-63 的室内标准。无腐蚀性气体、可燃性气体、油雾、水蒸气、滴水或盐分等
大气压力	70kPa～106kPa
存贮温度	－40℃～＋70℃
冷却方式	自然冷
交流配电系统	TN，TT
污染等级	2
过电压等级	II
海拔高度	≤3000m
注*：指采集器本身但不包含外接设备的工作温度。在该温度范围内，确保所选的外接不会受到损坏	

机械指标

采集器的机械指标见表 1-6。

表1-6　机械指标

尺寸（长×宽×高）	重量
440mm×210mm×44mm	≤5kg

第二章 安装

本章介绍采集器的安装，包括安装准备、安装工具以及具体的安装步骤。

2.1 安装准备

注意事项

安装和使用采集器时，应注意以下事项，以避免出现意外事故对人身及设备造成伤害

- 不要将采集器放置在有水的地方，也不要让液体进入采集器
- 安装和接线时，需佩戴防静电护腕，穿防静电工作服。如果在现场无防静电护腕和防静电工作服，则需用水将手部冲洗干净，并擦干
- 妥善布线；确保没有重物压在电源线上，且不要踩踏线缆
- 妥善将采集器接地
- 对采集器的所有操作都必须在断电情况下进行

运行环境

采集器必须安装在室内。室内的温度和湿度需符合产品规格要求（见表 1-5）。

抗干扰

为了抗干扰，需要采取下列措施：

- 避免将采集器工作地和防雷地或电力设备的接地合用，两者尽可能远离
- 远离强功率无线电发射台、雷达发射台、高频大电流设备
- 必要时采取电磁屏蔽的方法

散热

采集器的散热要求如下：

- 将采集器放置在远离热源的地方
- 当挂墙安装或安装在机柜中时，采集器周围至少留有 10mm 的空间，确保有足够的散热空间。但放置在工作台上时，采集器周围需留出 100mm 的散热空间

2.2 安装工具

采集器的安装工具见表 2-1。

表2-1　安装工具

工具名称	规格型号		工具名称	规格型号
电工斜口钳	150mm		电缆剪线钳	最大到 300mm^2
电工尖嘴钳	150mm		数字万用表	3 位半数字显示
螺丝刀（十字）	100mm、200mm		冲击钻	配Φ6 钻头
螺丝刀（一字）	100mm、200mm			

2.3 安装采集器

采集器支持墙面安装和机柜安装两种方式。

2.3.1 墙面安装

> 注意
>
> 墙面安装时，采集器安装的位置必须是不易燃墙面以及地面上。

如果将采集器安装在墙面上，需要安装 3 个上墙支架（附件）。具体安装步骤如下：

1．用附带的 M3 螺钉将 3 个上墙支架安装在采集器的顶盖上，如图 2-1所示。

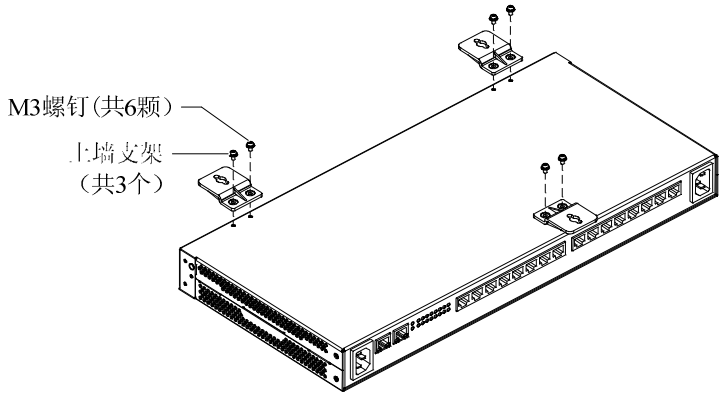


图2-1　安装上墙支架

2．参照图 2-2的尺寸，用Φ6 冲击钻在墙上钻 3 个 70mm 深的定位孔（孔间距最大允许误差 1.3mm），并将 3 个塑料膨胀管敲入定位孔中。

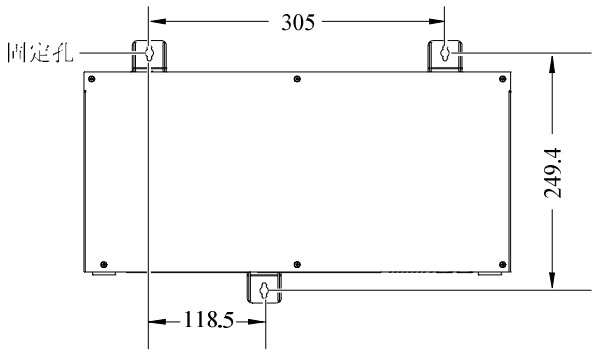


图2-2　定位孔尺寸（单位：mm）

3．把采集器放到安装位置（接线端子朝下），通过上墙支架的固定孔（见图 2-2）将自攻螺钉拧进塑料膨胀管中，从而将采集器固定在墙上。

2.3.2 机柜安装

安装步骤如下：

1．确认机柜已被固定好，机柜内外没有影响安装的障碍物。

2．确认采集器采用前出线方式还是后出线方式。

采用前出线方式时，挂耳安装在后面板两侧。采用后出线方式时，挂耳安装在前面板两侧。前面板两侧各有 3 个安装孔，适用于挂耳上 3 个安装孔；后面板两侧各有 2 个安装孔，适用于挂耳上 2 个安装孔。前后面板两侧的安装孔如图 2-3所示。

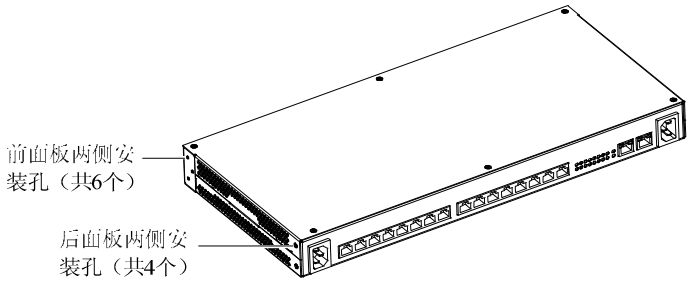


图2-3　前后面板两侧安装孔位置

3．根据出线方式，用附带的 M3 螺钉将挂耳（附件）固定在前面板或者后面板两侧，如图 2-4和图 2-5所示。

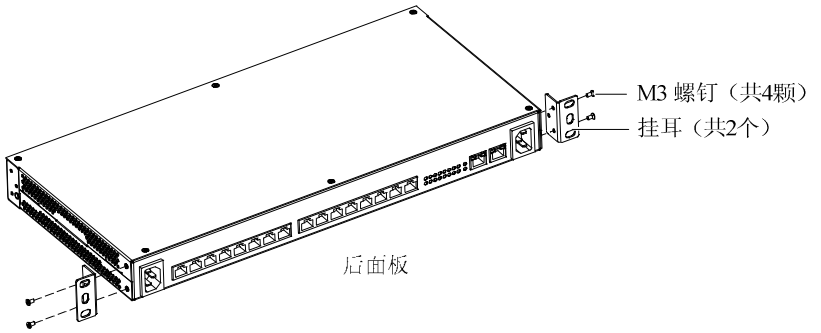


图2-4　安装挂耳（后面板两侧）

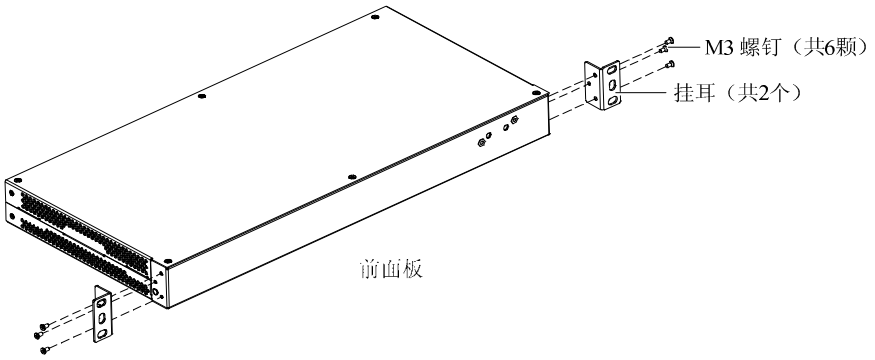


图2-5　安装挂耳（前面板两侧）

4．将采集器放到机柜导轨上，推入机柜中，直到推不动为止，如图 2-6所示。

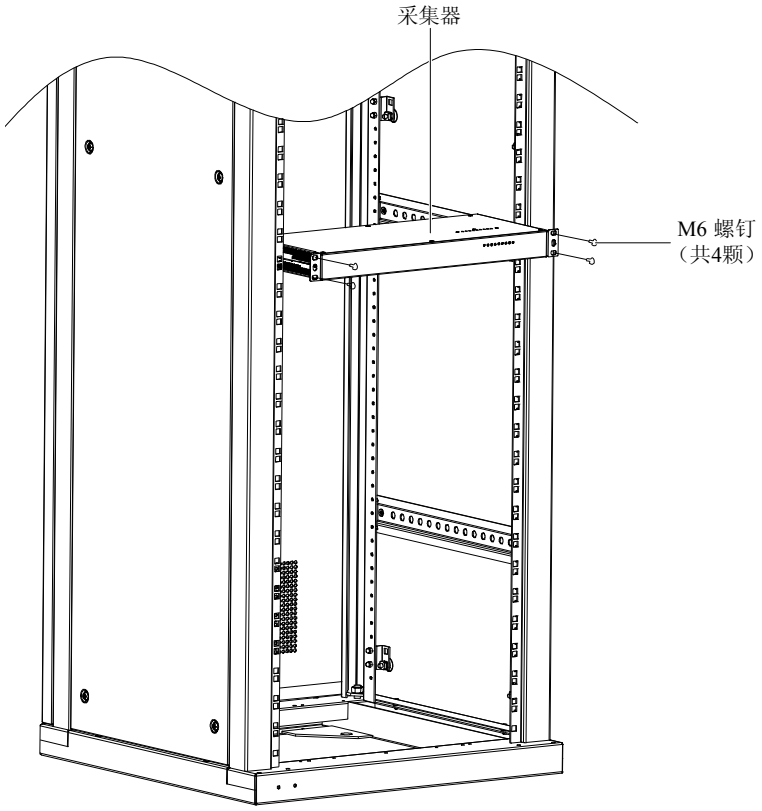


图2-6　安装在机柜中

5．用 M6 螺钉（用户自备）将采集器通过两侧挂耳固定在机柜上。

第三章 接线

本章详细介绍采集器的接线，包括注意事项以及各个接口的接线方法。

3.1 注意事项

所有接入采集器的外接信号必须是 SELV 电路，并且应和电网加强绝缘隔离。

3.2 串口接线

采集器提供 COM1～16 共 16 个串口用于和智能设备进行通信，且串口支持 RS485 通讯方式。

3.3 接口位置

ISU-0016IA 和 ISU-0016ID 采集器后面板都有 16 个串口。其接口位置分别如图 3-1和图 3-2所示。

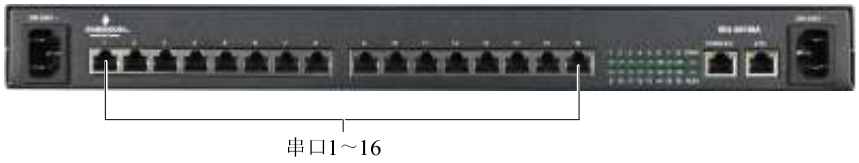
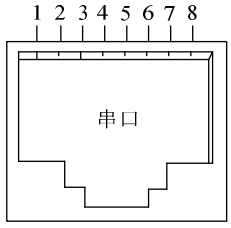


图3-1　ISU-0016IA 串口接口位置

图3-2　ISU-0016ID 串口接口位置

3.3.1 针脚定义

串口 1～16 的针脚定义如图 3-3所示。



针脚定义

1：	5：
2：	6：D−
3：D+	7：D+
4：	8：D−

图3-3　串口 1～16 针脚定义

3.3.2 接线方法

连接单台 RS485 智能设备时（以 IPLU 为例），接线方式如图 3-4所示。接线时为提高可靠性，需要在智能设备端将网线的 Pin3 和 Pin7 短接后接入智能设备的 DATA+，Pin6 和 Pin8 短接后接入智能设备的 DATA-。

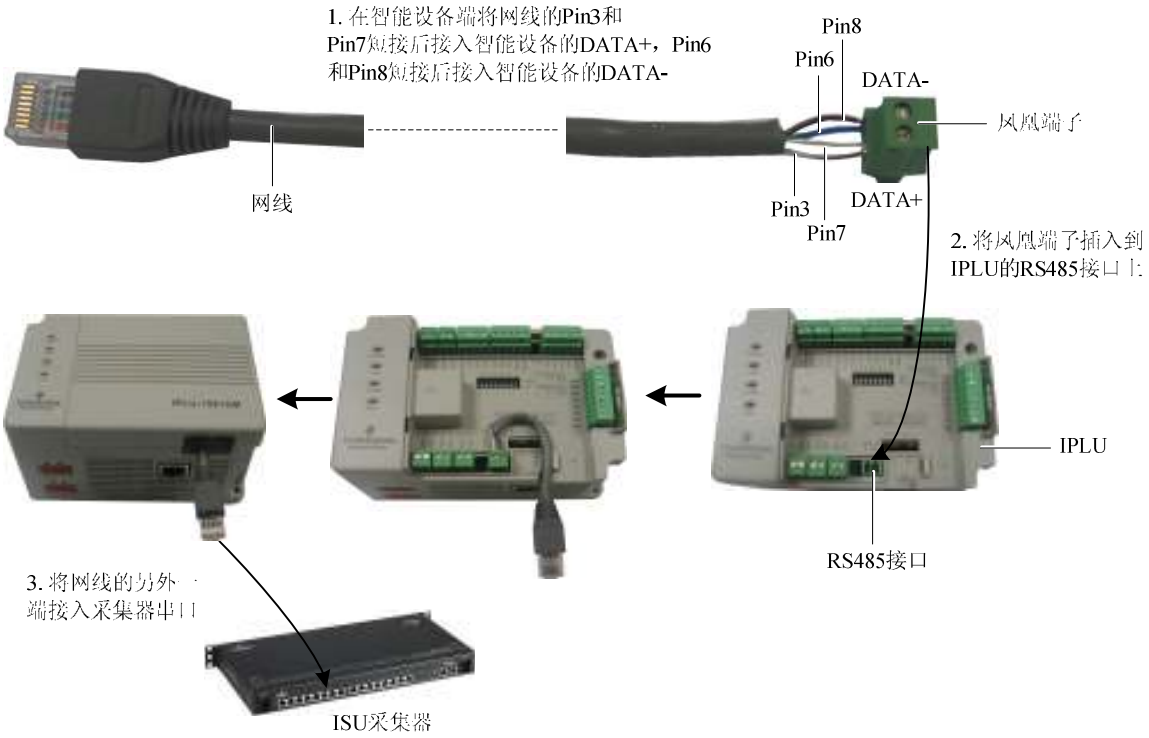


图3-4　单台 RS485 智能设备接线方式示意图

连接多台 RS485 智能设备时，接线方式如图 3-5所示。

如果是多台设备，可以通过 RJ45 三通头（选配件）进行转接，用标准直连网线将信号用菊花链的方式串连起来，然后再接入相应的接口中，如图 3-5所示。

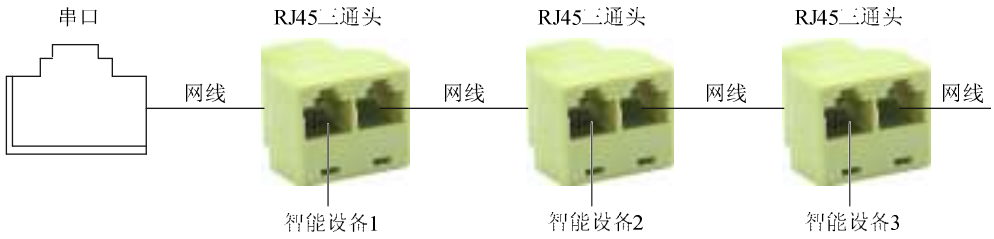


图3-5　多台 RS485 智能设备接线方式示意图

如果所接入的智能设备不是 RS485 接口（以空调为例），则需要外接一个串口转换器（选配件 50040021，需用户购买）将 RS422 或 RS232 转换成 RS485，再接入系统，接线方式如图 3-6所示。

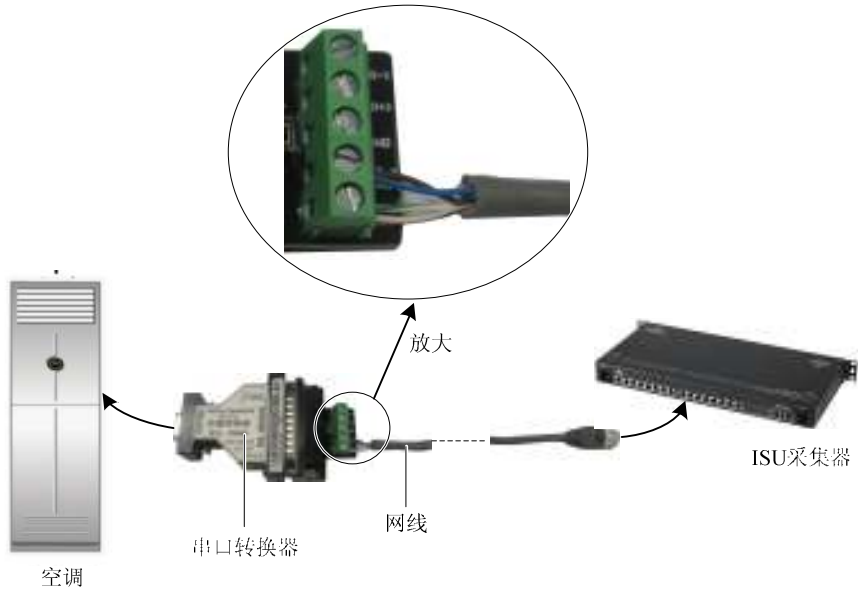


图3-6　非 RS485 智能设备接线方式示意图

3.4 调试口接线

3.4.1 接口位置

ISU-0016IA 和 ISU-0016ID 采集器的调试口位置相同。本节以 ISU-0016IA 采集器为例，其调试口的位置如图 3-7所示。

图3-7　调试口位置

3.4.2 接线方法

采集器提供 1 个 RJ45 的调试口，用于现场调试。调试人员可直接通过调试线缆连接到计算机串口上。

如果现场没有调试线缆，则需要按照表 3-1的针脚说明现场制作线缆。

表3-1　针脚说明

引脚序号	名称	定义
1		悬空
2		悬空
3	TX	数据发送
4	GND	信号地
5	GND	信号地
6	RX	数据接收
7		悬空
8		悬空

📖　注意

通讯参数为波特率 115200，数据位 8 位，无奇偶校验，无硬件流控，1 位停止位。

调试口接线方法如图 3-8所示。

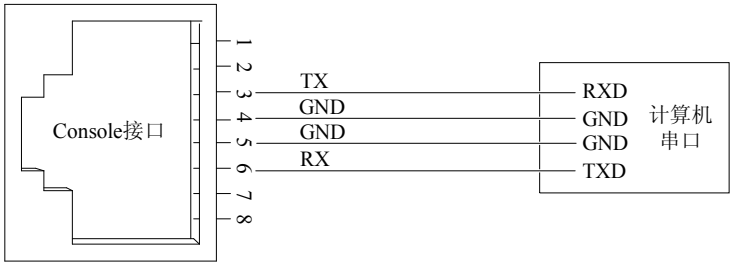


图3-8　调试口连接计算机串口示意图

3.5 连接地线

📖　注意

采集器接地线的正确连接是防雷、防干扰的首要保障，必须正确连接地线。

背景知识

在采集器输入端接有电源噪声滤波器，其中心地与机箱直接相连，我们称作机壳地（即保护地）。机壳地必须良好连接大地，以使感应电、泄漏电能够安全流入大地，并提高整机的抗电磁干扰特性。对于由外部接口如以太网口、串口等连接线串入的雷击高压，也由此地线提供保护。

采集器的保护地端子位于机箱后面板左侧，如图 3-9所示。

图3-9　保护地端子位置

接地要求

- 用一根黄绿接地线将保护地端子与大地连接起来，接地电阻不大于 4 Ω
- 如果采集器安装在机柜内，则机柜必须接地
- 接地方式应符合工作地、保护地和建筑防雷接地公用一组接地体的联合接地方式
- 接地线截面积：接地线截面积根据可能通过的最大电流负荷确定。接地线应采用良导体（铜）导线，并且禁止使用裸导线布放。联合接地的电阻值应小于 5 Ω

3.6 连接直流电源线

直流电源接口位置如图 3-10所示。

图3-10　直流电源接口位置

接线步骤如下：

1．确认保护地端子已经正确连接大地。

2．将直流电源线一端插入采集器的直流电源接口，另一端与直流供电电源相连。

警告

连接直流电源线时请务必注意电源线上的标签，避免出现连接错误。

3．检查采集器前面板电源指示灯（丝印为 POWER）是否变亮，指示灯亮则表示电源连接正确。

3.7 连接交流电源线

交流电源接口位置如图 3-11所示。

图3-11　交流电源接口位置

接线步骤如下：

1．将交流电源线一端插入采集器的交流电源接口，另一端与交流供电电源相连。

2．将另外一路交流电源按步骤 1 方式接入到交流电源中。

警告

ISU-0016IA 为多电源输入，维护时要确保在两路交流电源都断开的情况下进行。

3．检查采集器前面板电源指示灯（丝印为 PWR）是否变亮，指示灯亮则表示电源连接正确。

第四章 配置和调试

本章详细介绍配置和调试采集器的内容，包括连接采集器和计算机、上电检查、采用超级终端配置采集器、采用网页配置采集器（适用于 SiteWeb3.0 应用环境中）及采用 Tools2008 软件调试采集器。

4.1 连接采集器和计算机

采集器的参数配置和调试工作需要计算机配合才能完成。因此，在参数配置和调试前，需要连接采集器和计算机之间的通信线，并在计算机上设置好相应的通信参数。

用户可通过超级终端或调测工具平台软件 Tools2008（简称 Tools2008 软件）配置采集器的参数。

采用超级终端配置采集器参数时，需要手动输入配置命令和参数。而采用 Tools2008 软件时，因该软件采用可视化的人机交互界面，大大简化了现场的配置操作。

4.2 上电检查

完成采集器与计算机的通信线连接后，即可给采集器上电。

4.2.1 上电前检查

采集器上电之前需确保：

- 供电电压与设备的要求一致。
- 通信线连接正确。

📖 注意

上电前，需确认电源输入口（丝印：POWER 20-60VDC，见图 1-8，丝印 200-250~，见图 1-7）的位置，以便在发生事故时，能够及时切断供电电源。

4.2.2 上电后检查

采集器上电后，检查采集器的指示灯（见图 1-5）显示是否正常。指示灯状态描述见表 1-1。如果指示灯状态不正常，请检查采集器各接口接线是否正确，采集器所连接的基站是否正常工作等。

4.3 使用网页配置采集器（仅适用于 SiteWeb3.0 应用环境中）

1．在 IE 浏览器中输入采集器的 IP 地址，并按 Enter 键进入登录界面，如图 4-1所示。在语言中选择界面显示语言（中英文可选），输入用户名（默认 admin）和密码（默认 123456），然后点击**登录**按钮即可进入参数配置界面。

图4-1　登录界面

注意

1. 采集器 Console 端口的参数固定为 115200,N,8,1。
2. 采集器出厂默认 IP 为 192.168.100.100，子网掩码为 255.255.255.0，网关为空。

