



JB-QB-5Ei 型火灾报警控制器
Fire Alarm Control Panel Users' Manual

使用说明书



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JB-QB-5Ei 型火灾报警控制器是 JB-QB-5Ei 型固定式探火和失火报警系统的控制核心，是系统的重要组成部分，这本使用说明书将引领您一步一步地了解这款机型的强大功能。

我们约定

在以下的描述中：

- ◆ 凡用【】括住的文字或图符均表示按键，如：【△】表示上翻页键，【复位】表示复位键。
- ◆ 接入控制器的每个设备都被赋予一个逻辑地址，该地址用回路号和位号表示，回路号和位号的组合唯一地确定了一个设备，如主电源的地址是 3 回路 023 号。有关设备地址的分配请参阅附录 A。
- ◆ 设备地址用 4 位十进制数字表示，左边 1 位是回路号，右边 3 位是位号，如 1023 代表 1 回路 023 号设备。

1 概述

1.1 适用范围

本控制器适用于船舶和海上设施的探火、失火报警及固定式局部水基灭火系统。

1.2 执行标准

- CCS《钢质海船入级规范》(2012)第4篇, 第1章
- MSC311(88)决议
- MSC338(91)决议
- 《电气电子产品型式认可试验指南》GD01-2006
- 《EN54: 火灾探测和火灾报警系统》
- MSC.1/Circ.1387《经修正的适用于A类机器处所的固定式局部水基灭火系统认可导则》

1.3 术语

- 1.3.1 监管信号：指控制器监视的除火灾报警、故障信号之外的其他输入信号,如水位探测、防盗探测、压力、温度、空调等信号。
- 1.3.2 火灾报警触发装置：指感烟火灾探测器（简称“烟感”）、感温火灾探测器（温感）、手动火灾报警按钮（手报）、消火栓按钮（消报）、烟温复合探测器（复合）等火灾报警触发器件。
- 1.3.3 监管信号输入装置：指信号输入模块（简称“信号”）等能采集监管信号的装置。
- 1.3.4 火灾报警控制（即联动控制）装置：包括远动控制模块（简称“模块”）、外部控制输出单元（简称“外控”）以及火灾声光警报器控制单元。
- 1.3.5 总线设备：指火灾报警触发装置、监管信号输入装置以及应用于联动控制的远动控制模块（简称“模块”）等。
- 1.3.6 启动：指火灾报警控制器向联动控制设备发出的控制信号。
- 1.3.7 反馈：指联动控制设备的反馈信号。
- 1.3.8 模拟值：指总线设备给出的代表其敏感现象值的数字编码。如感烟火灾探测器的模拟值与现场的烟浓度有关（成正比）、感温火灾探测器的模拟值与现场的温度有关（成正比）。

1.4 特点

- ✧ 中文、英文信息显示。
- ✧ 黑匣子记录功能。
- ✧ 500 个智能总线器件容量。
- ✧ 报警地址信息二次转换精确定位报警地点（中英文输入）。
- ✧ 可现场编程的火灾报警控制功能。
- ✧ 可向火灾显示盘、VDR 等发送报警信息。
- ✧ 探测器数据量化功能（无量纲）。
- ✧ 总线设备类型自动识别。

2 工作原理

火灾报警控制器的工作原理：当火场参数超过某一阈值时，火灾报警触发装置动作，发出报警信号给火灾报警控制器，火灾报警控制器确认火警信号后发出声、光报警信号，同时显示火灾发生的部位，记录火灾发生的时间，依据事先设置的程序向联动设备发出控制命令。