2. 在图 4-2所示界面选中**系统设置**页签进行 IP 地址设置。

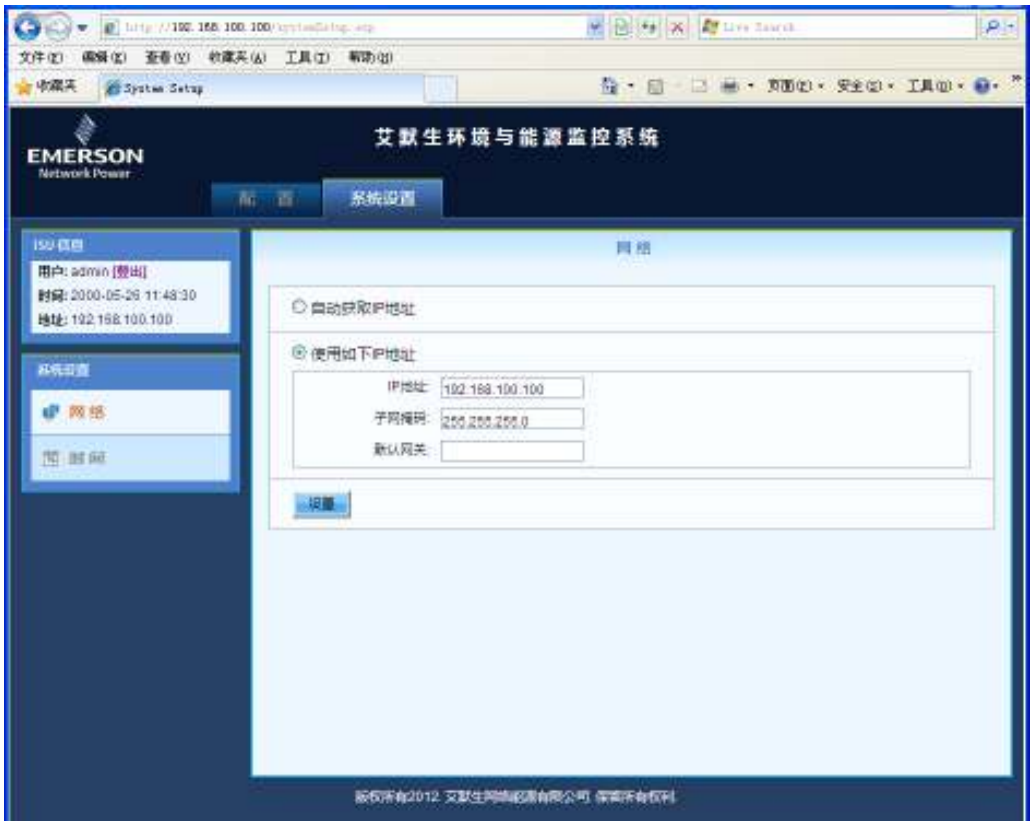


图4-2　系统设置界面

3．选中**配置**页签进行串口的波特率设置，显示如图 4-3所示。

图4-3　配置界面

4．设置全部完成后，请单击配置页签中的**重启**按钮进行系统重启。

4.4 使用 BottomDebugTool 底端调试工具软件调试采集器

4.4.1 连接采集器

1．用标准网线连接采集器的网口和计算机网口。

2．双击 BottomDebugTool 软件的运行程序 BottomDebugTool.exe 启动 BottomDebugTool 软件，屏幕出现如图 4-4所示窗口。

图4-4　选择连接类型

> 注意
>
> 如勾选“是否用 PC 时间校时采集器”，则连接采集器后，BottomDebugTool 软件将自动进行采集器校时，用计算机的系统时间来更新采集器时间。

3．在图 4-4所示窗口中选择“连接采集器”，单击**下一步（N）**，出现图 4-5所示窗口。

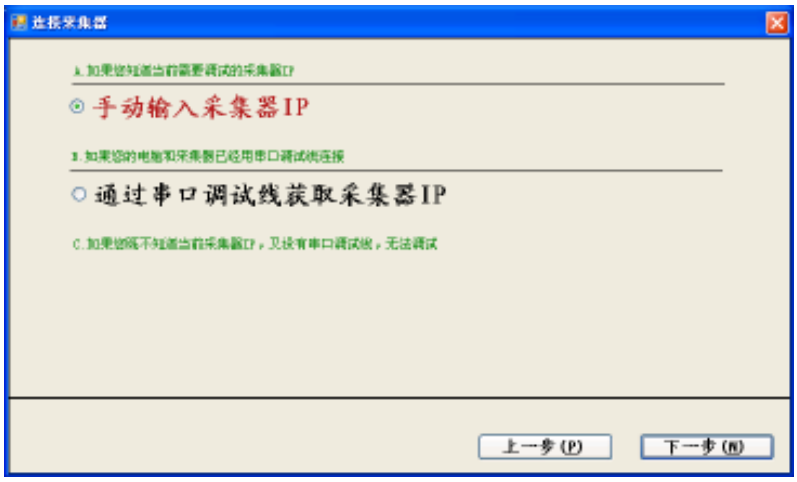


图4-5　选择“手动输入采集器 IP”

4．选择“手动输入采集器 IP”，单击**下一步（N）**，弹出如图 4-6所示窗口。

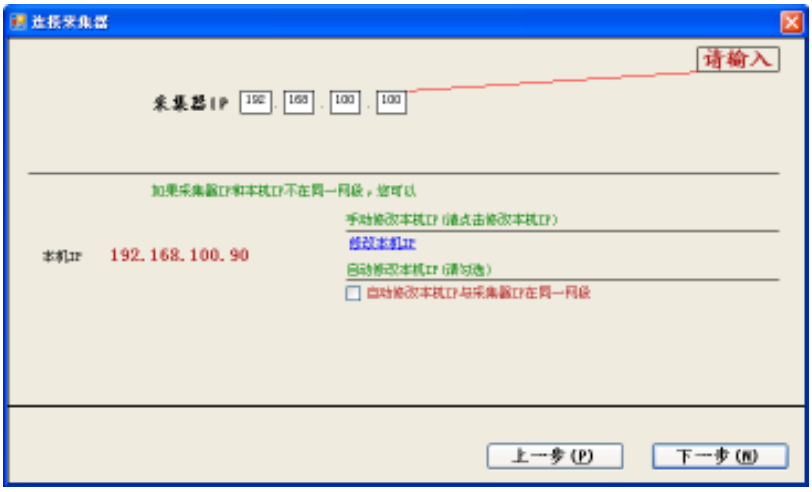


图4-6　输入采集器 IP 地址

5．输入采集器 IP 地址，单击**下一步（N）**，开始登录采集器。

4.4.2 配置

1．登录采集器后，屏幕显示图 4-7所示 BottomDebugTool 软件主窗口。

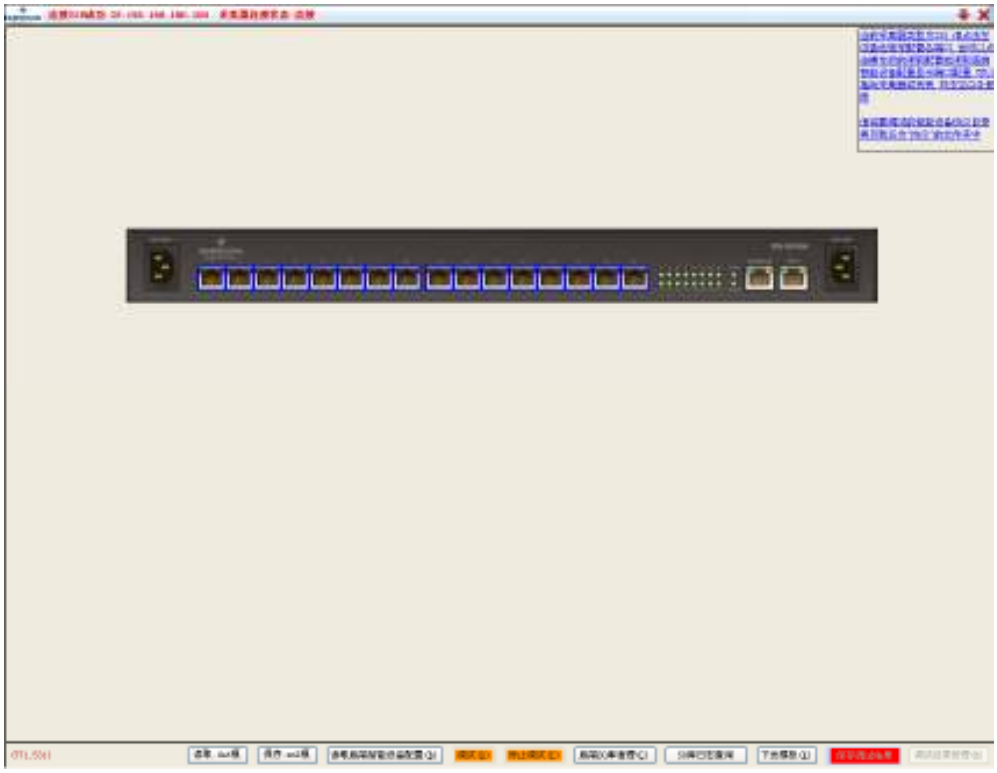


图4-7　BottomDebugTool 软件主窗口

2．在图 4-7所示 BottomDebugTool 软件主窗口中，选择所连接智能设备（以 IPLU1501 为例）对应的串口 4，选中的串口以高亮显示，如图 4-8所示。

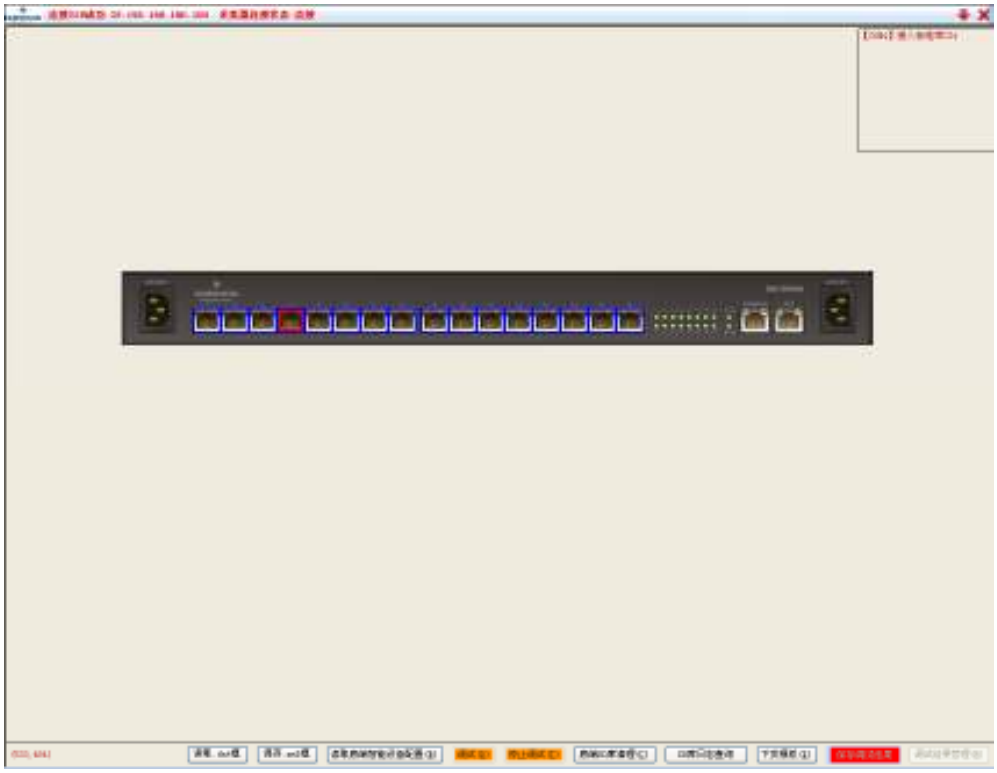


图4-8　选择串口

3．点击图 4-8所示串口 4 后，屏幕将弹出智能设备配置窗口，如图 4-9所示。

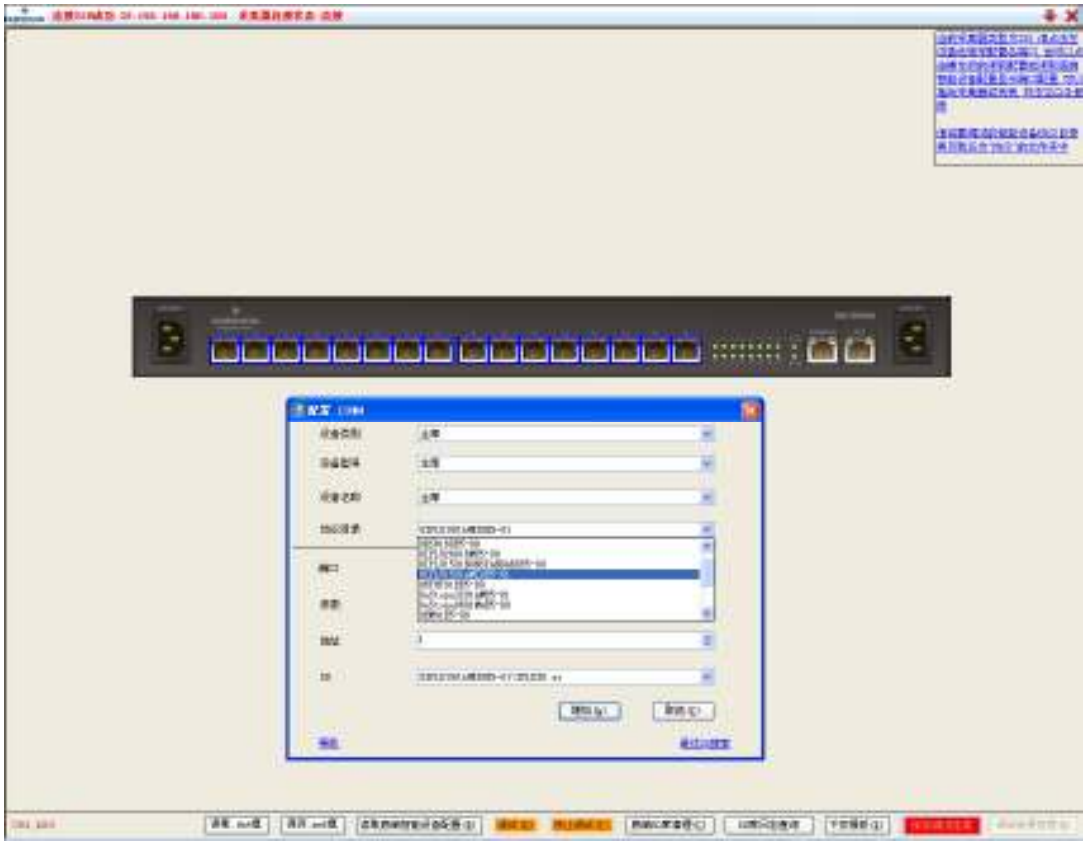


图4-9　智能设备（IPLU1501）配置窗口

4．在图 4-9所示智能设备配置窗口选择串口 4 所连接的智能设备的设备类别、设备型号、设备名称和协议目录，并输入设备名、通信参数和地址，显示如图 4-10所示。

图4-10　设置串口参数

- 如果 BottomDebugTool 软件自身带有该智能设备的协议目录，则其协议目录和 SO 库会自动分别显示在**协议目录**和**SO** 框中，点击**增加（A）**按钮即可在该端口下增加此智能设备。主窗口将显示新增的智能设备配置列表，如图 4-11所示。

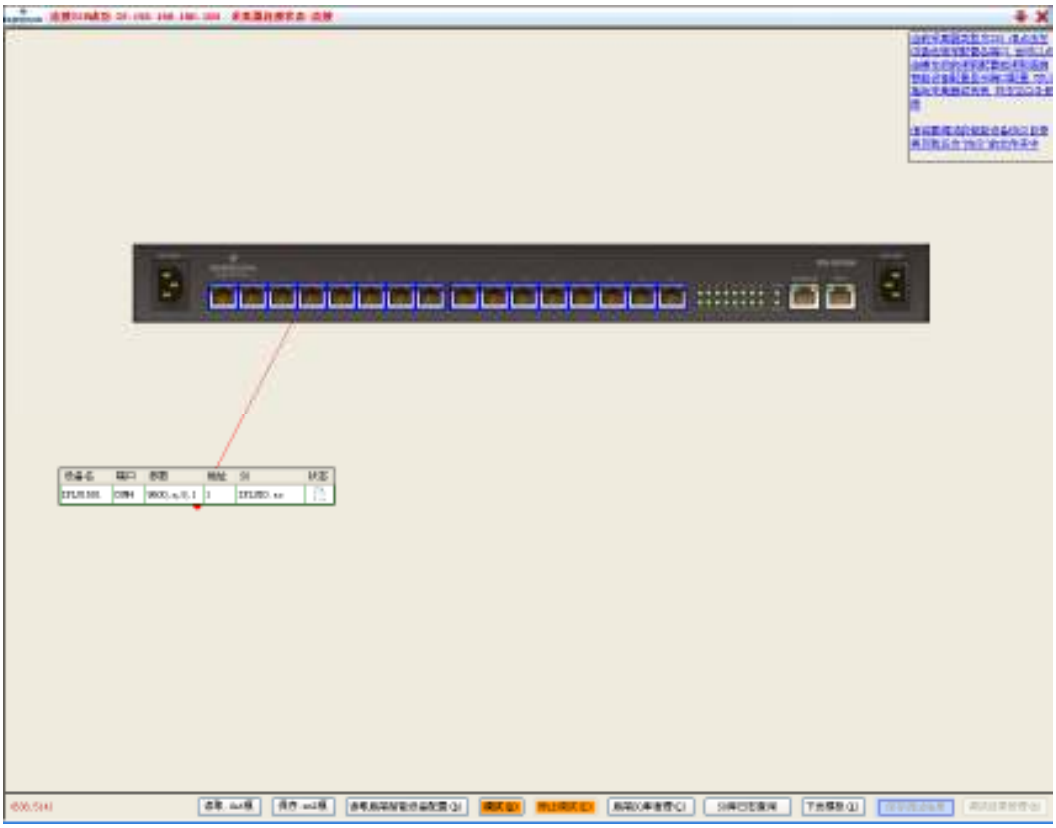


图4-11　新增智能设备配置列表

- 如果 BottomDebugTool 软件自身不带所连接智能设备的协议目录，则需将其协议目录拷贝到 BottomDebugToolB02D01\协议目录下，然后重复上述操作即可。

5．以上述同样的方式为串口 2 接入一个智能设备（以艾默生电源为例），在图 4-11所示界面选择串口 2，屏幕将弹出智能设备的配置窗口，选择对应的协议目录并输入设备名，显示如图 4-12所示。

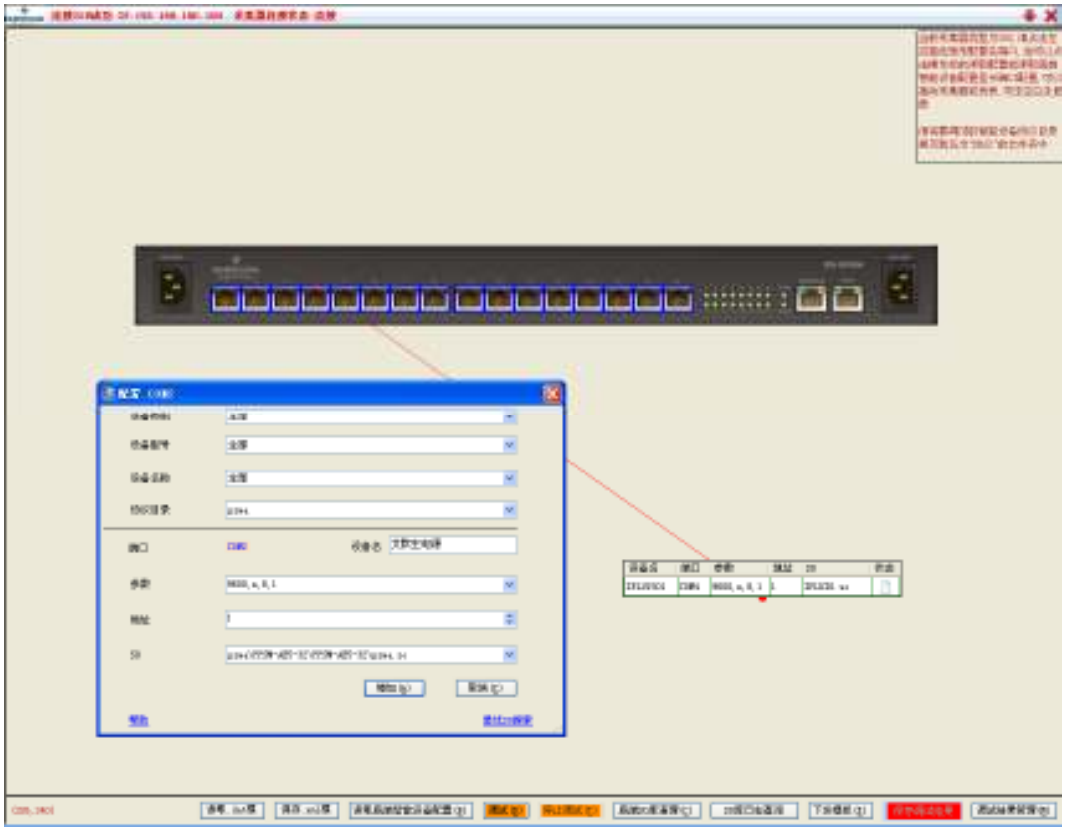


图4-12　智能设备（艾默生电源）配置窗口

6．在图 4-12所示配置窗口点击**增加（A）**按钮即可在串口 2 下增加此智能设备，主窗口将显示新增的智能设备配置列表，如图 4-13所示。

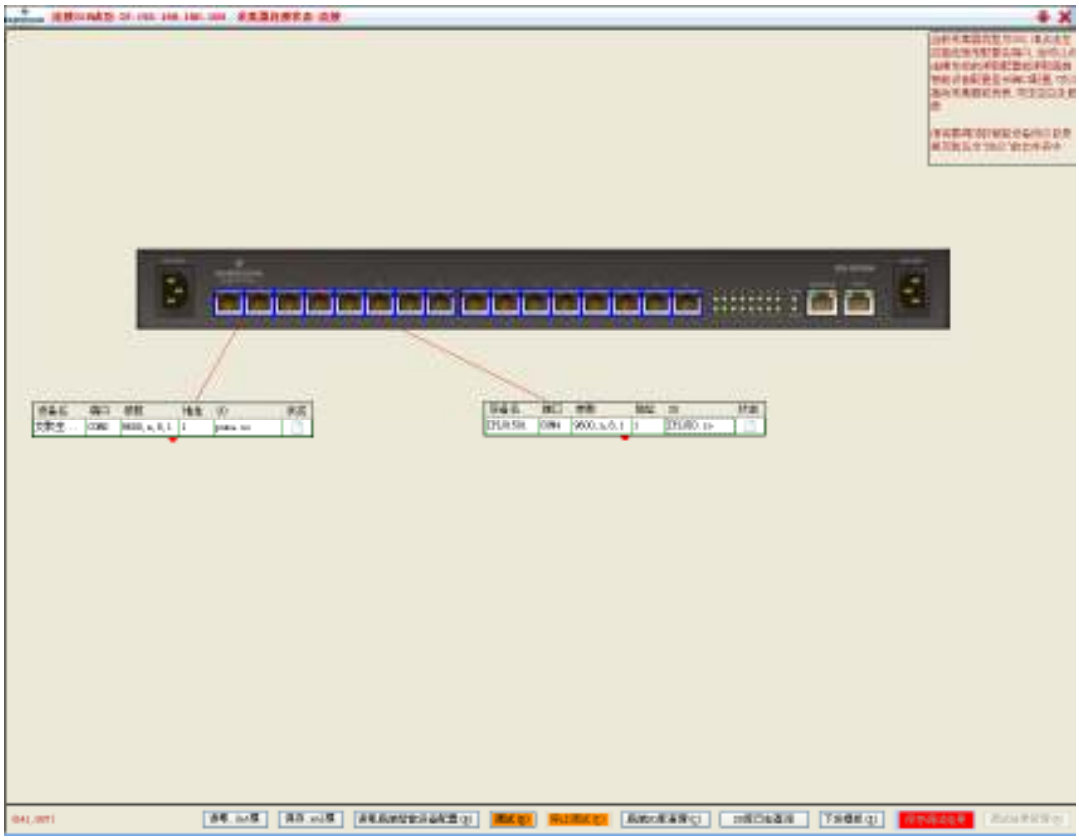


图4-13　设备添加完成界面

7．智能设备添加完毕后，点击图 4-13所示界面最下方的**调试（D）**按钮开始调试，屏幕弹出图 4-14所示提示窗口。

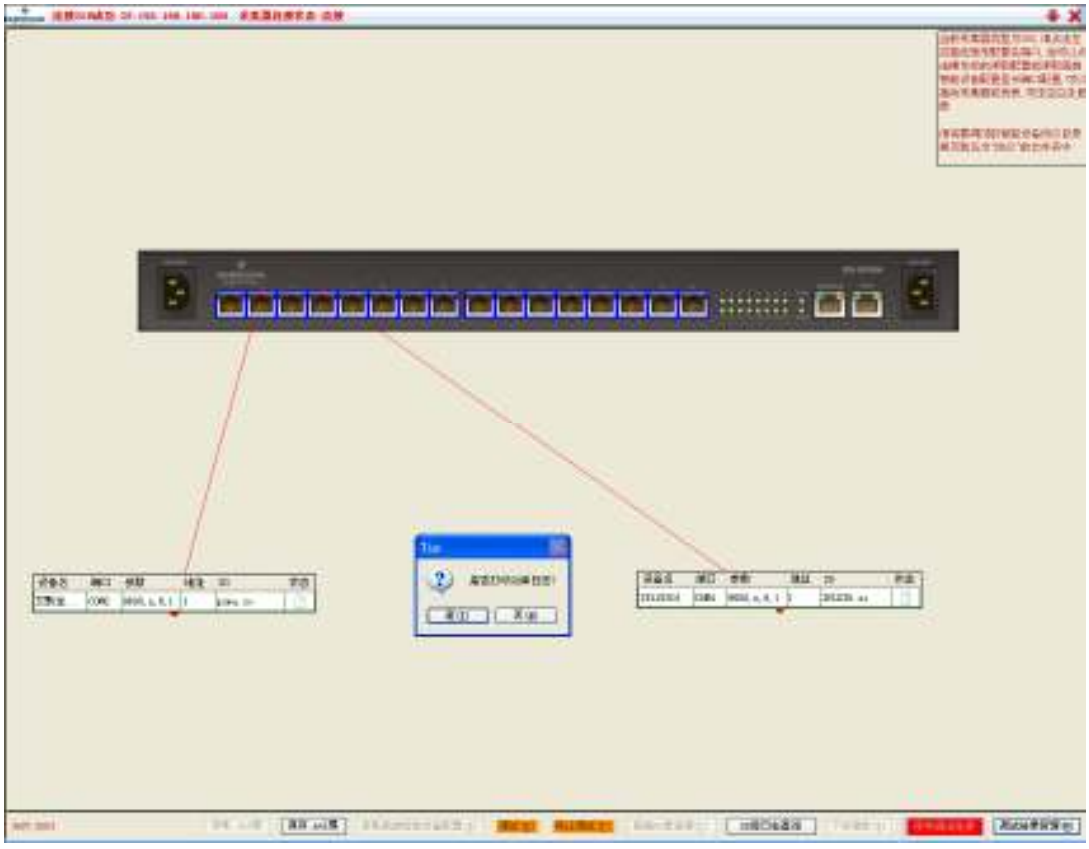


图4-14　提示窗口

7．选择**是（Y）**可查看调试日志的信息，适用于新的 so 库调测。选择**否（N）**则不打印日志。建议选择**是（Y）**，一旦出现问题还可以查看日志。

8．调试开始后，配置列表最后一列将显示智能设置的状态，如图 4-15所示。

：表示未生成调试结果。

：表示此智能设备通信正常。

：表示此智能设备无法通信，需检查接线或协议库是否正确。

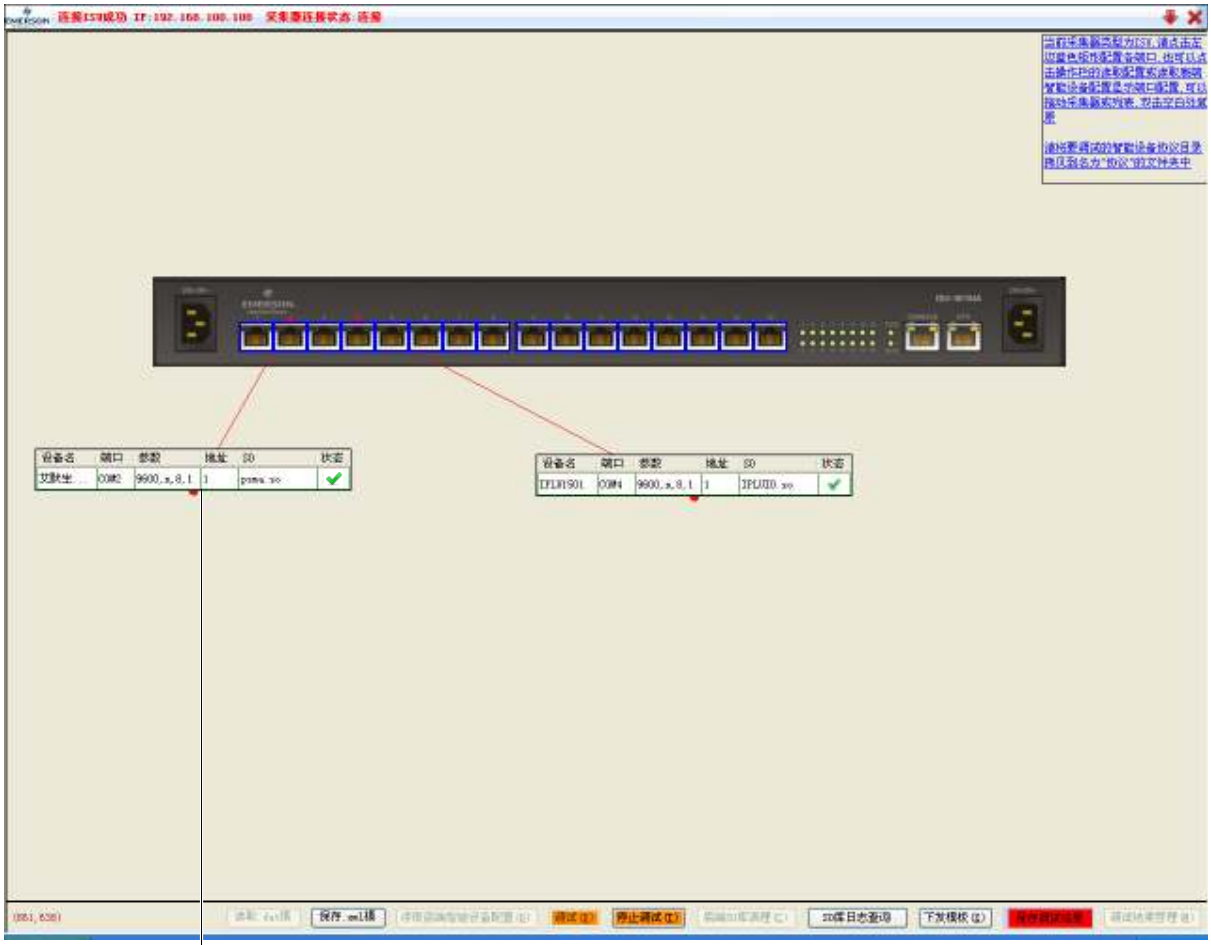
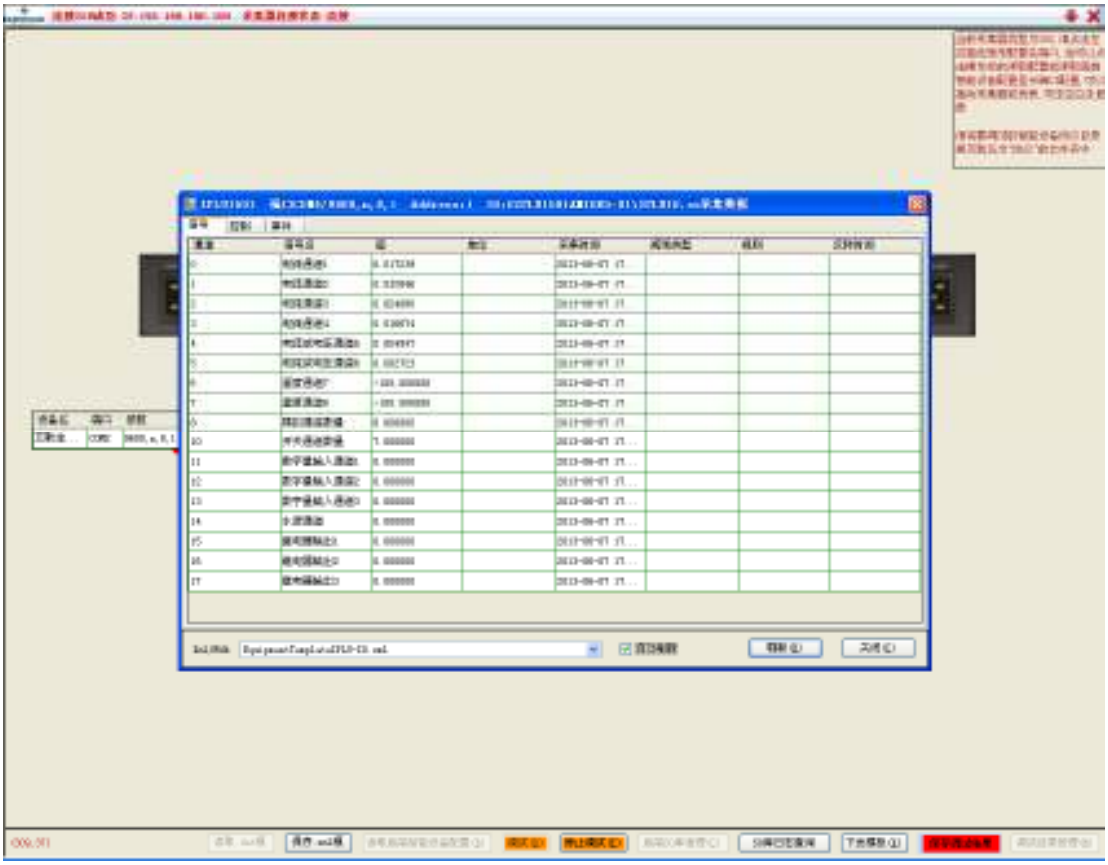
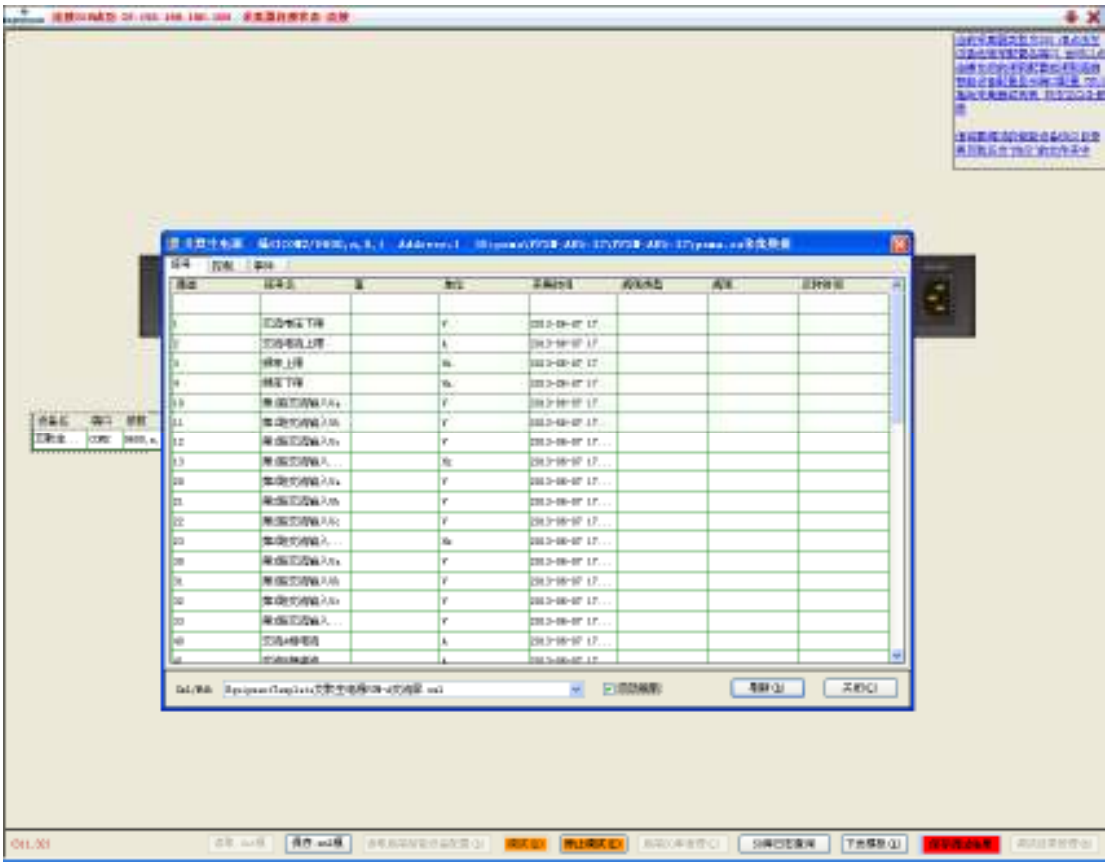


图4-15　调试

9．双击配置列表中的设备名，屏幕将弹出设备信号窗口（见图 4-16），可在此窗口中查看相应的信号。



查看 IPLU1501 信号



查看艾默生电源信号

图4-16　查看设备信号

10．调试完成后，点击主窗口下方的**保存调试结果**按钮，屏幕弹出如图 4-17所示菜单。

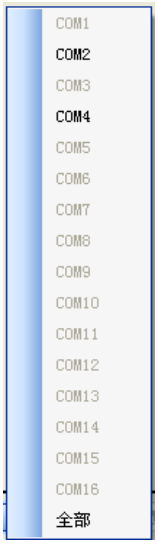


图4-17　选择数据类型

11．在图 4-17所示菜单中选择数据类型，屏幕弹出如图 4-18所示对话框。

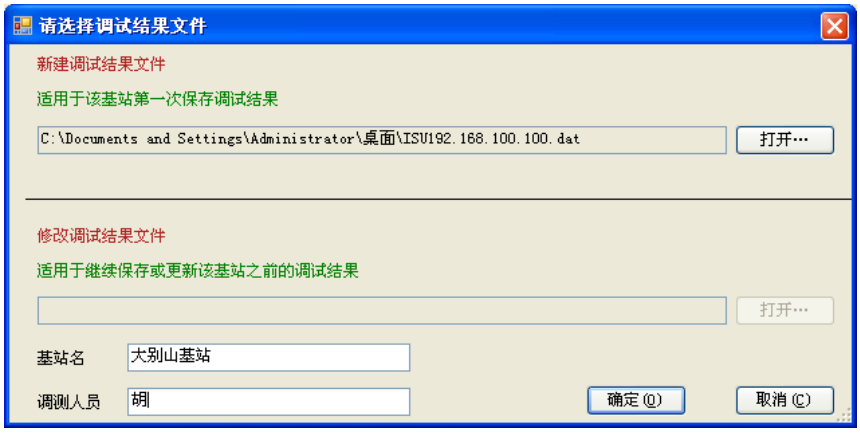


图4-18　保存调试结果

12．点击**打开...** 按钮，选择文件路径、文件名后，点击**确定（O）**。

13．点击主窗口下方的**调试结果管理（M）**，屏幕弹出如图 4-19所示界面，显示已保存的调试结果信息。

调试结果内容除基站信息可修改外，其余均为只读项。相关操作包括：

a．选择窗口左侧的分类可查看相应类别的调试结果。

b．查看调试不合格项：窗口下方红色字体内容为调试中的不合格项，即不符合调试要求的内容，应查检问题后重新调试，直到不合格项全部处理完毕。

c．修改基站信息：点击窗口右下方的**基站信息录入（I）**按钮，屏幕弹出如图 4-19所示基站信息录入窗口；输入各项基站信息后，点击**确定（O）**按钮。

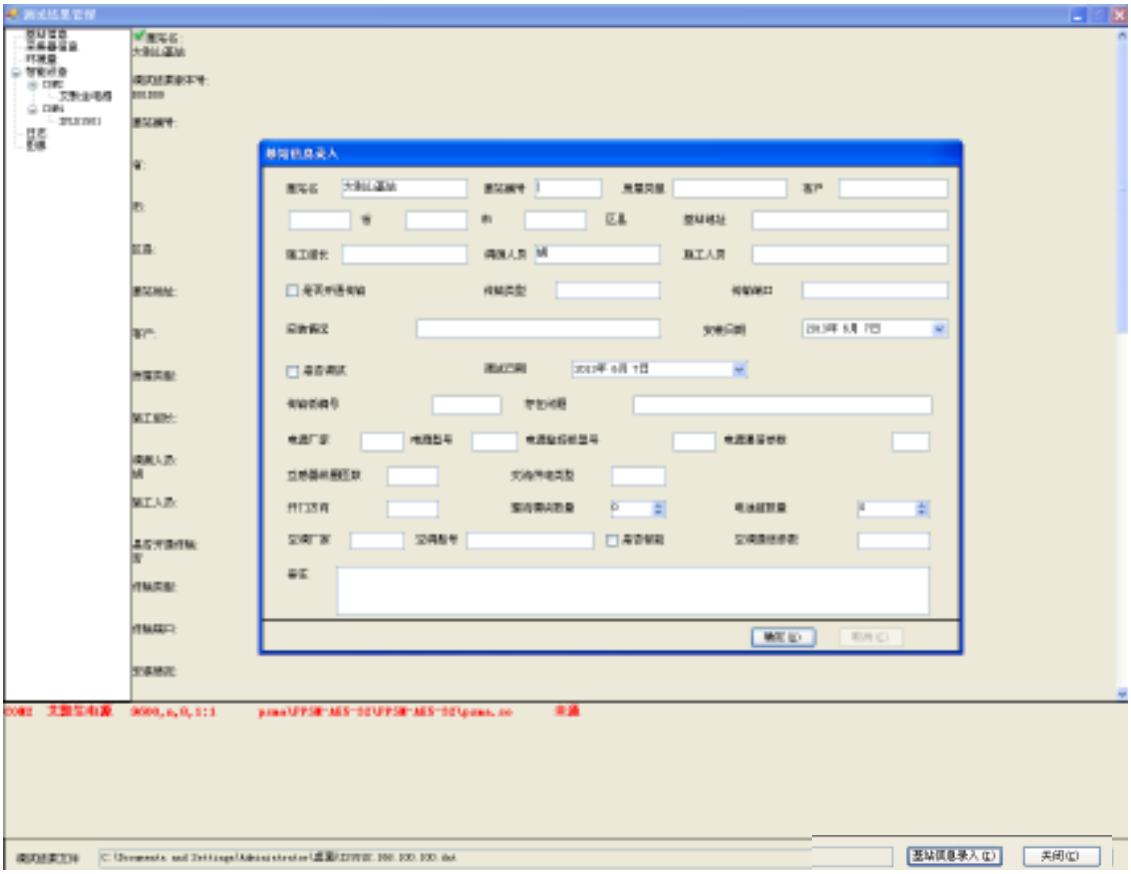


图4-19　查看调试结果

14．在主窗口下方点击**停止调试（T）**，屏幕弹出如图 4-20所示提示窗口。

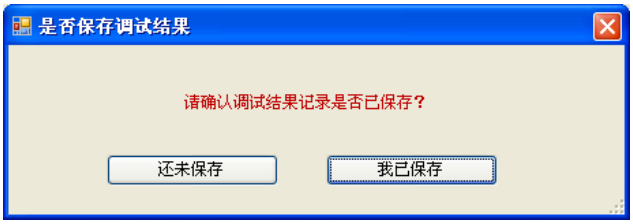


图4-20　保存提示窗口

15．如果已经保存调试结果，请选择“我已保存”；否则，请选择“还未保存”。

16．确认保存后，单击退出调测软件。此时，系统将自动重启。

4.5 采用超级终端配置采集器

采用超级终端配置采集器时，设备支持两种连接方式：以太网口方式和调试口方式（接口位置见图 1-8）。实际调试时根据现场情况进行选择。

设置超级终端后，才能在计算机上通过超级终端配置采集器的参数。

4.5.1 设置超级终端

通过以太网口连接

用标准直连网线连接采集器的以太网口和计算机网口。

网线连接完成后，开始设置超级终端，操作步骤如下：

1．点击**开始**->**所有程序**->**附件**->**通讯**->**超级终端**，弹出**连接描述**界面，如图 4-21所示。

图4-21　连接描述界面

2．在**名称（N）**中输入“ISU”，点击**确定**按钮，显示如图 4-22所示。

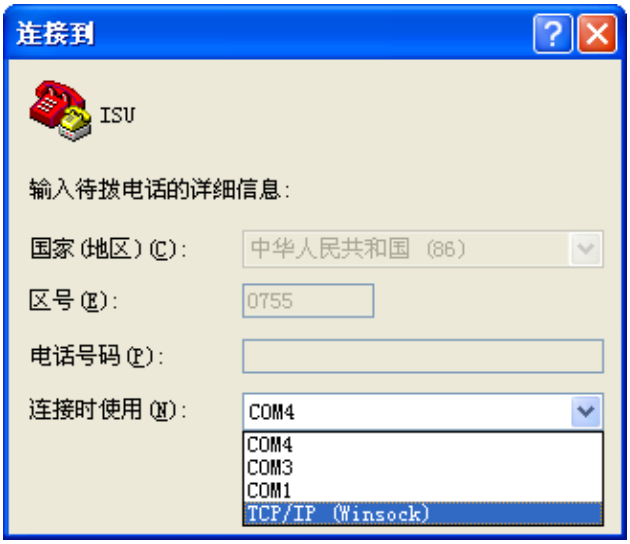


图4-22　连接到界面

3．在**连接时使用（N）**选项中，选择“TCP/IP（Winsock）”方式，显示如图 4-23所示。

图4-23　选择“TCP/IP（Winsock）”

4．按照图 4-24所示，输入主机地址(默认:192.168.100.100)和端口号(默认:23)，然后点击**确定**按钮即完成超级终端的设置。

图4-24　设置主机地址和端口号

通过调试口连接

用调试线缆（自备）连接采集器调试口和计算机任一串口。

调试线缆连接完成后，开始设置超级终端，操作步骤如下：

1．点击**开始**->**所有程序**->**附件**->**通讯**->**超级终端**，弹出**连接描述**界面，显示如图 4-25所示。

图4-25　连接描述界面

2．在**名称（N）**中输入名称“ISU”，点击**确定**按钮，显示如图 4-26所示。

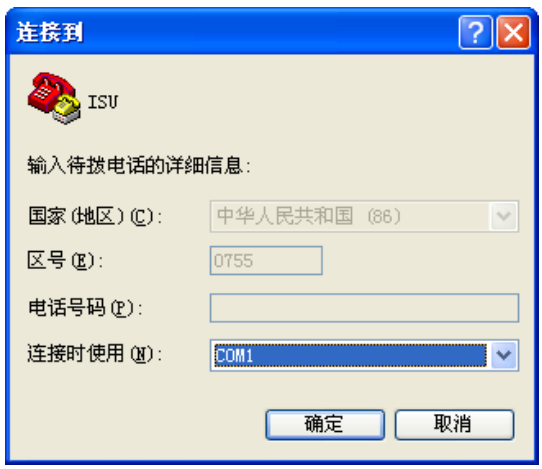


图4-26　连接到界面

3．选择计算机实际所连接的的串口（如图 4-26中的“COM1”），点击**确定**按钮，显示如图 4-27所示。

图4-27　设置串口参数

4．按照图 4-27所示设置串口参数，然后点击**确定**按钮。

5．在 **ISU-超级终端**界面的菜单中选择**文件**->**属性**，在弹出的 ISU 属性界面选择**设置**页签，如图 4-28所示。

图4-28　设置页签

6．在**终端仿真(E)**中选择“VT100”或“自动检测”，点击**确定**按钮。

4.5.2 登录采集器

登录采集器的过程如下图所示，具体的登录步骤如下：

1．设置超级终端后，超级终端界面将显示 **ISU login:**。

2．输入用户名“isuadmin”后按 Enter 键，超级终端界面将显示 **Password:**。

3．在 **Password:** 后输入密码“isuadmin”并按 Enter 键，超级终端界面将显示命令提示符 **ISU_admin#**。

🕮　注意

用户名和密码都区分大小写。

```
ISU login: isuadmin
Password:

Linux 2.6.24

Copyright 2006. Emerson Network Power Co., Ltd. All Rights Reserved.

Mar  6 21:07:45 ISU auth.info login[1060]: root login on 'ttyS0'
*****************    The model is ISU     ********************
 ************************************************************************
 *                                                                      *
 *   Copyright(c) 2013-2023, Emerson Network Power Co., Ltd.            *
 *                    ALL RIGHTS RESERVED                               *
 *                                                                      *
 *                      Welcome to ISU                                  *
 *                                                                      *
 ************************************************************************

ISU_admin#
```