火灾报警控制器的原理框图如图 1。

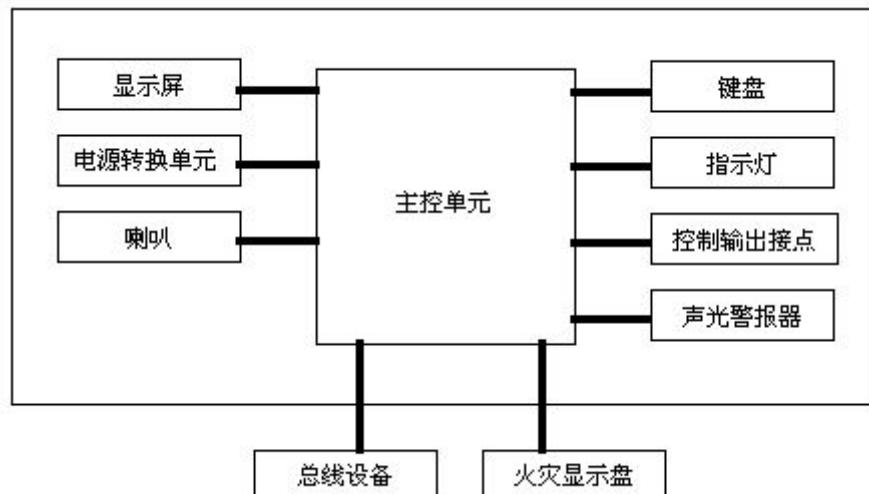


图 1 火灾报警控制器的原理框图

3 技术数据

表 1 控制器的技术数据

主电源	AC 220V (+10%~-15%) , 50HZ
副电源 (备电源)	DC 24V(±10%)
功耗	监视态: ≤3W; 报警态: ≤10W(25 个探测器同时处于火警状态)
基本监视容量	2 个回路, 每个回路 250 点;
巡检周期	≤10 秒 (情况异常时单点连续查巡)
信号传输距离	≤ 1000 米 (RVS-2 × 1.0mm ²); ≤ 1500 米 (RVS-2 × 1.5mm ²);
报警线路布线方式	二总线
报警总线之间电压	24V (18V~26V)
工作环境温度	0°C~55°C
相对湿度	≤95%
黑匣子记录数	可保存最近的 999 条火警记录、999 条其它记录(包括开、关机、复位、监管、联动及故障报警等信息)。
联动编程数	100 条 (包括或一、或二、与逻辑)。
位置转换容量	2×250 条, 每条 10 个汉字或 20 个英文字符
火警输出接点	1 火警延时输出接点 (延时时间 0-250 秒可调), 无源; 1 火警立即输出接点, 无源
故障输出接点	1 电源故障输出接点, 无源; 1 故障输出接点, 无源
最大灭火分区数(用于固定式局部水基灭火系统的控制装置)	16 个
重量	约 10kg

4 外观、尺寸

本控制器有壁挂式和嵌入式2种安装结构，结构紧凑、布局合理、外形美观。

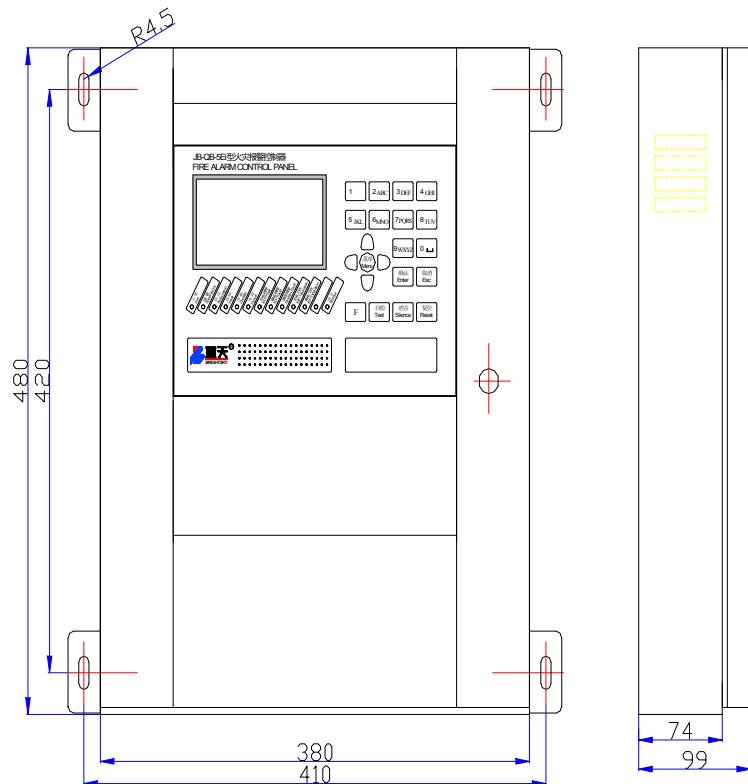


图 2 壁挂式安装尺寸图

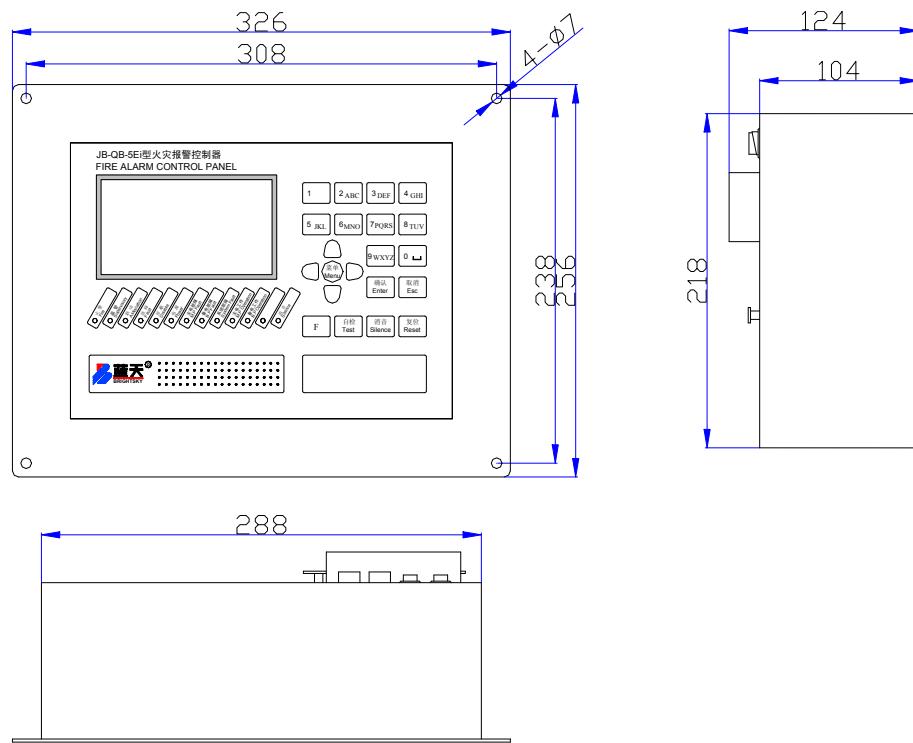


图 3 嵌入式安装尺寸图

5 安装、调试

5.1 外接线端子示意图



图 4 控制器的外接线端子示意图

说明：1) 嵌入式控制器的故障输出以及电源故障输出都只有一组常开触点，但可在“系统设置”菜单中设置输出逻辑；
 2) VDR 接口上的实际标注可能有所不同，如 VDR+ VDR-等；
 3) T1 和 T3 构成 1 回路环形回路报警总线；
 4) T2 和 T4 构成 2 回路环形回路报警总线。

5.2 安装的技术要求

- ◆ 火灾报警控制器应具有良好的接地保护，控制器内部设有接地标志。
- ◆ 火灾报警控制器应设在有专人值班的房间或场所。一般报警控制器的底边距地为 1.5 米，两边应留有大于 0.5 米的空间以便操作与维修。
- ◆ 24V 电源线采用截面不小于 2.5mm^2 的阻燃多股铜质塑料软线。传输距离小于 1500 米时信号线采用 RVS-2 $\times 1.5\text{mm}^2$ 双色多绞多股铜质塑料软线。当传输距离小于 1000 米时信号线可采用 RVS-2 $\times 1.0\text{mm}^2$ 双色多绞多股铜质塑料软线；
- ◆ 调试前施工方应按照施工图纸和各总线设备的使用说明书将总线设备安装在合适的位置并接入到报警总线。

5.3 调试步骤

5.3.1 接线

- 1) 根据施工图检查所有至本控制器的输入输出导线规格应符合设计图纸要求。
- 2) 使用 500V 兆欧表检测所有输入输出导线对地电阻应 $\geq 20\text{M}\Omega$ ，如不能达到要求应请施工人员排故障后方可进入下一步操作。

- 3) 按照“外接线端子排列图”接好导线。

5.3.2 开机

打开控制器门板，同时将主、备电源开关合上，控制器初始化后进行指示灯和音响自检，显示待机界面（图 5），电源灯闪烁，此时按下【菜单】键控制器进入调试状态，输入正确的口令（图 6）后就可以看到调试菜单（图 7）。注意，调试菜单中各项前面的序号并不表示调试的步骤或顺序。



图 5 控制器的待机界面



图 6 输入口令时的显示界面

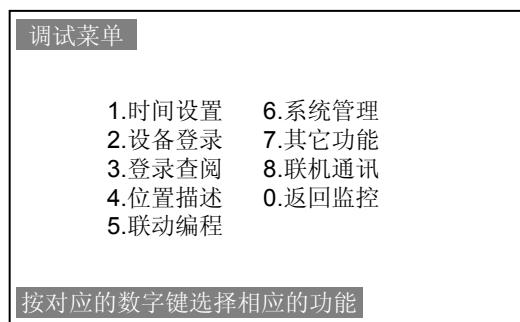


图 7 调试菜单界面

5.3.3 设置时间

在调试菜单中按【1】键设置系统的时间（图8）。注意，错误的时间不能被系统接受。



图8 设置时间的界面

5.3.4 登录设备

所有的外部设备包括探测器、外部控制输出单元所接的设备、火灾显示盘等只有首先在系统中注册才能发挥各自作用，这个注册的过程即设备登录。在调试菜单中按【2】键就可以进入到设备登录功能（图9），可以登录总线设备（图10）和其它外部设备（图11）。