采集器首次使用时需要设置各采集通道的参数，更改接线后也需要重新设置各采集通道的参数。只有正确设置了各采集通道参数后，采集器才能正常完成各个通道的采集工作。

🕮　注意

1. 所有命令设置完参数后，如果要立即生效的话，按照提示输入“Y”。
2. 如果不输入参数值而直接按 Enter 键，则使用原来的参数。
3. 如果在 5 分钟内没有对命令行进行操作，系统会自动退出命令行。
4. 设置完一个命令的所有参数后，按提示输入“Q”并按 Enter 键，退出该命令，超级终端将出现命令提示符 **ISU_admin#**。

4.5.3 重启采集器

在所有参数设置完成后，需根据如下步骤重新启动采集器。

1．在命令提示符 **ISU_admin#**提示下，输入“reboot”命令并按 Enter 键，显示如下界面。

```
ISU_admin#reboot
Are you sure to reboot the system? Y/N [N]
```

2．根据系统提示输入“Y”或“N”并按 Enter 键。

如果输入“Y”，采集器将会重启；如果输入“N”则取消重启任务。

第五章 常见故障与处理

本章介绍采集器的常见故障与处理方法。

常见故障与处理方法见表 5-1。

表5-1　常见故障与处理方法

故障现象	处理方法
采集器上电后，电源指示灯（见图 1-5）不亮	1．检查电源输入线接线有无接反或接触不良。 2．用万用表测量电源输入电压是否符合要求
RS485 通信不正常	检查 RS485 通信电缆接线是否按下述方式连接： RS485 方式时： D＋接 D＋， D－接 D－
网络始终不能连通	1．检查采集器是否与通信的网络设备在同一个网段内。 2．检查是否有设网关
通过调试口不能访问采集器	1．检查调试口线缆连接是否正确。 2．检查计算机超级终端的串口配置是否为 115200、n、8、1、硬件无流控

附录一　命令行

本章主要介绍采集器的命令行。

1. 命令行简介

采集器提供了一系列命令行，用户可以通过这些命令行来设置和管理设备。命令行提供帮助、下载和上传文件、测试、修改密码和设置命令等功能。

命令行有如下的特点：

- 通过调试口进行本地设置
- 支持简单的命令行编辑功能
- 用户登陆后可以随时输入“？”或者“help”来获得在线帮助
- 提供相应的调试信息帮助诊断网络故障
- 支持关键字输入方式。命令行解释器对关键字采取不完全匹配的搜索方法，用户只需输入无冲突关键字即可被解释，如命令 update，输入“upd”也可

2. 主要命令行

1．?或 help

在命令提示符 **ISU_admin#**提示下，输入“？”或者“help”并按 Enter 键，即可显示帮助信息，如下图所示。

```
Following commands are supported:

help        Show this information
update      Update kernel or filesystem remotely, i.e. from Uboot
password    Change password
saveip      Save the IP address, netmask and default gateway information
            to ISU, and ISU will use these settings after reboot
setip       Set IP address, netmask and default gateway
showstatus  show system status,show net status
startdhcp   start dhcp
stopdhcp    stop dhcp
setrtc      set real time clock
showip      show ip parameter
show        Show ISU information
version     View the version information of ISU,including hardware version
            and software version
logout      Logout from ISU
reboot      Reboot ISU system
```

2．logout

logout 命令用于退出采集器。

在命令提示符 **ISU_admin#**提示下，输入“logout”并按 Enter 键后显示如下图所示。

```
ISU_admin#logout
process '/sbin/getty -L -i 115200 ttyS0' (pid 959) exited. Scheduling it for restart.
starting pid 968, tty '': '/sbin/getty'

Emerson Network Power Co., Ltd.

ISU login:
```

3．password

password 命令用于修改登录密码。

在命令提示符 **ISU_admin#**提示下，输入“password”并按 Enter 键后显示如下图所示。在命令提示符 **New password:**后输入新的密码。然后在命令提示符 **Retype password:**后再次输入新的密码。

```
ISU_admin#password
Changing password for isuadmin
New password:
Retype password:
Password for isuadmin changed by root
Mar  6 20:34:53 ISU auth.info passwd: Password for isuadmin changed by root
ISU_admin#
```

4．reboot

reboot 命令用于重启采集器。

在命令提示符 **ISU_admin#**提示下，输入“reboot”并按 Enter 键后显示如下图所示。按提示输入“Y”并 Enter 键后，即可重启采集器。

```
ISU_admin#reboot
Are you sure to reboot the system? Y/N [N]
```

5．showip

showip 命令用于显示 IP 参数。

在命令提示符 **ISU_admin#**提示下，输入“showip”并按 Enter 键后显示如下图所示。

```
ISU_admin#showip

current IP address        :192.168.100.100
current IP mask           :255.255.255.0
current IP default gateway:none

ISU_admin#
```

6．saveip

saveip 命令用于保存设置的网络参数。

在命令提示符 **ISU_admin#**提示下，输入“saveip”并按 Enter 键后显示如下图所示。

```
current IP address        :142.100.6.24
current IP mask           :255.255.255.0
current IP default gateway:none

Are you want to save it ? Y/N [N]
```

7．setip

setip 命令可设置网络参数如 IP 地址、网关和子网掩码等。

在命令提示符 **ISU_admin#**提示下，输入“setip”并按 Enter 键后显示如下图所示。

```
Please input IP_address[142.100.6.24]:_
```

根据提示可依次输入采集器采集器的 IP 地址、子网掩码和默认的网关并按 Enter 键，新设置的网络参数可以立即生效。

8．show

show 命令用于显示产品信息。

在命令提示符 **ISU_admin#**提示下，输入“show”并按 Enter 键后显示如下图所示。

```
ISU_admin#show
      Emerson Network Power Co.,Ltd
                ISU Product
```

9．startdhcp

startdhcp 命令用于启动 DHCP 服务命令。

在命令提示符 **ISU_admin#**提示下，输入“startdhcp”并按 Enter 键后显示如下图所示。

```
0) Print this menu
1) start DHCP client service
2) Exit
```

用户可以输入“0”～“2”，实现不同的操作功能：

- 输入“0”并按 Enter 键：显示 startdhcp 命令界面
- 输入“1”并按 Enter 键：启动客户端 DHCP 服务
- 输入“2”并按 Enter 键：退出该命令并返回命令行主界面

注意

系统第一次启动时采用静态 IP 方式，没有启动客户端 DHCP 服务。但如果启动了 DHCP 服务，下次启动系统时将还是采用 DHCP 方式获得 IP。如果想改为静态 IP 方式，需采用 stopdhcp 命令，停止 DHCP 服务。

10．stopdhcp

stopdhcp 命令用于停止 DHCP 客户服务。

在命令提示符 **ISU_admin#**提示下，输入“stopdhcp”并按 Enter 键后显示如下图所示。

```
0) Print this menu
1) stop DHCP client service
2) Exit
```

用户可以输入“0”～“3”，实现不同的操作功能：

- 输入“0”并按 Enter 键：显示 stopmod 命令界面
- 输入“1”并按 Enter 键：停止 DHCP 客户服务
- 输入“2”并按 Enter 键：退出该命令并返回命令行主界面

11．setrtc

setrtc 命令用于设置实时时钟。

在命令提示符 **ISU_admin#**提示下，输入“setrtc”并按 Enter 键后显示如下图所示。

```
ISU_admin#setrtc
*****************************************************
*                                                   *
* Input format description:                         *
*      year-month-day:hour-mintue-second            *
*   example: 2006-05-01:14-45-32                    *
*                                                   *
*****************************************************
please input a line year-month-day:hour-mintue-second :
```

12．version

version 命令用于显示采集器的版本信息，包括硬件版本信息和软件版本信息。

在命令提示符 **ISU_admin#**提示下，输入“version”并按 Enter 键后显示如下图所示。

```
ISU_admin#version
  Emerson Network Power Co.,Ltd
  ISU Product
  Hardware Ver1.00
  U-Boot 1.1.6
  Linux version 2.6.24
  gcc version 4.1.4 (DENX ELDK 4.1 4.0.0)
  Filesystem Ver B01D03
  ISU Software Ver: 1.00
ISU_admin#
```

13．update

update 命令用于升级 ISU 的固件，包括内核及文件系统。

在命令提示符 **ISU_admin#**提示下，输入“update”并按 Enter 键后显示如下图所示。

```
ISU_admin#upd

+=====================================================+
|                                                     |
|                   Update function                   |
|                                                     |
+=====================================================+
0) Print this menu
1) Update Kernel
2) Update Filesystem
3) Exit


UPDATE> Command (0 for help): 
```

用户可以输入“0”～“3”，实行不同的操作功能。

- 输入“0”并按 Enter 键：显示 update 命令界面
- 输入“1”并按 Enter 键：升级内核

```
UPDATE> Command (0 for help): 1
Update Kernel start ...
Please check:
[1]: Please bakup the files in data2 directory if needed!
[2]: Please double click the 'Tftpd32.exe' and assure the uImage
     or isu.jffs2 files are in the same directory!

Are you sure ? Y/N [N]
```

> 📖　**注意**
>
> 提示信息提醒升级过程中，需要备份 data2 文件下的数据，及打开升级目标文件夹中的 Tftpd32.exe 文件。

输入 Y 后，提示输入存放目标升级文件的 IP 地址，如下：

```
Please input SERVER_IP_address[192.168.100.80]:192.168.100.80
Are you sure ? Y/N [N]
```

再输入 Y 后，开始升级内核：

```
Please input SERVER_IP_address[192.168.100.80]:192.168.100.80
Are you sure ? Y/N [N]y
The Specified active Server is:192.168.100.80
   OK!  5 packets transmitted, 5 packets received, 0% packet loss
   The Server is alive!
usb video is exit successfully!
Sample is exit successfully!
Sdog is exit successfully!
Get uImage from server ...
```

- 输入“2”并按 Enter 键：升级文件系统

```
UPDATE> Command (0 for help): 2

Note: This step will restore the software to factory mode, except the following files:
      init_eth iplu_e1.cfg io.cfg usb_video.cfg idu_plus.ini Config.txt XmlCfg SO library
Update Filesystem start ...
Please check:
[1]: Please bakup the files in data2 directory if needed!
[2]: Please double click the 'Tftpd32.exe' and assure the uImage
     or isu.jffs2 files are in the same directory!

Are you sure ? Y/N [N]
```

📖　注意

提示信息提醒升级过程中，需要备份 data2 文件下的数据，及打开升级目标文件夹中的 Tftpd32.exe 文件。

输入 Y 后，提示输入存放目标升级文件的 IP 地址，如下：

```
Please input SERVER_IP_address[192.168.100.80]:192.168.100.80
Are you sure ? Y/N [N]
```

再输入 Y 后，开始升级文件系统：

```
Are you sure ? Y/N [N]y
The Specified active Server is:192.168.100.80
   OK!  5 packets transmitted, 5 packets received, 0% packet loss
   The Server is alive!
usb video is exit successfully!
Sample is exit successfully!
Sdog is exit successfully!
```

- 输入“3”并按 Enter 键：返回主菜单

📖　注意

如果升级不成功，请检查网络设置是否正确，目标升级文件是否存在。

附录二　有毒有害物质或元素标识表

部件名称	有毒有害物质或元素					
	铅	汞	镉	六价铬	多溴联苯	多溴联苯醚
	Pb	Hg	Cd	Cr^{6+}	PBB	PBDE
五金件	○	○	○	○	○	○
制成板	×	○	○	○	○	○
线缆	○	○	○	○	○	○

○：表示该有毒有害物质在该部件所有均质材料中的含量在 SJ/T-11363－2006 规定的限量要求以下。

×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363－2006 规定的限量要求

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以下部件或者应用中含有有毒有害物质是限于目前的技术水平无法实现可靠的替代或者没有成熟的解决方案：

1．焊料含有铅。

2．铜合金中含有铅。

3．电子陶瓷含铅

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适用范围：ISU-0016IA、ISU-0016ID 智能串口采集器

Contents

Chapter 1 Overview

This chapter gives a brief introduction to the appearance, indicators, ports, technical specifications and options of the monitoring equipment.

1.1 Brief Introduction

The monitoring equipment is an intelligent acquisition system and used to monitor the environment in equipment rooms of access network, small station, micro station and outdoor base station. It provides 16 serial ports for connecting intelligent device, such as access control system, power system, IPLU environmental detector, IPLU battery detector, UPS, air conditioner and so on. Moreover, it can report the acquired signals of each intelligent device to data center through transparent transmission or bottom procession. The 1U design makes it suitable for cabinet installation and wall installation. The function layout of the monitoring equipment is shown in Figure 1-1.

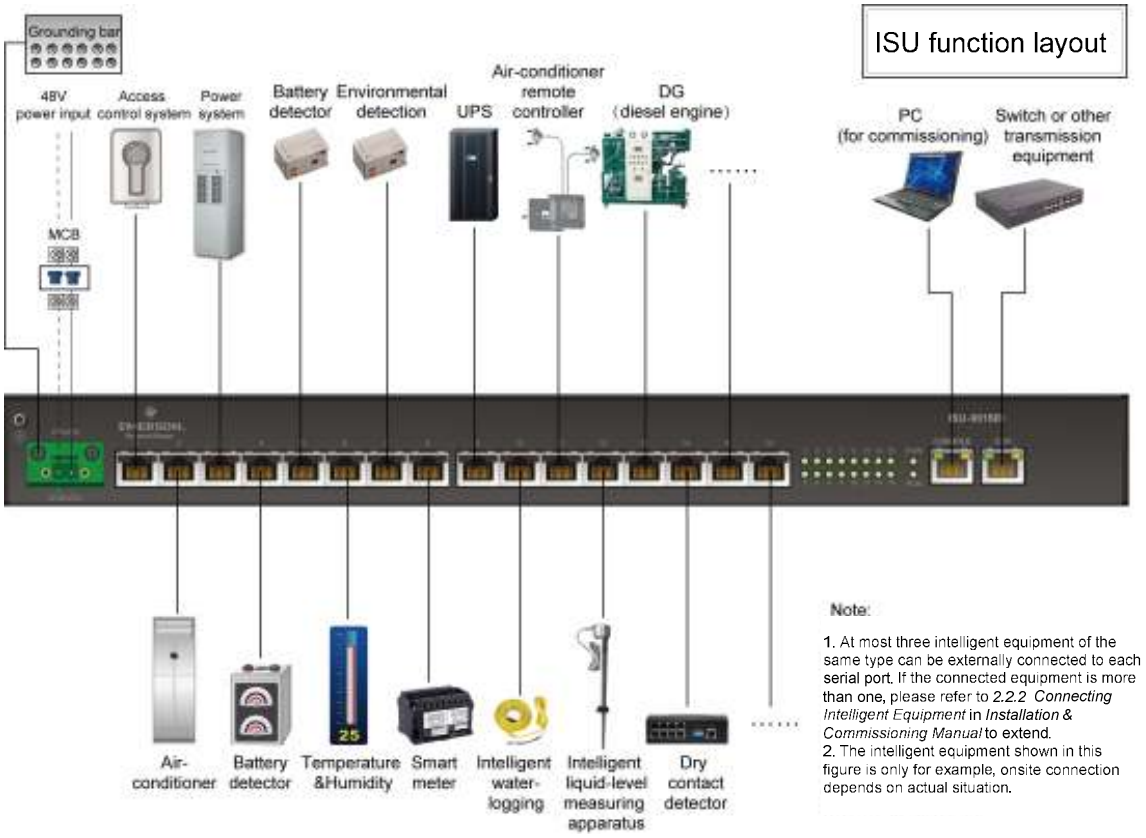


Figure 1-1 ISU function layout

Appearance

The appearance of the monitoring equipment is separately shown in Figure 1-2 and Figure 1-3.

Figure 1-2 Appearance of ISU-0016IA monitoring equipment

Figure 1-3 Appearance of ISU-0016ID monitoring equipment

Indicators

The monitoring equipment provides 20 indicators, respectively located on front plate and rear plate.

The upper corner of the front plate of the monitoring equipment has two indicators, which are power indicator and run indicator. These two indicators are shown in Figure 1-4 and described in details in Table 1-1.

Figure 1-4 Power indicator and run indicator

Table 1-1 Description of indicators on front and rear plate

Silk print	Definition	Color	Function	Status	Description
POWER	Power indicator	Green	Indicating the power status of the monitoring equipment	On	The monitoring equipment is powered on
				Off	The monitoring equipment is not powered on
RUN	Run indicator	Green	Indicating the running status of the monitoring equipment	Off	The monitoring equipment is running abnormally
				Blinking	The monitoring equipment is running normally
1/2/3..15/16	Serial ports 1 ~ 16 indicator	Green	Indicating the status of serial port	Blinking	The serial port is sending or receiving data
				Off	The serial port is not sending or receiving data

There are 18 indicators on the rear plate. The indicators are shown in Figure 1-5 and described in Table 1-1.

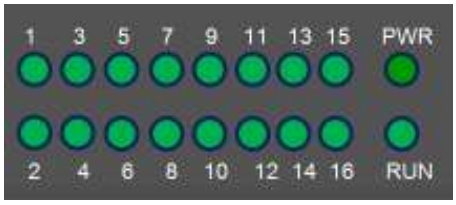


Figure 1-5 Indicators on rear plate

The Ethernet port and console port are RJ45 ports. Two indicators on each port are used to indicate the working status of the ports. The indicator of Ethernet port is show in Figure 1-6 (the indicator of the console port is not functioned) and described in details in Table 1-2.

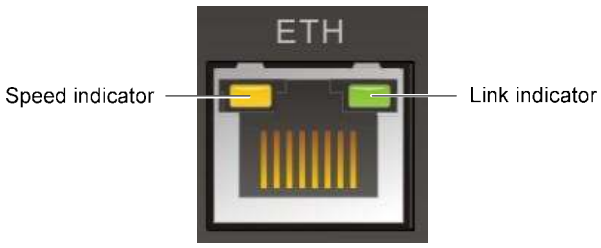


Figure 1-6 Indicators of Ethernet port

Table 1-2 Indicator description of Ethernet port

Silk print	Definition	Color	Function	Status	Description
ETH	Link indicator	Green	Indicating the link status of the port	Blinking	The port is sending or receiving data
				Off	The port is not sending or receiving data
	Speed indicator	Yellow	Indicating the speed status of the port	On	The speed is 100M
				Off	The speed is 10M or no link

Ports

All ports of the monitoring equipment are located on the rear plate, as shown in Figure 1-7 and Figure 1-8.

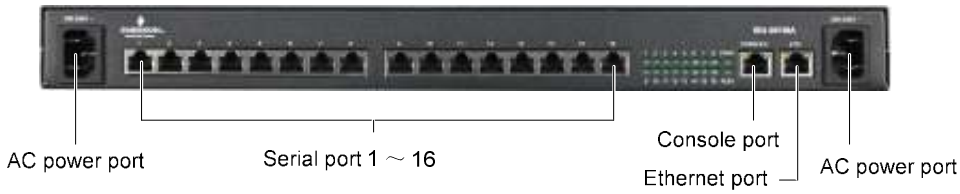


Figure 1-7 Port positions of ISU-0016IA monitoring equipment

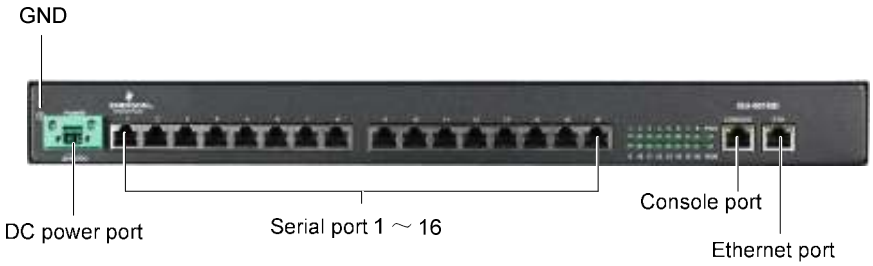


Figure 1-8 Port positions of ISU-0016ID monitoring equipment

The detailed definitions, functions and descriptions of the ports are described in Table 1-3.

Table 1-3 Port description

Silkprint	Definition	Description
⏚	PE terminal	Connecting to the earth
POWER 20-60VDC	DC power input port	Input power range: 20Vdc ~ 60Vdc
200-250~	AC power input port	Input power range: 200Vac ~ 250Vac
1/2/3/4/5/6/7/8/9/10/11/12/13/14/15/16	Serial port 1 ~ 16	RS485 communication mode
CONSOLE	Console port	Port standard: RS232; baud rate:115200bps, N, 8, 1; non-isolation
ETH	Ethernet port	10M/100M self-adaptive Ethernet port
Note: 1. Only the ISU-0016IA monitoring equipment has the AC power input port. 2. Only the ISU-0016ID monitoring equipment has the DC power input port		

1.2 Technical Specifications

Input specifications

The specification of serial port communication parameter is listed in Table 1-4.

Table 1-4 Specification of serial port communication parameter

COM	Type	Communication parameter	Port	Protocol	Function
COM1 ~ COM16	RS485	Supporting 1200bps, 2400bps, 4800bps, 9600bps, 19200bps, with 6 ~ 8 bits; verification mode: None, Odd, Even, Mark or Space; Stop bits 1, 2	RJ45	Intelligent device protocol, loading onsite	Acquiring data of intelligent device, isolation

Environmental specifications

The environmental specifications of the monitoring equipment are listed in Table 1-5.

Table 1-5 Environmental specifications

Item	Specifications
Application location	Indoor
Working temperature*	-10ºC ~ +55ºC
Relative humidity	5%RH ~ 95%RH (non-condensing)
Working environment	Dust: compliant with indoor requirements in GR-63. No corrosive or flammable gases, no oily mist, steam, water drops or salt
Air pressure	70kPa ~ 106kPa
Storage temperature	-40ºC ~ +70ºC
Cooling	Natural cooling
Pollution degree	2
Overvoltage grade	II
Altitude	≤3000m
Note*: This is the working temperature range of the monitoring equipment, without considering the external sensors. Make sure the selected sensors will not be damaged in this temperature range	

Mechanical specifications

The mechanical specifications of the monitoring equipment are listed in Table 1-6.

Table 1-6 Mechanical specifications

Dimensions (L × W × H)	Weight
440mm × 210mm × 44mm	≤ 5kg

Chapter 2 Installation

This chapter introduces the installation of the moniotoring equipment, including installation preparation, installation tools and installation procedures.

2.1 Installation Preparation

Notes

To avoid personnel injury and damage to the device in installation and use of the monitoring equipment, take the following precautions:

- Never put the monitoring equipment in watery places and always prevent liquid from entering the monitoring equipment
- In installation and connection, wear anti-static clothing and an anti-static wrist strap; if anti-static clothing and anti-static wrist strap are not available, wash your hands instead and dry them before installation and connection
- Arrange the wires properly. Do not put any heavy objects on the wires or stamp the wires
- Ground the monitoring equipment properly
- Always cut off the power before performing any hardware operation

Operating environment

The monitoring equipment must be installed indoors. The temperature and humidity should meet the product specifications (see Table 1-5).

EMI

For EMI purpose, take the following measures:

- Do not connect the working ground of the monitoring equipment to ground of electrical power equipment or lightning ground. Instead, place them away from each other as far as possible
- Keep the monitoring equipment away from large-power radio transmitters, radar transmitters and high-frequency large current electrical equipment
- Take electromagnetic shielding measures if necessary

Heat dissipation

The heat dissipation requirements of the monitoring equipment are given as follows:

- Keep the monitoring equipment as far as possible from heat sources
- When the monitoring equipment is installed on the wall or in a cabinet, keep at least 10mm clearances around the monitoring equipment for adequate heat dissipation. But when the monitoring equipment is put on a workbench, you should maintain 100mm clearances around the monitoring equipment

2.2 Installation Tools

The installation tools of the monitoring equipment are listed in Table 2-1.