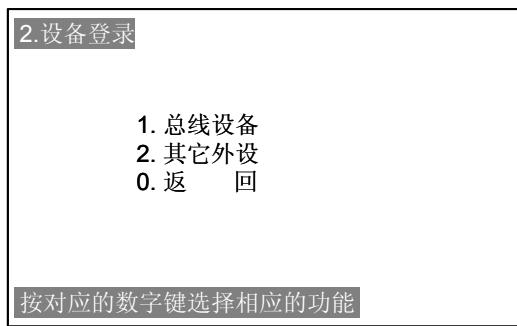


图9 设备登录菜单

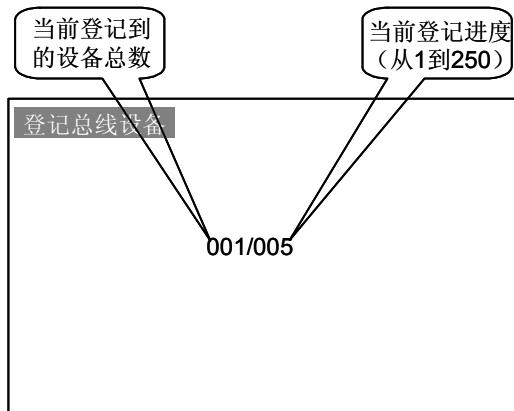


图10 登录总线设备的界面

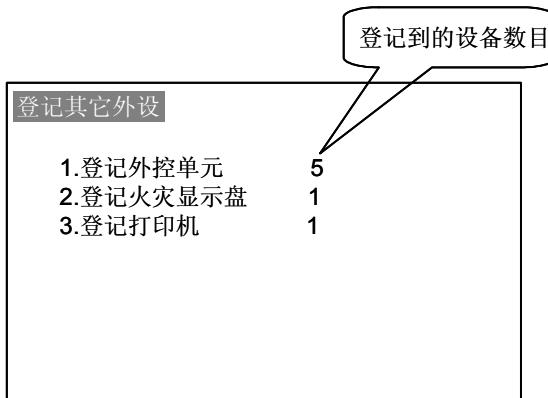


图11 登录其它外设的界面

5.3.5 查阅登录信息

查看已登录到系统的设备情况，如设备号码、登记值、位置信息、总数等。在调试菜单中按【3】键可以进入到登录查阅功能（图12）。

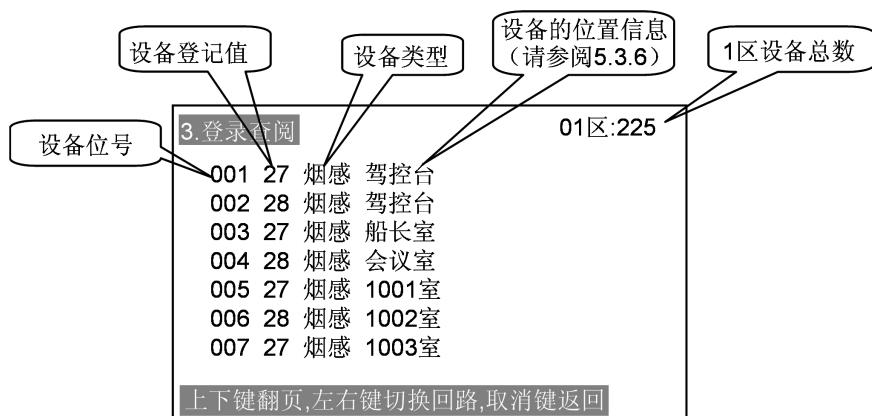


图12 查阅登录信息的界面

如果已经确定设备被接入系统，但是在“登录查阅”中却查不到该设备的号码，那么可以在“参数测试”中看一下该设备的工作状态。在调试菜单中依次按【7】→【1】键可以进入到参数测试功能（图13）。参数测试功能有两种显示方式，一种是数字显示，一种是曲线显示，按【菜单】键可以在两种显示方式之间切换。