Table 2-1 Installation tools

Tool	Specification		Tool	Specification
Electrician diagonal plier	150mm		Wire cutter	Maximum 300mm^2
Electrician sharp nose plier	150mm		Digital multimeter	Three and a half digit
Cross-head screwdriver	100mm, 200mm		Drill	With a Φ6 aiguille
Slotted screwdriver	100mm, 200mm			

2.3 Installing Monitoring Equipment

The monitoring equipment supports two installation modes: wall installation and cabinet installation.

2.3.1 Wall installation

Note

The monitoring equipment must be installed on concrete or non-flammable surface during wall installation.

If the monitoring equipment is installed on the wall, you need to install three wall brackets (accessories). The detailed installation procedures are given as follows:

1. Fasten three wall brackets to the cover panel of the monitoring equipment with provided M3 screws, as shown in Figure 2-1.

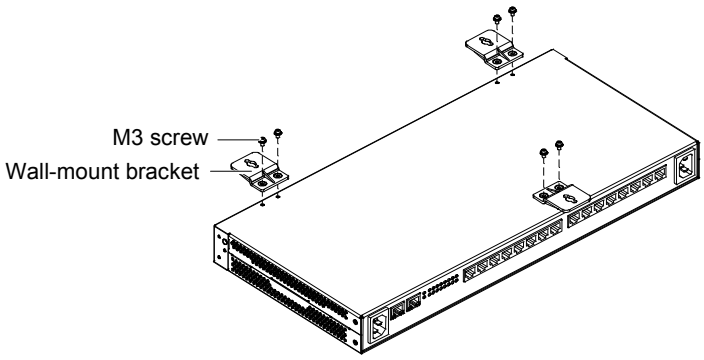


Figure 2-1 Installing wall brackets

2. Use a drill (aiguille: Φ6) to drill three holes (depth: 70mm, max. error: 1.3mm) on the wall according to the dimensions in Figure 2-2 and knock three plastic expansion pipes into the holes.

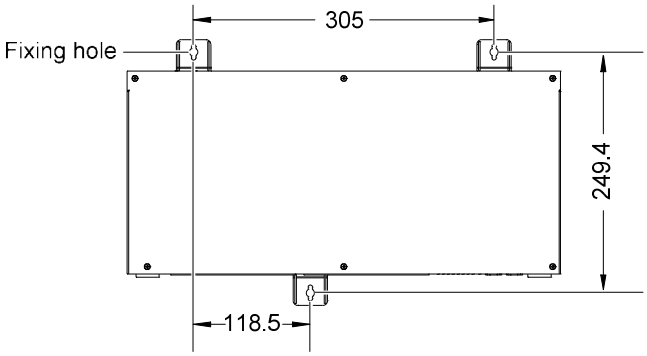


Figure 2-2 Hole dimensions (unit: mm)

3. Put the monitoring equipment in the position, with connection terminals downward, and wrench self-tapping screws into the plastic expansion pipes through the fixing holes (see Figure 2-2) of the wall brackets to fix the monitoring equipment on the wall.

2.3.2 Cabinet Installation

The installation procedures are given as follows:

1. Make sure that the cabinet is fixed and that no obstacles exit inside or outside.

2. Make sure that the monitoring equipment use front cabling mode or rear cabling mode.

When the front cabling mode is used, the brackets are installed on both sides of the rear plate; when the rear cabling mode is used, the brackets are installed on both sides of the front plate. Both side of the front plate have three installation holes, suitable for three installation holes on the bracket. Both sides of the rear plate have two installation holes, suitable for two installation holes on the bracket. The installation holes on the front and rear plates are shown in Figure 2-3.

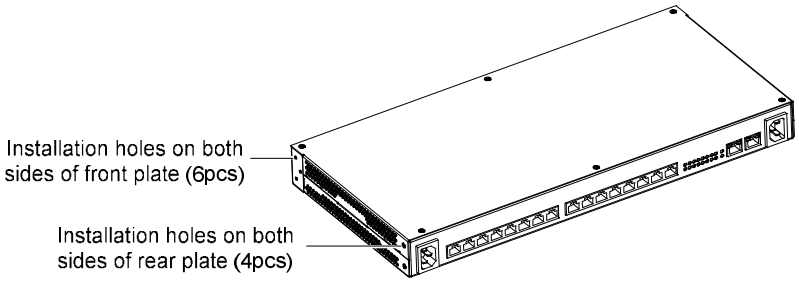


Figure 2-3 Installation holes positions on front and rear plates

3. According to the cabling mode, fix the brackets (accessories) to both sides of the front or rear plate with the provided M3 screws, as shown in Figure 2-4 and Figure 2-5.

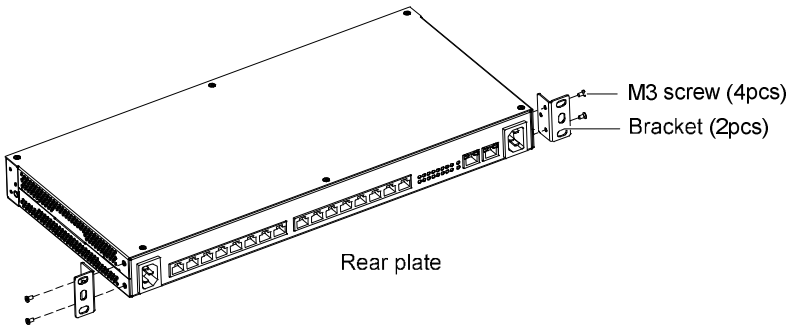


Figure 2-4 Installing brackets (on both sides of rear plate)

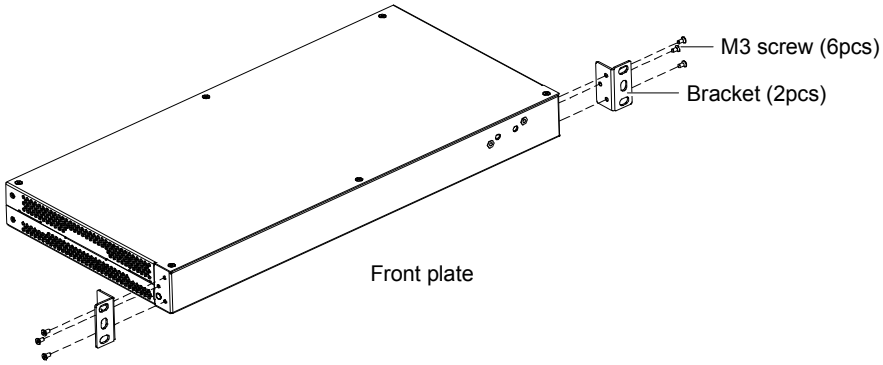


Figure 2-5 Installing brackets (on both sides of front plate)

4. Put the monitoring equipment on the guide rails in the cabinet and push it into the cabinet completely, as shown in Figure 2-6.

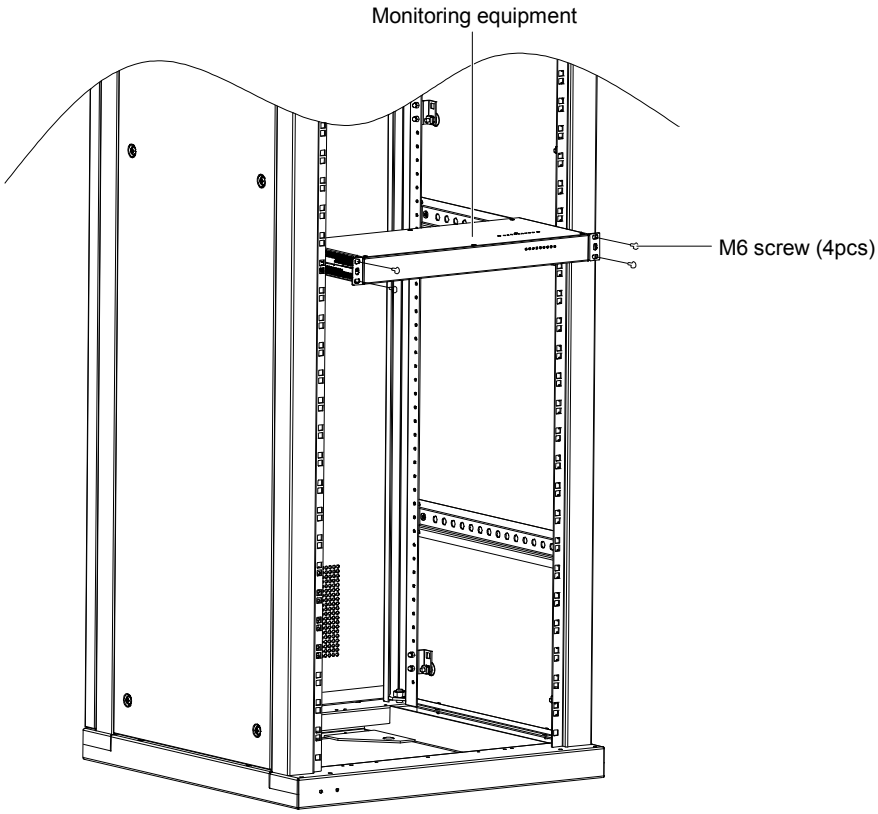


Figure 2-6 Installation in cabinet

5. Fix the monitoring equipment to the cabinet through the brackets on both sides with the M6 screws (user-prepared).

Chapter 3 Connection

This chapter expounds the connection of the monitoring equipment, including notes and connection method of the ports.

3.1 Notes

All external signals connected to the monitoring equipment must be safety extra-low voltage (SELV) circuits. The isolation and insulation must be enhanced between them and the power grid.

3.2 Connection Serial Port

The monitoring equipment provides 16 serial ports (COM1 ~ COM16) for communication with the intelligent device, and the serial ports support RS485 communication mode.

3.2.1 Port Position

There are 16 serial ports on the rear plate of both ISU-0016IA and ISU-0016ID monitoring equipment, and the port positions are respectively shown in Figure 3-1 and Figure 3-2.

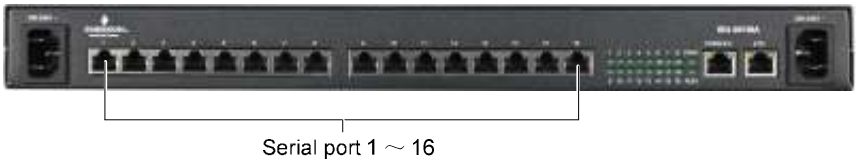


Figure 3-1 Position of ISU-0016IA serial port

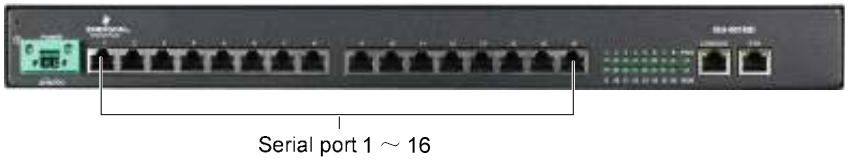


Figure 3-2 Position of ISU-0016ID serial port

3.2.2 Pin Definition

The pin definition of the serial port 1 ~ 16 is shown in Figure 3-3.

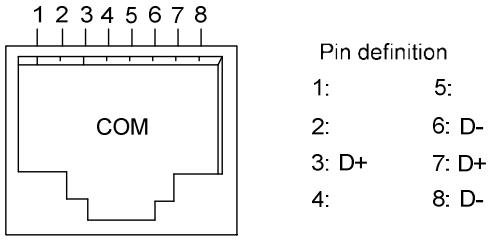


Figure 3-3 Pin definition of serial port 1 ~ 16

3.2.3 Connection Method

The connection method for single RS485 intelligent (take IPLU for example) is shown in Figure 3-4. To improve the connection reliability, you should short pin3 and pin7 of the Ethernet cable and connect it to DATA+; short pin6 and pin8 and connect it to DATA- at the end of intelligent equipment.

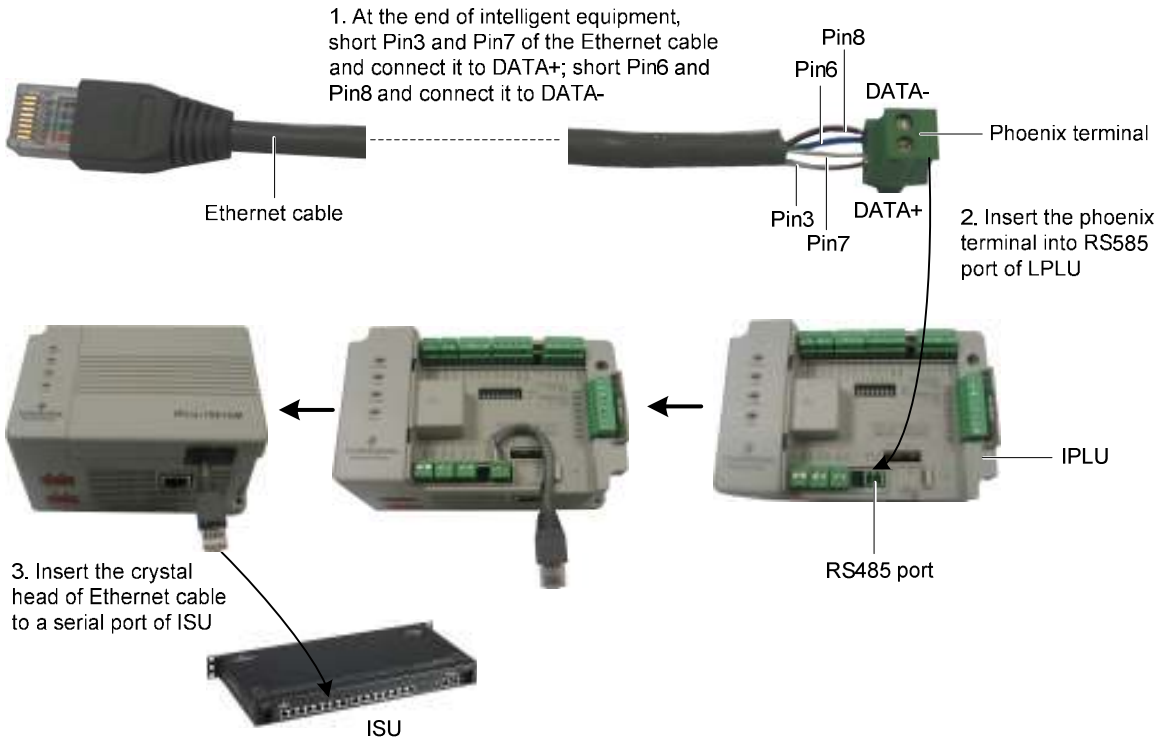


Figure 3-4 Connection of single RS485 intelligent device

The connection method for multi RS485 intelligent device is shown in Figure 3-5.

If multiple intelligent devices need to be connected, you can use an RJ45 three-way head (optional) to transfer. Use a standard Ethernet cable to mount up the signals in the way of daisy chain, and then connected to the corresponding port, as shown in Figure 3-5.

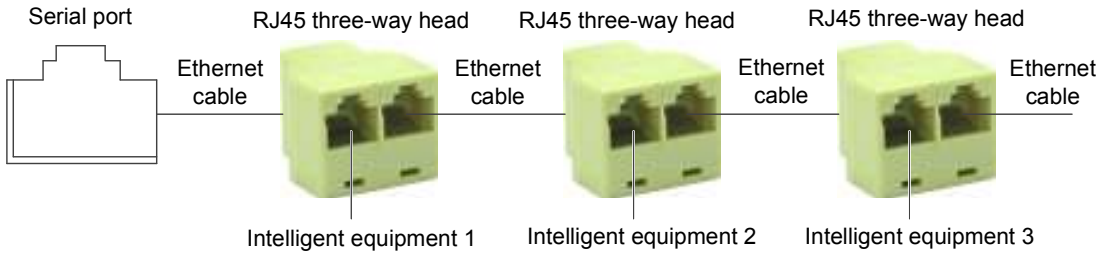


Figure 3-5 Connection of multi RS485 intelligent device

If the connected intelligent device doesn't support RS485 port (take air conditioner for example), an extral serial port adapter (optional, 50040021, user purchased) needs to be connected to transfer the RS422 or RS232 into RS485, after then can the air conditioner be connected to the monitoring equipment. The connection method is shown in Figure 3-6.

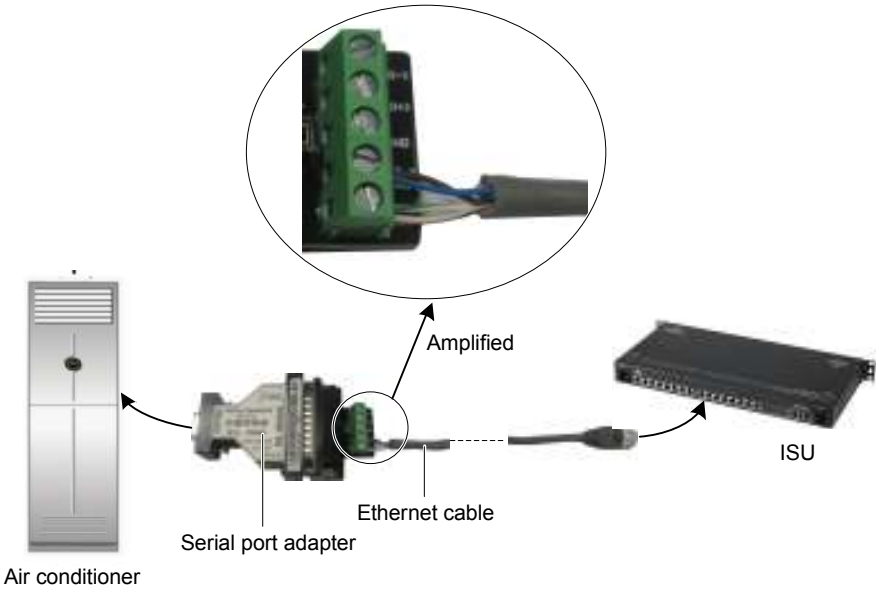


Figure 3-6 Connection of non- RS485 intelligent device

3.3 Connection Of Console Port

3.3.1 Port Position

The console port position of ISU-0016IA is the same with that of ISU-0016ID monitoring equipment. Here take ISU-0016IA monitoring equipment for example, the position of the console port is shown in Figure 3-7.

Figure 3-7 Position of console port

3.3.2 Connection Method

The monitoring equipment provides an RJ45 console port for field commissioning. The commissioning personnel may use the commissioning cable to connect the console port directly with the serial port of the computer used for commissioning.

If no commissioning cable is available in the field, you can make a cable according to the pin definition given in Table 3-1.

Table 3-1 Pin definition of console port

Pin SN	Name	Definition
1		Suspended
2		Suspended
3	TX	Data transmission
4	GND	Signal ground
5	GND	Signal ground
6	RX	Data reception
7		Suspended
8		Suspended

Note

The communication parameter is given as follows: baud rate: 115200, data bit: 8 bit, no check, no flow control, stop bit: 1 bit.

The connection method of the console port is shown in Figure 3-8.

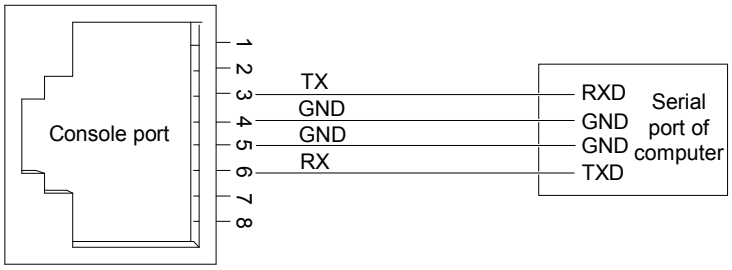


Figure 3-8 Connecting console port to serial port of computer

3.4 Connection Of Earth Cable

Note

The correct connection of the monitoring equipment earth cable is the primary protection of lightning protection and anti-interference. So, you must connect the earth cable correctly.

Background knowledge

The input terminal of the monitoring equipment has power noise filter whose center ground is connected to the chassis called chassis ground (that is, protective ground). Chassis ground must be connected to the earth properly, so that the induction power and leakage power can safely flow into the earth to improve the anti-electromagnetic interference feature of the entire equipment. For the lightning high voltage from the external ports such as Ethernet port and serial ports, the earth cable can also provide the protection.

The PE terminal of the monitoring equipment is located on the left side of the chassis rear plate, as shown in Figure 3-9.

Figure 3-9 Position of PE terminal

Earth connection requirement

- Use a green-yellow earth cable to connect the PE terminal and the earth. The earth resistor cannot be more than 4Ω
- If the monitoring equipment is installed in a cabinet, the cabinet must be grounded
- Joint grounding mode is used: working ground, PE and building lightning ground use the same set of grounding body
- Cross-sectional area (CSA) of earth cable: determined by the maximum flowing current load. The earth cable should be good conductor (copper) wire. It is prohibited to use bare cable. The resistance of the combined earth should be less than 5Ω

3.5 Connection Of DC Power Cable

The position of the DC power input port is shown in Figure 3-10.

Figure 3-10 Position of DC power input port

The connection procedures are given as follows:

1. Make sure that the PE terminal has been connected to the earth correctly.

2. Insert one end of the DC power cable into the DC power input port of the monitoring equipment, and connect the other end to the DC power supply.

Warning

Note the label of the power cable when connecting the DC power cable, to avoid the incorrect connection.

3. Check that the power indicator (silkprint: POWER) of the monitoring equipment turns on. If it is on, it indicates that the power cable is connected correctly.

3.6 Connection Of AC Power Cable

The position of the DC power input port is shown in Figure 3-11.

Figure 3-11 Position of AC power input port

The connection procedures are given as follows:

1. Insert one end of the AC power cable into the AC power input port of the monitoring equipment, and connect the other end to the AC power supply.

2. Connect the other route of AC power to the AC power supply addcording to setp 1.

Warning

The ISU-0016IA monitoring equipment supports multi power input. Make sure that both of the two AC power inputs are off upon maintenance.

3. Check that the power indicator (silkprint: PWR) on the front plate of the monitoring equipment turns on. If it is on, it indicates that the power cable is connected correctly.

Chapter 4 Configuration And Commissioning

This chapter expounds the configuration and commissioning of the monitoring equipment, including connecting monitoring equipment and computer, power-on check, configuring monitoring equipment through HyperTerminal and SiteWeb3.0 software, and commissioning the monitoring equipment through Tools2008 software.

4.1 Connecting Monitoring Equipment And Computer

To configure and commission the monitoring equipment, a computer is needed. Therefore, before parameter configuration and commissioning, you should connect the communication cable between the monitoring equipment and the computer, and set the communication parameters through the computer.

You can configure the parameters of the monitoring equipment through the HyperTerminal or test tools platform software Tools2008 (Tools2008 software for short).

If the HyperTerminal is used for parameter configuration, you should type the configuration commands and parameters manually. If the Tools2008 software is used, your configuration operation in the field will be greatly simplified because of the visual man-machine interaction interface of the software.

4.2 Power-on Check

You can power on the monitoring equipment after the communication cable between the monitoring equipment and the computer is connected.

4.2.1 Check Before Power-on

Ensure the following items before powering on the monitoring equipment:

- The power voltage meets the requirement of the monitoring equipment.
- The communication cable is connected correctly.

Note

Before powering on the monitoring equipment, confirm the location of the power input port (silkprint: POWER 20-60VDC, see Figure 1-8; silkprint: 200-250~, see Figure 1-7), so that you can cut off the power in time in case of an accident.

4.2.2 Check After Power-on

After powering on the monitoring equipment, check that the indicators (see Figure 1-4) of the monitoring equipment are indicating normally. The indicator status descriptions are listed in Table 1-1. If the indicators are abnormal, check that the cable connections of the ports are correct and that the base station connected with the monitoring equipment is working normally.

4.3 Configuring Monitoring Equipment Through Web (Only Applicable Under SiteWeb 3.0)

1. Input IP address of the monitoring equipment in IE address bar and press the Enter key to enter the login interface shown in Figure 4-1. Select the interface display language (Chinese and English, optional) in **Language**. Type the user name (default: ‘admin’) and password (default: ‘123456’) and click the **Login** button to enter the **System Setup** interface.

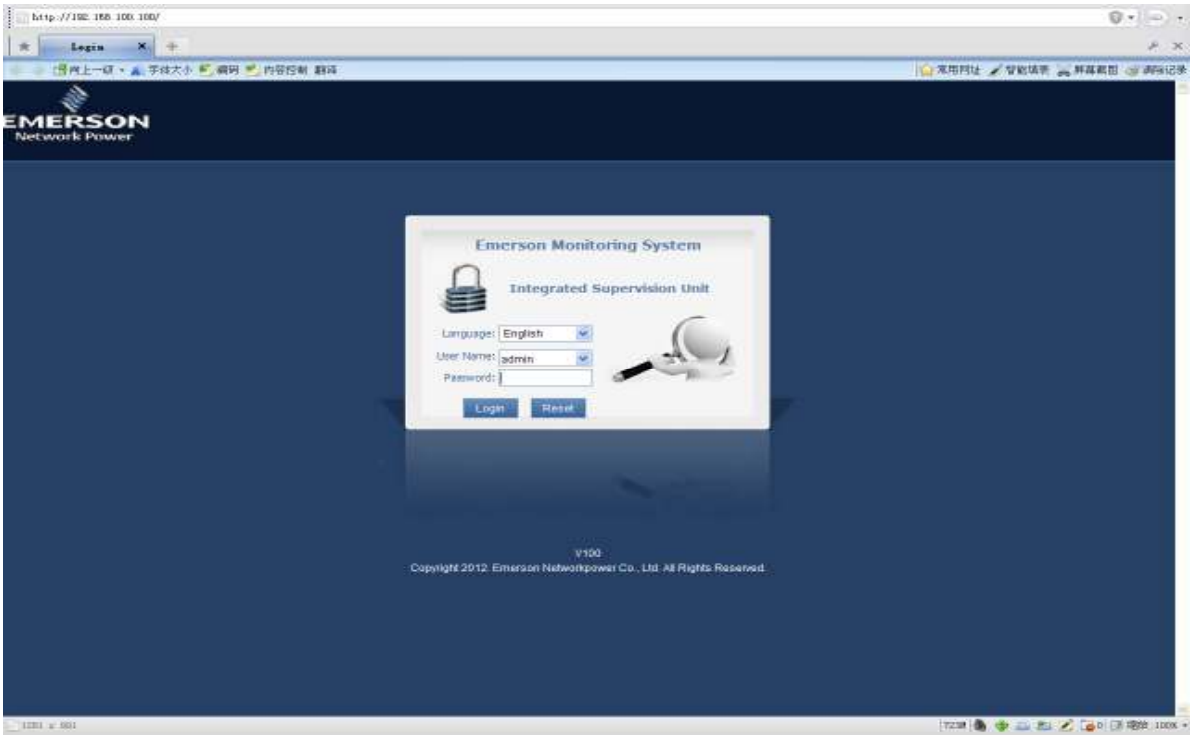


Figure 4-1 Login interface

Note

1. The Console port parameter of the monitoring equipment is fixed as 115200,N,8,1.
2. The default IP is 192.168.100.100, the subnet mask is 255.255.255.0, and the default gateway is null.

2. In the interface shown in Figure 4-2, select the **System Setup** tab to set the IP address.

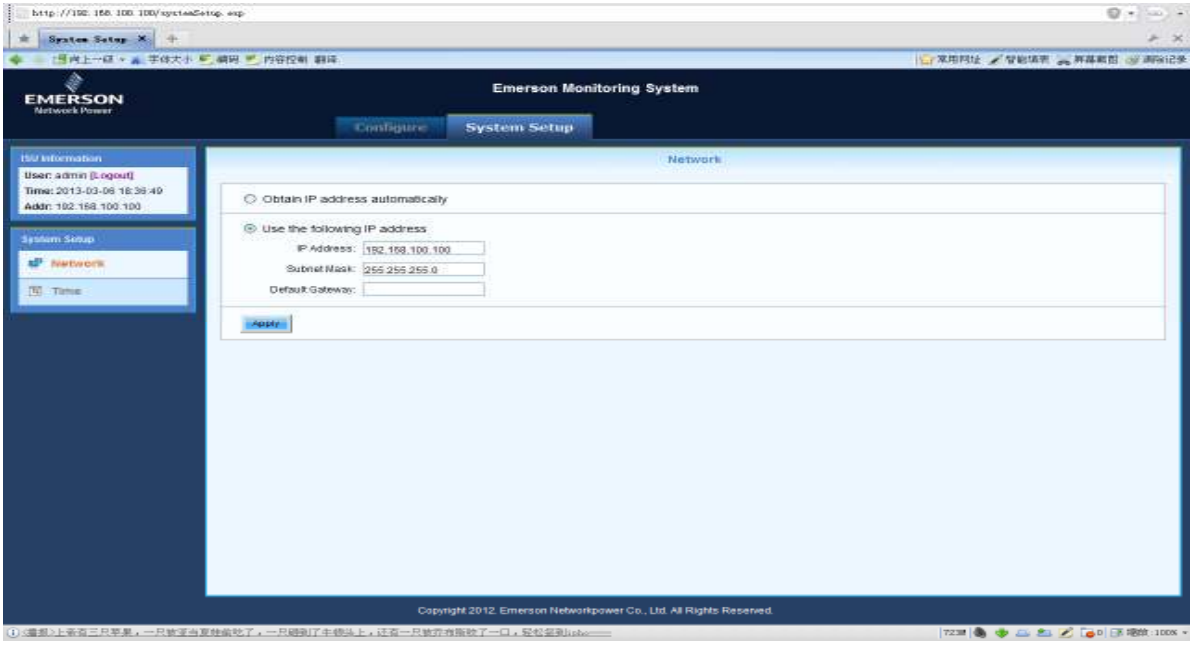


Figure 4-2 System Setup interface

3. Select the **Confiure** tab to set the baudrate of the serial port, as shown in Figure 4-3.

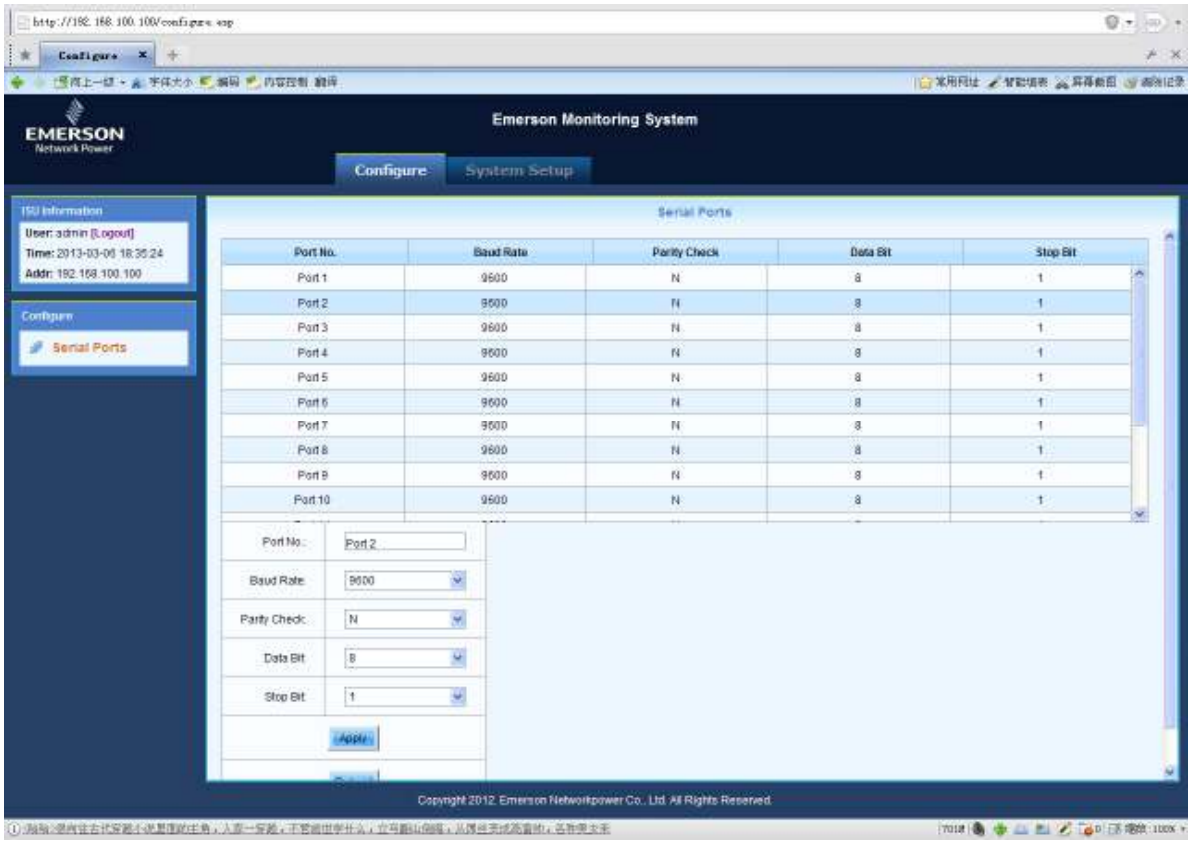


Figure 4-3 Configure interface

4. After parameters setting, click **Reboot** in the **Configure** tab to restart the system.

4.4 Commissioning Monitoring Equipment Through BottomDebug Tool

For detailed procedures of commissioning the monitoring equipment through BottomDebug Tool software, please refer to *BottomDubug Tool Operation Manual*.

4.4.1 Logging In FSU

1. Use a standard Ethernet cable to connect Ethernet port of the FSU to that of the PC.

2. Double-click the BottomDebugTool software operation program BottomDebugTool.exe to start the BottomDebugTool software, and the window shown in Figure 4-4 appears.

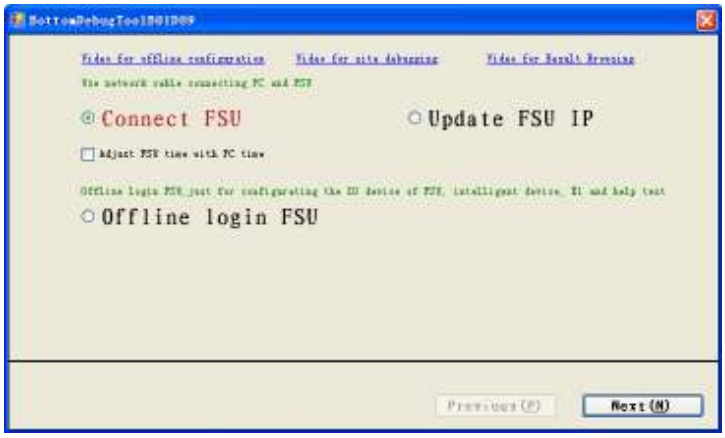


Figure 4-4 Selecting connection type

Note

If you tick 'Adjust FSU time with PC time', after connecting the FSU, the BottomDebugTool software will adjust the FSU time to the PC time automatically.

3. Select 'Connect FSU' in the window shown in Figure 4-4, click **Next (N)**, and the window shown in Figure 4-5 appears.

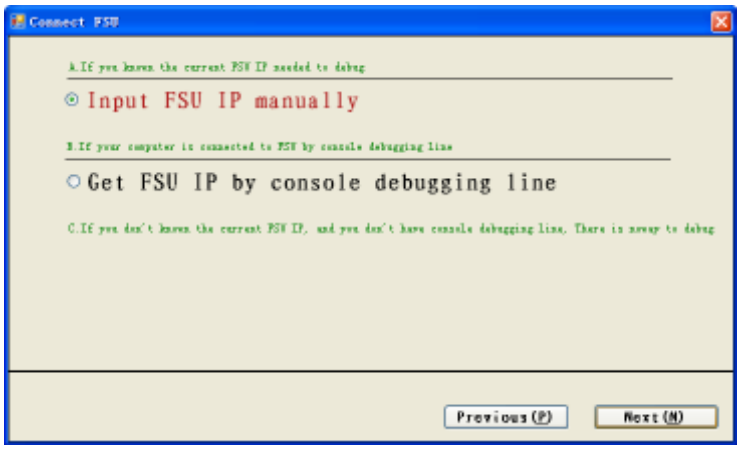


Figure 4-5 Selecting 'Input FSU IP manually'

4. Select 'Input FSU IP manually', click **Next (N)**, and the window shown in Figure 4-6 appears.

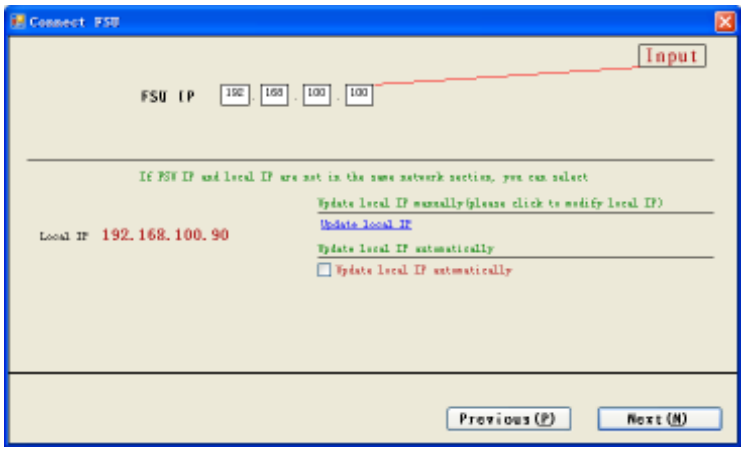


Figure 4-6 Input FSU IP address

5. Input the FSU IP address, and click **Next (N)** to log in the FSU.

4.4.2 Configuration

1. After logging in the FSU, the primary window of the BottomDebugTool software appears, as shown in Figure 4-7.

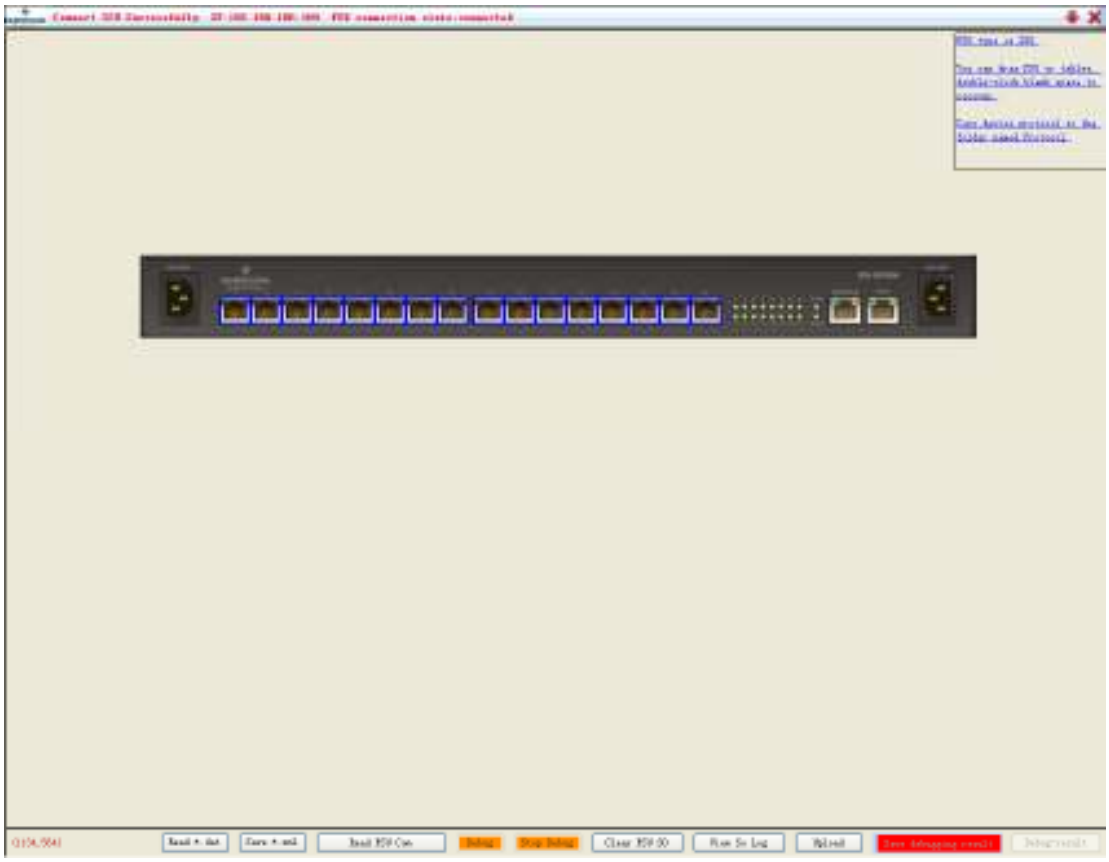


Figure 4-7 Primary window of BottomDebugTool software

2. In the primary window of the BottomDebugTool software shown in Figure 4-7, select the corresponding COM 4 of the connected intelligent device (take IPLU1501 for example), and the selected serial port will be highlighted, as shown in Figure 4-8.

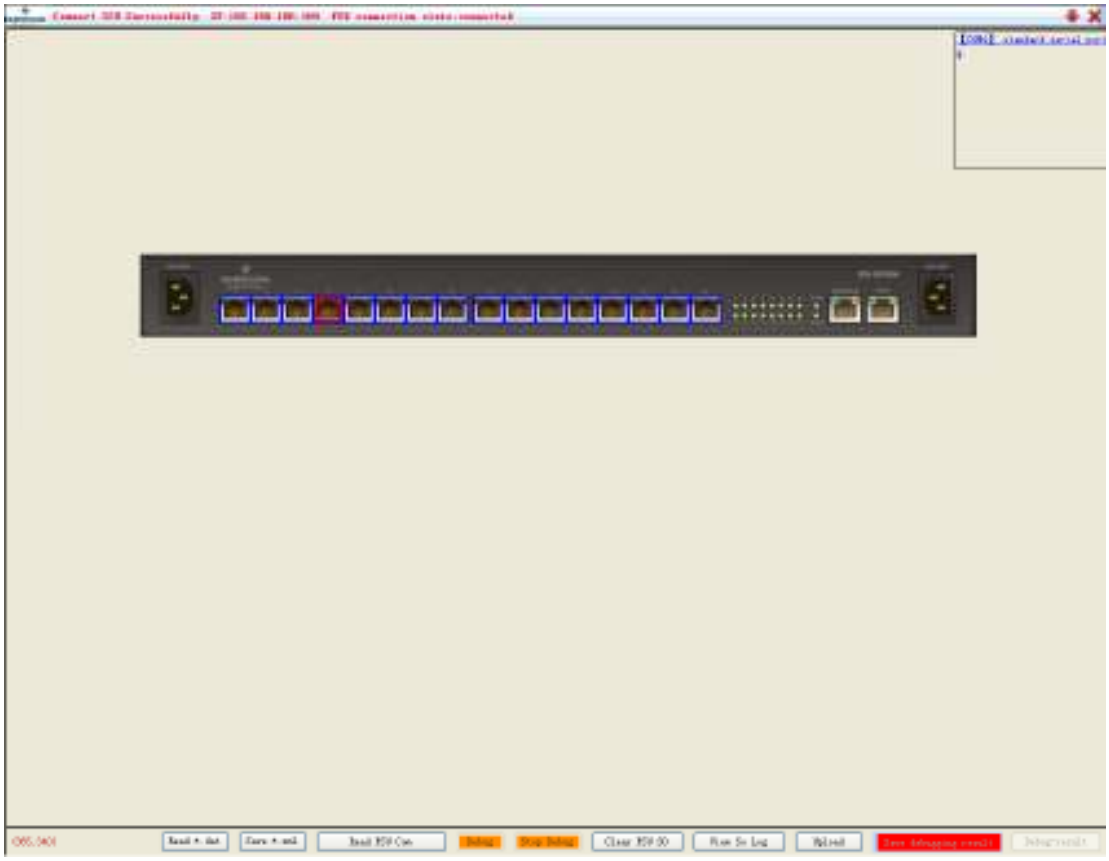


Figure 4-8 Selecting serial port

3. After selecting the COM 4 shown in Figure 4-8, a configuration window will pop out, as shown in Figure 4-9.

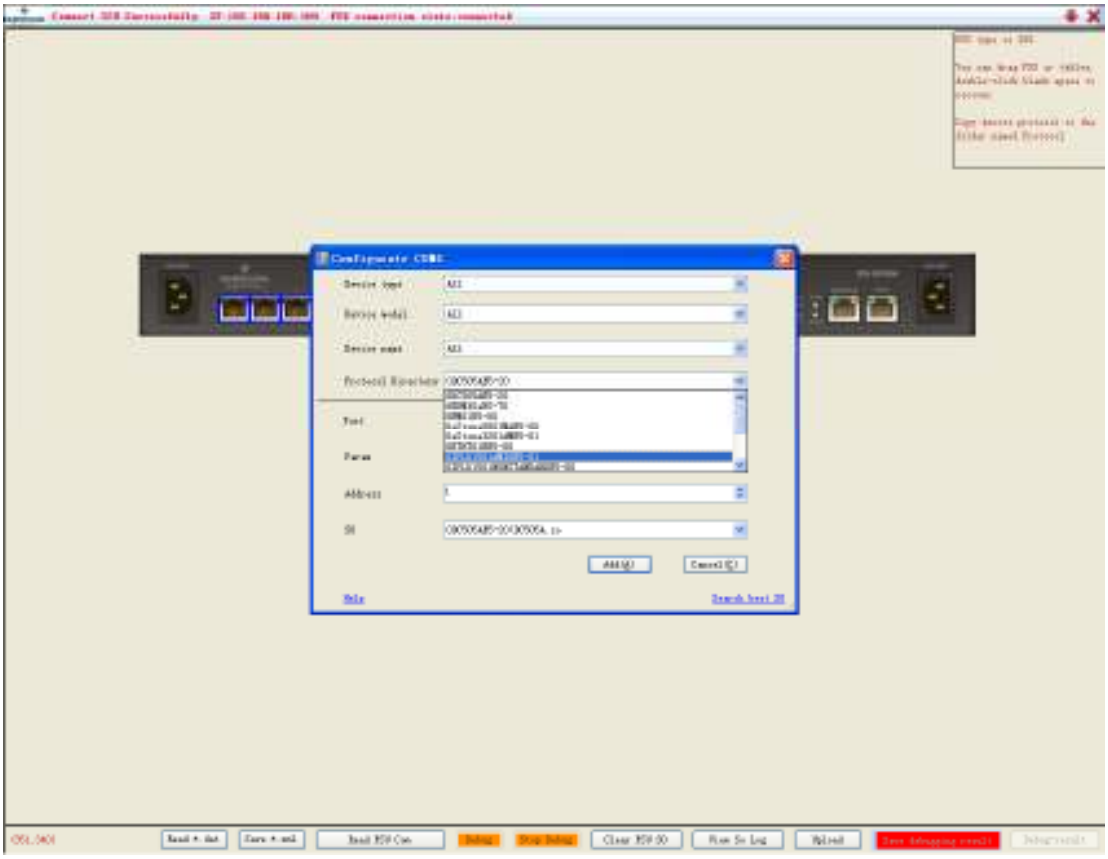


Figure 4-9 Configuration window of intelligent device (IPLU1501)

4. In the intelligent device configuration window (see Figure 4-9) , select the type, model, name of the intelligent device connected to the port, and input the device name, communication parameters and address, as shown in Figure 4-10.

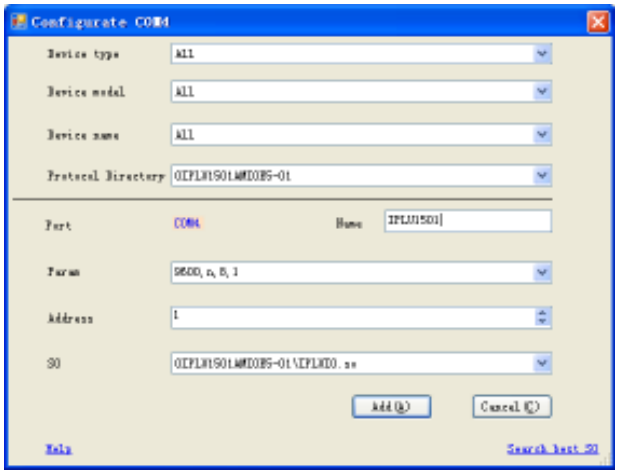


Figure 4-10 Setting serial port parameters

- If the BottomDebugTool software has the protocol directory of this intelligent device, the protocol directory and SO database will be displayed in the **Protocol Directory** and **SO** boxes respectively. Click the **Add (A)** button, and this intelligent device is added under this port. The primary window displays the configuration list of the newly added intelligent device, as shown in Figure 4-11.

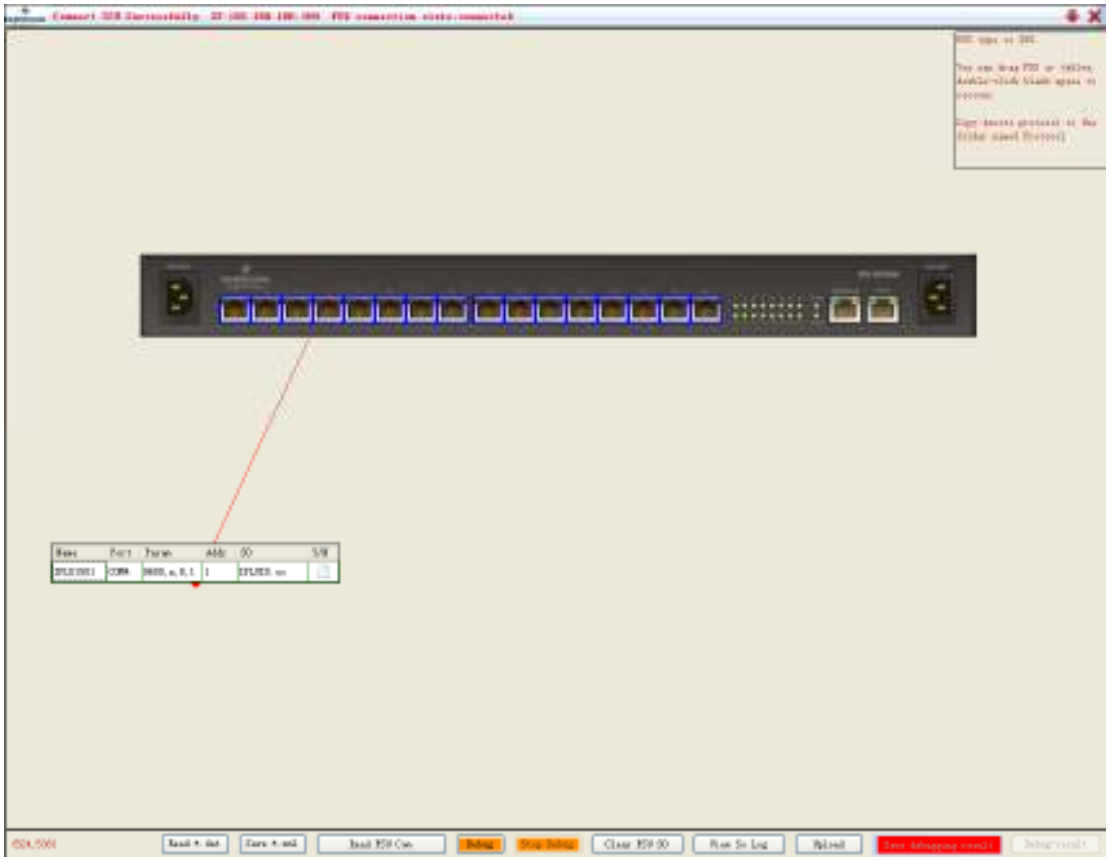


Figure 4-11 Configuration list of newly added intelligent device

- If the BottomDebugTool software does not have the protocol directory of the connected intelligent device, you are required to copy the protocol directory to BottomDebugToolB02D01\protocol directory, and then repeat the preceding steps.

5. Follow the same ways to add another intelligent device (take Emerson power supply for example) to COM2, select COM2 in the interface shown in Figure 4-11, a configuration window will pop up automaticly, then select the corresponding protocol directory of the connected intelligent device and input the device name, as shown in Figure 4-12.

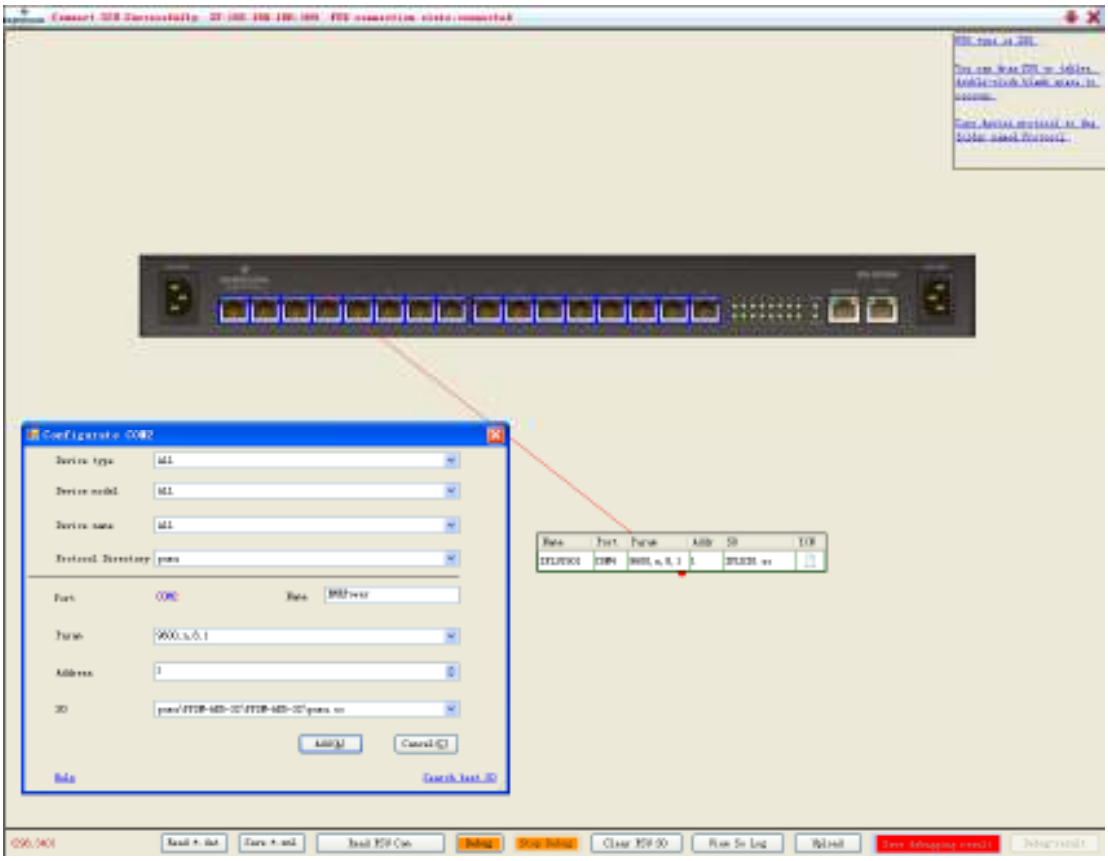


Figure 4-12 Configuration window of intelligent device (Emerson power supply)

6. In the window shown in Figure 4-12, Click the **Add (A)** button, and this intelligent device is added under COM2. The primary window displays the configuration list of the newly added intelligent device, as shown in Figure 4-13.

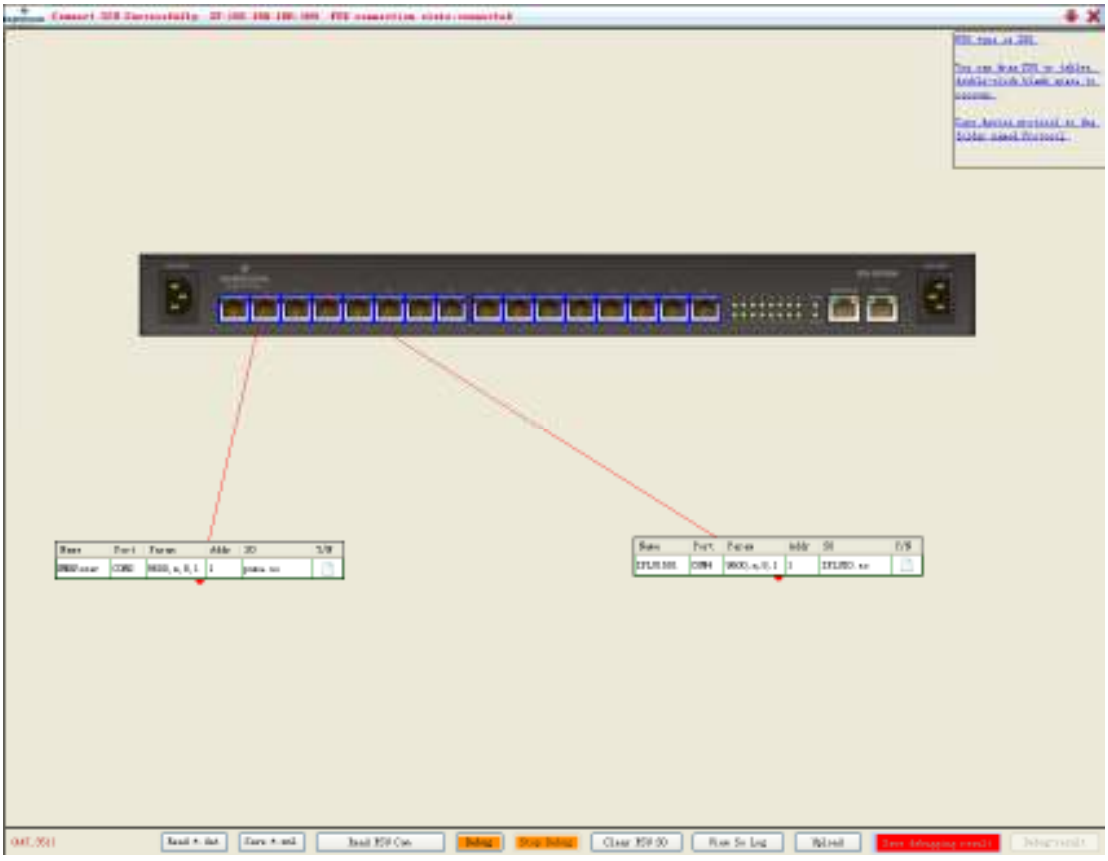


Figure 4-13 Completing of adding intelligent device

7. After finish adding the intelligent device, click the **Debug** button at the bottom of the primary window to start debugging, and the indication window shown in Figure 4-14 appears.

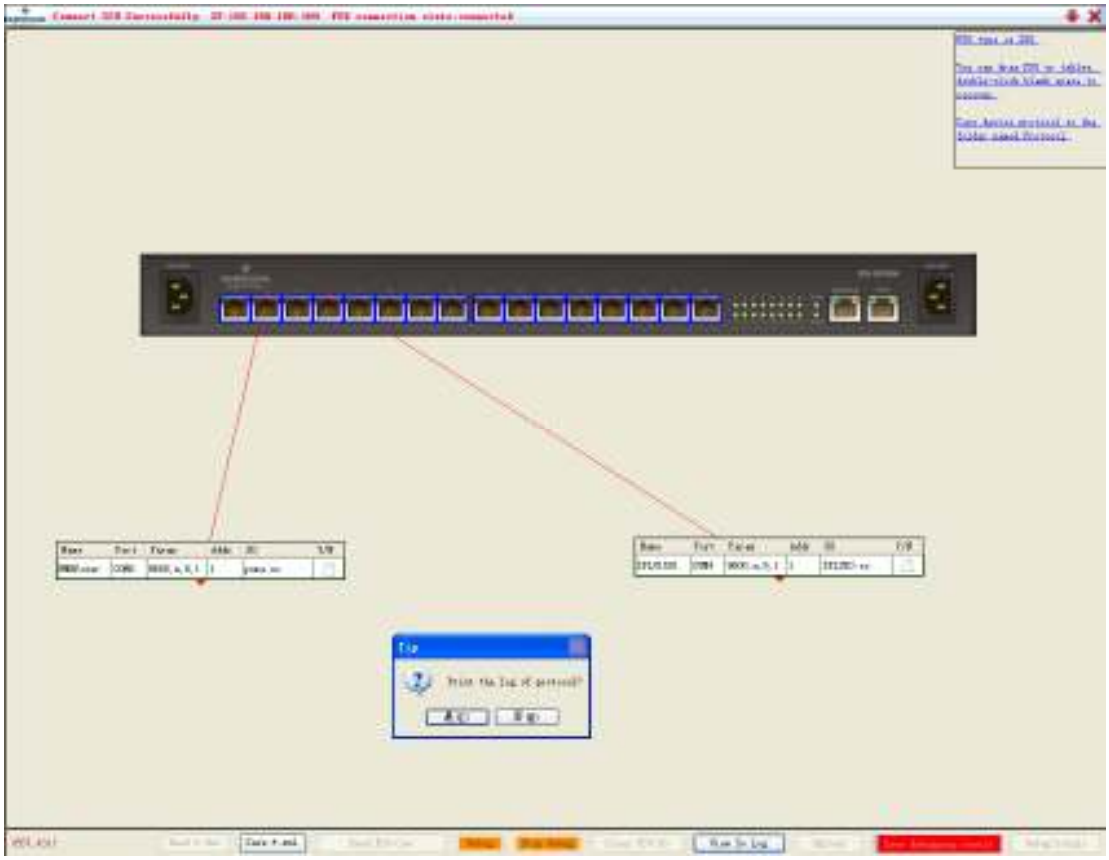


Figure 4-14 Indication window

7. Select Y to query the log information, which is suitable to debug new so base. Select N will not print the log of protocol. It is rommend to select Y, in case there are some faults, and then you can query the log for help.

8. After starting debugging, the last columns of the configuration lists display the states/values of the configured environmental signals and intelligent devices, as shown in Figure 4-15. The meanings of the state icons are as follows:

: The debugging result has not been generated yet.

: The communication of this intelligent device is normal.

: The communication of this intelligent device is interrupted.

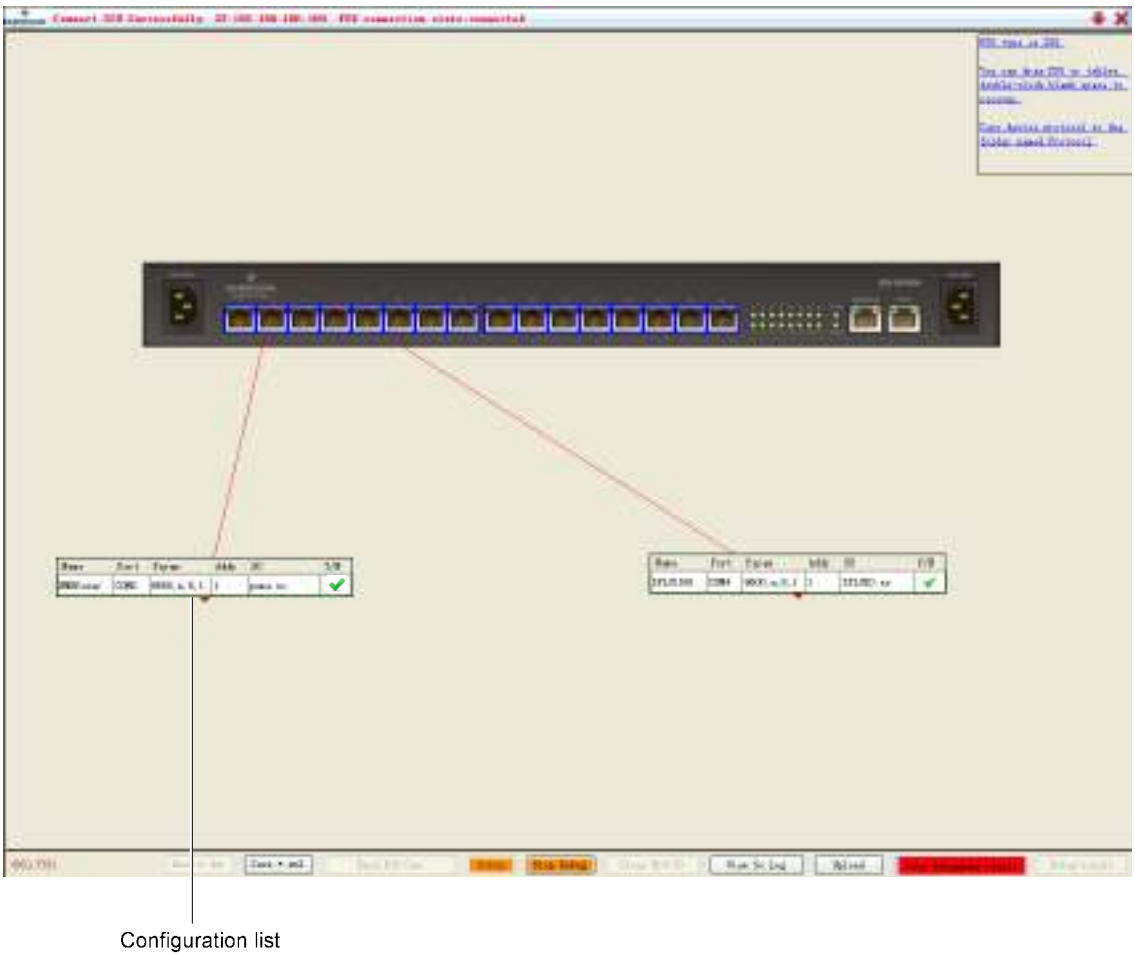
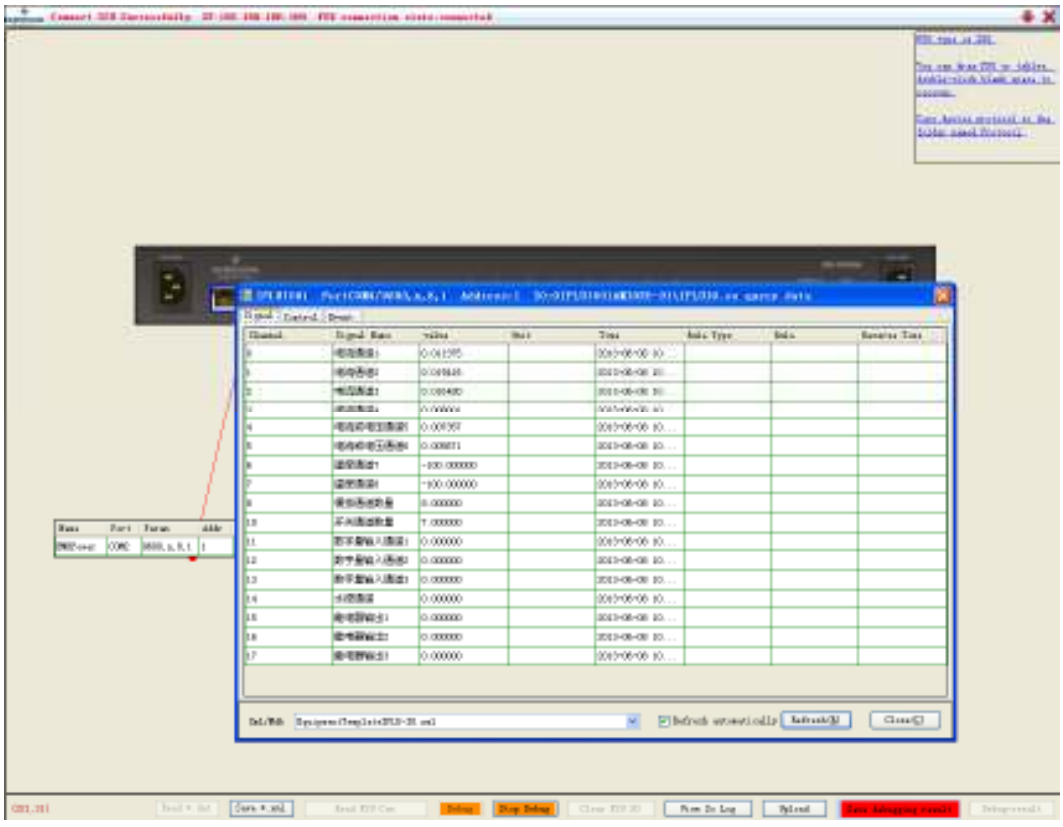
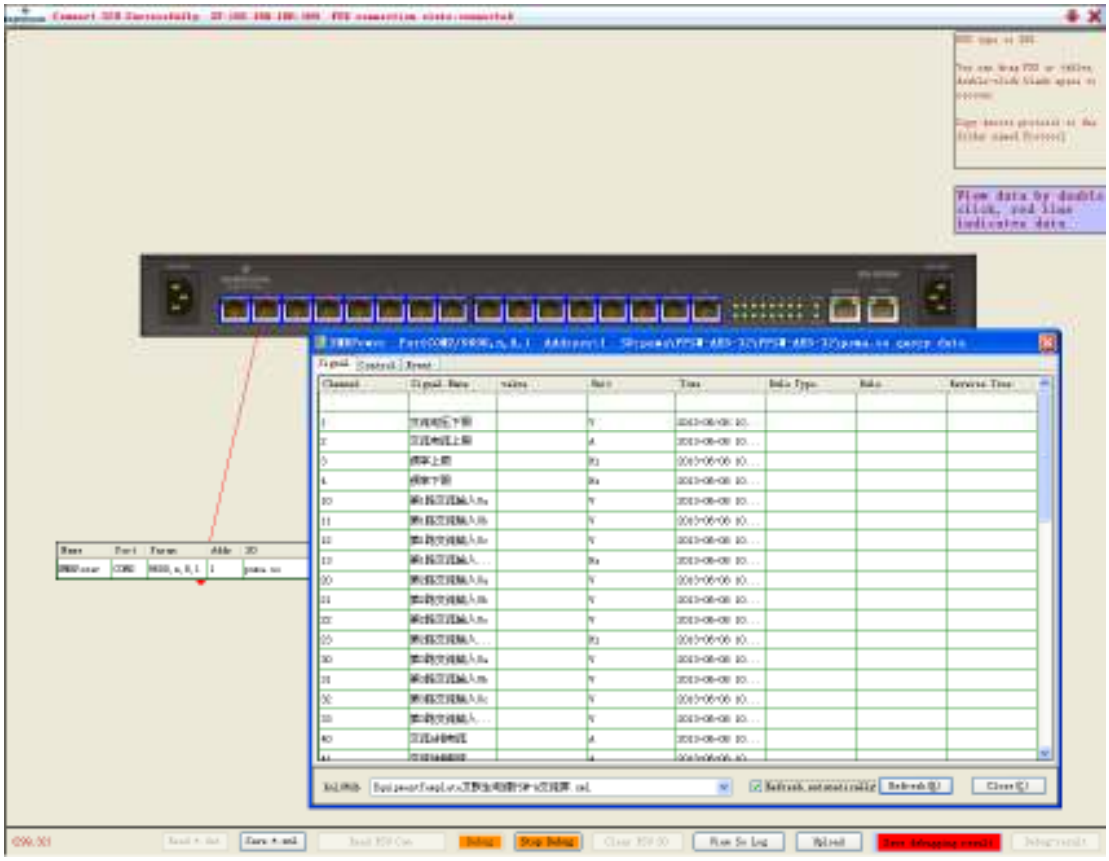


Figure 4-15 Debugging

9. Double click the device name in the configuration list, and a device signal window will appear, as shown in Figure 4-16. You can query the corresponding signal in this window.



Querying signal of IPLU1501



Querying signal of Emerson power supply

Figure 4-16 Querying signal of intelligent device

10. After debugging, Click the **Save debugging result** button at the bottom of the primary window, and the menu shown in Figure 4-17 pops up.

Figure 4-17 Selecting data type

11. Select the desired data type in the menu shown in Figure 4-17, and the dialog box shown in Figure 4-18 appears.

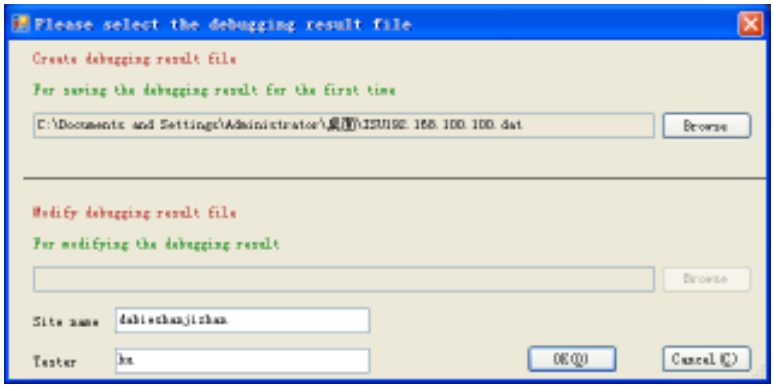


Figure 4-18 Saving debugging result

12. Click the **Open…** button, select the file path and name, and click **OK (O)**.

13. Click the **Debug-result** button at the bottom of the primary window, and the window shown in Figure 4-19 pops up, displaying the saved debugging result information.

Except for the base station information, which can be modified, all debugging result information is read-only data. Relevant operations include:

a. Selecting the desired data type on the left side of the window to view the corresponding debugging result.

b. Viewing unqualified debugging items: The red data in the lower part of the window are unqualified debugging items, that is, items that do not meet the debugging requirement. Find out the problem and repeat the debugging until all of the items are qualified.

c. Modifying site information: Click the **Input Site Information** button at the right bottom of the window, and the window shown in Figure 4-19 appears; input all site information and click the **OK (O)** button.

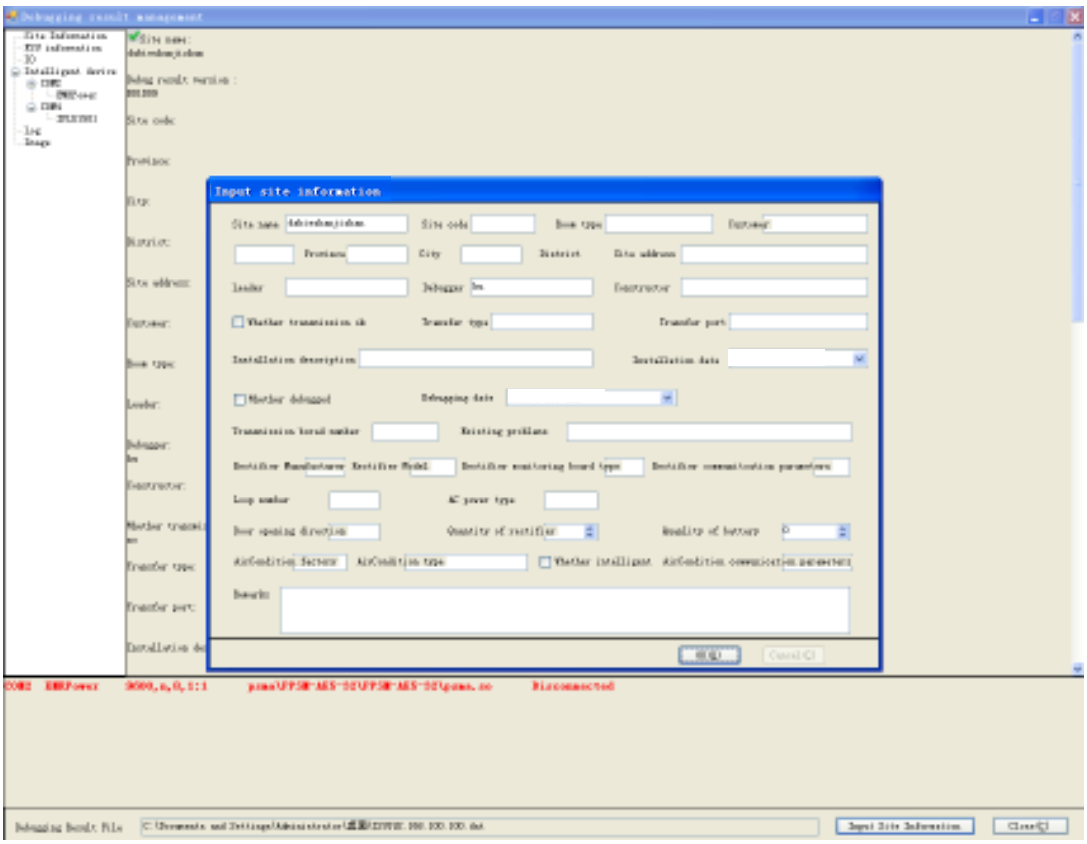


Figure 4-19 Viewing debugging result

14. Click the **Stop Debug** button at the bottom of primary window, and the window shown in Figure 4-20 appears.

Figure 4-20 Saving debug result

15. If the debug result was saved, please select ‘Saved’; otherwise, please select ‘No, saved’.

16. After the debug result being saved, click ✖ to execute the debug software, and then the system will restart automaticly.

4.5 Configuring Monitoring Equipment Through HyperTerminal

When the HyperTerminal is used, two connection modes (Ethernet port mode and console port mode, see Figure 1-8 for port positions) are supported. You can select one mode according to the field condition.

After setting the HyperTerminal, you can configure the parameters of the monitoring equipment through the HyperTerminal.

4.5.1 Setting HyperTerminal

Connecting through Ethernet port

Use a standard straight network cable to connect the Ethernet port of the monitoring equipment and network port of the computer.

After the connection of the network cable, you can start to set the Hyper Terminal. The detailed setting procedures are given as follows:

1. Click **Start** -> **Programs** -> **Accessories** -> **Communications** -> **HyperTerminal**, and the **Connection Description** interface will pop up, as shown in Figure 4-21.

Figure 4-21 Connection description interface

2. Type 'ISU' in the **Name** field and click **OK**, and the interface shown in Figure 4-22 will appear.

Figure 4-22 Connect to interface

3. Select 'TCP/IP (Winsock)' in the **Connect using** field, and the interface shown in Figure 4-23 will appear.

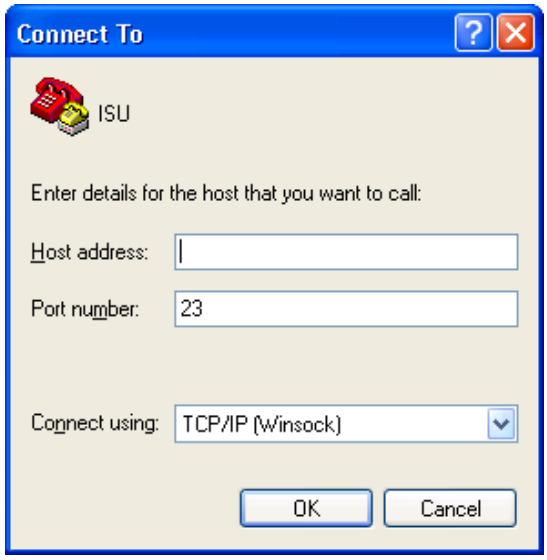


Figure 4-23 Selecting 'TCP/IP (Winsock)'

4. As shown in Figure 4-24, type the host address (default address: 192.168.100.100) and port number (default: 23), and click **OK** to finish setting of Hyper Terminal.

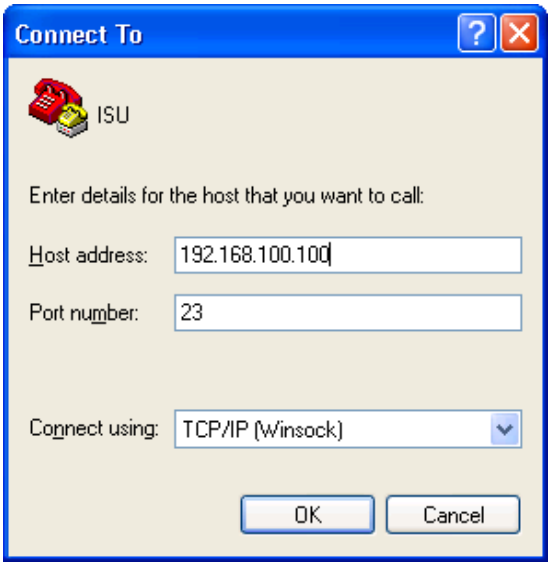


Figure 4-24 Setting host address and port number

Connecting through console port

Use a commissioning cable (user-prepared) to connect the console port of the monitoring equipment and any serial port of the computer.

After the connection of the commissioning cable, you can start to set the HyperTerminal. The detailed setting procedures are given as follows:

1. Click **Start** -> **Programs** -> **Accessories** -> **Communications** -> **HyperTerminal**, and the **Connection Description** interface will pop up, as shown in Figure 4-25.

Figure 4-25 Connection description interface

2. Type 'ISU' in the **Name** field and click **OK**, and the interface shown in Figure 4-26 will appear.

Figure 4-26 Connect to interface

3. Select the connected serial port No. of the computer (such as 'COM1' shown in Figure 4-26) and click **OK**, and the interface shown in Figure 4-27 will appear.

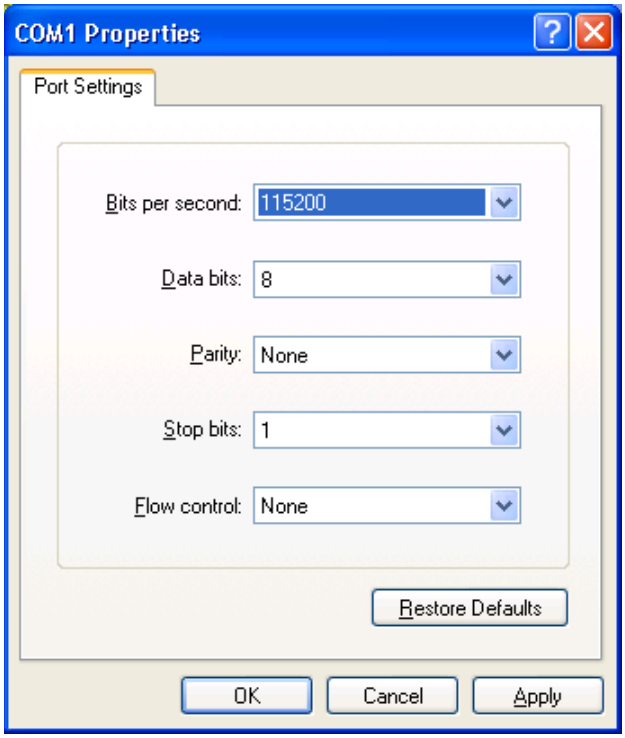


Figure 4-27 Setting serial port parameters

4. Set the serial port parameters according to Figure 4-27, and click **OK**.

5. Select the menu **File** -> **Properties** in the **ISU-HyperTerminal** interface, and select the **Settings** tab in the pop-up **ISU Properties** interface, as shown in Figure 4-28.

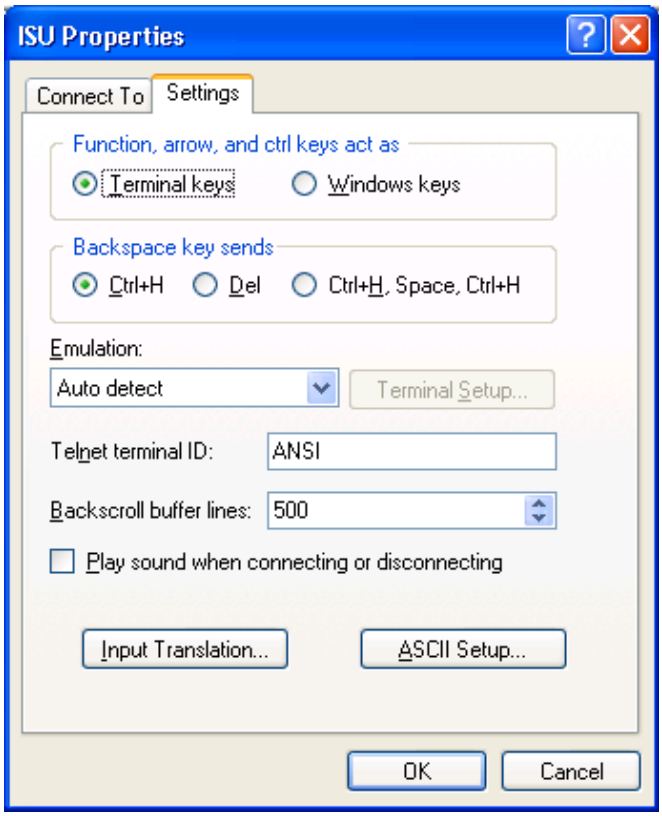


Figure 4-28 Settings tab

6. Select ‘Auto detect’ or ‘VT100’ in the **Emulation** field, keep other parameters by default and click **OK**.

4.5.2 Logging Onto Monitoring Equipment

The process of logging onto the monitoring equipment is shown in the following figure, and the detailed procedures are given as follows:

1. The HyperTerminal interface will display **ISU login:** after the HyperTerminal is set.

2. Type the user name 'isuadmin' and press the Enter key, and the HyperTerminal interface will display **Password:**.

3. Type the password 'isuadmin' under **Password:** and press the Enter key, and the HyperTerminal interface will display the command prompt **ISU_admin#**.

Note

Both the user name and password are case-sensitive.

```
ISU login: isuadmin
Password:

Linux 2.6.24

Copyright 2006. Emerson Network Power Co., Ltd. All Rights Reserved.

Mar  6 21:07:45 ISU auth.info login[1060]: root login on 'ttyS0'
*****************    The model is ISU     ********************
 ************************************************************************
 *                                                                      *
 *   Copyright(c) 2013-2023, Emerson Network Power Co., Ltd.            *
 *                   ALL RIGHTS RESERVED                                *
 *                                                                      *
 *                     Welcome to ISU                                   *
 *                                                                      *
 ************************************************************************

ISU_admin#
```

Related parameters must be set for using the monitoring equipment, both for the first time and after the connection is changed. Proper parameter configuration is a must for normal operation of the monitoring equipment.

Note

1. To validate the modifications you made, type 'Y' according to system prompt.

2. If you press the Enter key directly without typing a new value, the old parameters will be used.

3. The system will exit the command line if no operation is made within five minutes.

4. After all parameters of a command are set, type 'Q' as requested by the prompt and press the Enter key to exit the command. The command prompt **ISU_admin#** will appear in the HyperTerminal interface.

4.5.3 Restarting Monitoring Equipment

After all parameters are set, restart the monitoring equipment according to the following procedures.

1. Type 'reboot' following the command prompt **ISU_admin#** and press the Enter key, and the following figure will appear.

```
ISU_admin#reboot
Are you sure to reboot the system? Y/N [N]
```

2. Type 'Y' or 'N' according to the system prompt and press the Enter key.

If you type 'Y', the monitoring equipment will be restarted; if you type 'N', it will not be restarted.

Chapter 5 Troubleshooting

This chapter introduces the troubleshooting of the monitoring equipment.

See Table 5-1 for the troubleshooting.

Table 5-1 Troubleshooting

Fault phenomenon	Treatment
After the monitoring equipment is powered on, the power indicator (see Figure 1-4) is not on	1. Check that the power input cable is not connected reversely or badly. 2. Measure that the power input voltage meets the requirement with a multimeter
RS485 communication is abnormal	Check that RS485 communication cables is connected according to the following method: RS485 mode: D+ connects to D+, D- connects to D-
The network cannot be connected	1. Check that the monitoring equipment and the network device communicating with it are the same network segment. 2. Check whether the gateway has been set
The monitoring equipment cannot be visited through the console port	1. Check that the cable of the console port is connected correctly. 2. Check that the serial port configuration of the HyperTerminal in the computer is 115200, n, 8, 1, no flow control

Appendix 1 Command Lines

This appendix expounds the command lines of the monitoring equipment.

Overview Of Command Lines

The monitoring equipment provides a series of command lines. You can run the command lines to configure and manage the equipment. The command lines provide the function of helping, loading, uploading files, testing, changing password and command setting.

The features of the command lines are listed as follows:

- Set local configurations through Console port
- Support simple command line editing function
- Type '?' or 'help' to get online help information at any moment after logging onto the monitoring equipment.
- Provide the relative commissioning information help to diagnose network malfunction
- Support the input of key word. You need only input part the key word related to a command and the shell can recognize the command, for example, to run the command update, just type 'upd'.

Main Command Lines

1. ? or help

Type '?' or 'help' following the command prompt **ISU_admin#** and press the Enter key to get the help information, and the following figure will appear.

```
Following commands are supported:

help        Show this information
update      Update kernel or filesystem remotely, i.e. from Uboot
password    Change password
saveip      Save the IP address, netmask and default gateway information
            to ISU, and ISU will use these settings after reboot
setip       Set IP address, netmask and default gateway
showstatus  show system status,show net status
startdhcp   start dhcp
stopdhcp    stop dhcp
setrtc      set real time clock
showip      show ip parameter
show        Show ISU information
version     View the version information of ISU,including hardware version
            and software version
logout      Logout from ISU
reboot      Reboot ISU system
```

2. logout

The logout command is used to exit the monitoring equipment.

Type 'logout' following the command prompt **ISU_admin#** and press the Enter key, and the following figure will appear.

```
ISU_admin#logout
process '/sbin/getty -L -i 115200 ttyS0' (pid 959) exited. Scheduling it for restart.
starting pid 968, tty '': '/sbin/getty'

Emerson Network Power Co., Ltd.

ISU login:
```

3. password

The password command is used to change the logging password.

Type ‘password’ following the command prompt **ISU_admin#** and press the Enter key, and the following figure will appear. You can type the new password following the command prompt **New password:**, and retype the new password following the command prompt **Retype password:**.

```
ISU_admin#password
Changing password for isuadmin
New password:
Retype password:
Password for isuadmin changed by root
Mar  6 20:34:53 ISU auth.info passwd: Password for isuadmin changed by root
ISU_admin#
```

4. reboot

The reboot command is used to restart the monitoring equipment.

Type ‘reboot’ following the command prompt **ISU_admin#** and press the Enter key, and the following figure will appear. Type ‘Y’ and press the Enter key, and the monitoring equipment will be restarted.

```
ISU_admin#reboot
Are you sure to reboot the system? Y/N [N]
```

5. showip

The showip command is used to display the IP parameters.

Type ‘showip’ following the command prompt **ISU_admin#** and press the Enter key, and then the following figure will appear.

```
ISU_admin#showip

current IP address        :192.168.100.100
current IP mask           :255.255.255.0
current IP default gateway:none

ISU_admin#
```

6. saveip

The saveip command is used to save the set network parameters.

Type ‘saveip’ following the command prompt **ISU_admin#** and press the Enter key, and then the following figure will appear.

```
current IP address        :142.100.6.24
current IP mask           :255.255.255.0
current IP default gateway:none

Are you want to save it ? Y/N [N]
```

7. setip

The setip command is used to set the network parameters, such as IP address, mask and default gateway.

Type ‘setip’ following the command prompt **ISU_admin#** and press the Enter key, and the following figure will appear.

```
Please input IP_address[142.100.6.24]:_
```

Type the IP address, mask and default gateway of monitoring equipment following the prompt and press the Enter key, and the new network parameters can take effect immediately.

8. show

The show command is used to display the product information.

Type ‘show’ following the command prompt **ISU_admin#** and press the Enter key, and the following figure will appear.

```
ISU_admin#show
      Emerson Network Power Co.,Ltd
                ISU Product
```

9. startdhcp

The startdhcp command is used to start the DHCP (Dynamic Host Configuration Protocol) service command.

Type ‘startdhcp’ following the command prompt **ISU_admin#** and press the Enter key, and the following figure will appear.

```
0) Print this menu
1) start DHCP client service
2) Exit
```

You can type ‘0’ ~ ‘2’ to realize the different operation functions:

- Type ‘0’ and press the Enter key: show the startdhcp command interface
- Type ‘1’ and press the Enter key: start the DHCP client service
- Type ‘2’ and press the Enter key: exit the startdhcp command interface and return the main interface of command line

Note

Upon the first startup of the system, a static IP address is assigned to the system, with DHCP disabled. Once the DHCP is started, a dynamic IP address is obtained each time the system starts. You can disable DHCP with the command stopdhcp.

10. stopdhcp

The stopdhcp command is used to stop DHCP client service.

Type ‘stopdhcp’ following the command prompt **ISU_admin#** and press the Enter key, and the following figure will appear.

```
0) Print this menu
1) stop DHCP client service
2) Exit
```

You can type ‘0’ ~ ‘2’ to realize the different operation functions:

- Type ‘0’ and press the Enter key: show the stopdhcp command interface
- Type ‘1’ and press the Enter key: stop the DHCP client service
- Type ‘2’ and press the Enter key: exit the stopdhcp command and return the main interface of command line

11. setrtc

The setrtc command is used to set the real time clock.

Type ‘setrtc’ following the command prompt **ISU_admin#** and press the Enter key, and the following figure will appear.

```
ISU_admin#setrtc
**************************************************
*                                                *
* Input format description:                      *
*      year-month-day:hour-mintue-second         *
*   example: 2006-05-01:14-45-32                 *
*                                                *
**************************************************
please input a line year-month-day:hour-mintue-second :
```

12. version

The version command is used to show the version information of the monitoring equipment, including the hardware version information and software version information.

Type ‘version’ following the command prompt **ISU_admin#** and press the Enter key, and the following figure will appear.

```
ISU_admin#version
  Emerson Network Power Co.,Ltd
  ISU Product
  Hardware Ver1.00
  U-Boot 1.1.6
  Linux version 2.6.24
  gcc version 4.1.4 (DENX ELDK 4.1 4.0.0)
  Filesystem Ver B01D03
  ISU Software Ver: 1.00
ISU_admin#
```

13. update

The update command is used to update the firmware of ISU, including the kernel and the file system.

Type 'update' following the command prompt **ISU_admin#** and press the Enter key, and the following figure will appear.

```
ISU_admin#upd

+=====================================================+
|                                                     |
|                   Update function                   |
|                                                     |
+=====================================================+
0) Print this menu
1) Update Kernel
2) Update Filesystem
3) Exit


UPDATE> Command (0 for help): 
```

You can type '0' ~ '3' to realize the different operation functions:

- Enter '0' and press the Enter key: show the update command interface
- Type '1' and press the Enter key: update the kernel

```
UPDATE> Command (0 for help): 1
Update Kernel start ...
Please check:
[1]: Please bakup the files in data2 directory if needed!
[2]: Please double click the 'Tftpd32.exe' and assure the uImage
     or isu.jffs2 files are in the same directory!

Are you sure ? Y/N [N]
```

Note

The prompt information prompts that during the update process you need to backup the data in data2 directory and open the Tftpd32.exe file in the update destination folder.

After typing 'Y', you are prompted to enter the IP address where you wish to locate the destination update file, as follows:

```
Please input SERVER_IP_address[192.168.100.80]:192.168.100.80
Are you sure ? Y/N [N]
```

Typing 'Y' begins to update the kernel.

```
Please input SERVER_IP_address[192.168.100.80]:192.168.100.80
Are you sure ? Y/N [N]y
The Specified active Server is:192.168.100.80
   OK!  5 packets transmitted, 5 packets received, 0% packet loss
   The Server is alive!
usb video is exit successfully!
Sample is exit successfully!
Sdog is exit successfully!
Get uImage from server ...
```

- Type '2' and press the Enter key: update the file system

```
UPDATE> Command (0 for help): 2

Note: This step will restore the software to factory mode, except the following files:
      init_eth iplu_e1.cfg io.cfg usb_video.cfg idu_plus.ini Config.txt XmlCfg SO library
Update Filesystem start ...
Please check:
[1]: Please bakup the files in data2 directory if needed!
[2]: Please double click the 'Tftpd32.exe' and assure the uImage
     or isu.jffs2 files are in the same directory!

Are you sure ? Y/N [N]
```

🕮 **Note**

The prompt information prompts that during the update process you need to backup the data in data2 directory and open the Tftpd32.exe file in the update destination folder.

After typing 'Y', you are prompted to enter the IP address where you wish to locate the destination update file, as follows:

```
Please input SERVER_IP_address[192.168.100.80]:192.168.100.80
Are you sure ? Y/N [N]
```

Typing 'Y' begins to update the file system.

```
Are you sure ? Y/N [N]y
The Specified active Server is:192.168.100.80
   OK!  5 packets transmitted, 5 packets received, 0% packet loss
   The Server is alive!
usb video is exit successfully!
Sample is exit successfully!
Sdog is exit successfully!
```

- Type '3' and press the Enter key: return to the main menu

🕮 **Note**

If the update fails, please verify the network setting and check if the destination update file exists.

Appendix 2 Glossary

CSA	Cross sectional area
PE	Protective earth
DHCP	Dynamic host configuration protocol