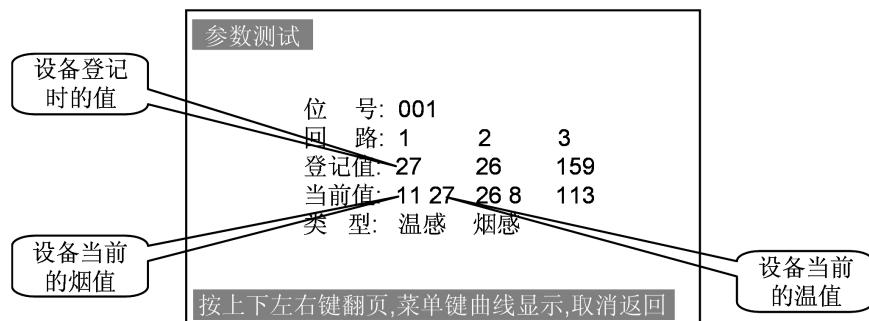


图13 参数测试的界面

每个探测器的模拟值有2个：烟值和温值（无量纲），探测器的当前值到底看烟值和温值中的哪一个，要根据探测器的实际类型来定，如果探测器的实际类型是温感，则当前值以温值为准，其它类型的设备则以烟值为准。如果探测器实际类型所对应的当前值低于12，则探测器不能被登入系统，应予以更换。

如果探测器的实际类型和显示的类型不符，则可在“类型设定”中更改探测器的类型为实际的类型。在调试菜单中依次按【7】键→【2】键可以进入到类型设定功能（图14）。注意：原来是烟感或者温感的设备，类型是不能被更改的。

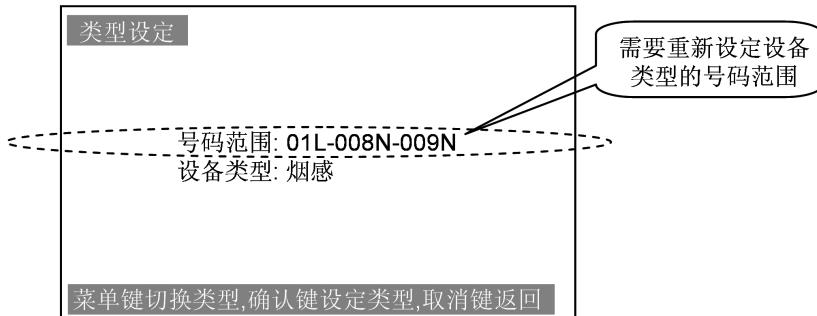


图14 类型设定的界面

5.3.6 编辑设备的位置信息

位置信息，即探测器安装的地方，这样当有报警发生时就可以精确的定位报警的地点。在调试菜单中按【4】键可以进入到位置信息编辑功能即位置描述（图15）。



图15 编辑位置信息时的界面

本功能支持中（拼音）英文及数字输入。在输入设备号码的时候，如果按【菜单】键，屏幕上“N”的后面就会出现一个“*”号，这个时候如果按【确认】键确认输入的号码时，控制器不再调出该号码原来的位置信息，而是以当前“位置”处的信息做为该号码的位置信息，这其实是一个简单的位置信息复制功能，把上一个位置信息复制到这个号码上，以简化对安装在同一个地方的设备的位置信息的编辑功能。

5.3.7 联动编程

联动编程用来设置当控制器接收到火灾报警信号后，如果处于自动状态，则应该如何执行火灾报警控制功能，即：在何种火灾报警信号下控制哪些消防联动设备。在调试菜单中按【5】键进入联动编程功能（图16），系统支持3种逻辑关系：“与”逻辑、“或一”逻辑、“或二”逻辑）。

“与”逻辑表示：设置在条件1范围内的任意一个设备报警，并且设置在条件2范围内的设备也有一个报警，那么就对设置在动作范围内的联动设备发出控制信号。

“或一”逻辑表示：设置在条件1范围内的任意一个设备报警或者设置在条件2范围内的任意一个设备报警就对设置在动作范围内的联动设备发出控制信号。

“或二”逻辑表示：设置在条件1范围内的任意两个设备报警或者设置在条件2范围内的任意两个设备报警就对设置在动作范围内的联动设备发出控制信号。

设置所需的联动编程数据后必须将下一页的第一个数据项设置为0，如设置了5条（每页1条，从第0页开始）编程数据，那么就要将第5页的第一个数据项（条件1的回路）设置为0。



图16 联动编程界面

5.3.8 其它参数设定

记录选择 本控制器可以记录（到黑匣子）的报警类型有火警、监管、启动、反馈、故障、事件，除火警外，其它类型都是可选项，即可以选择记录，也可以选择不记录。在调试菜单中依次按【7】键→【3】键可以进入到记录选择功能（图17）。每一项都有“是的”和“不必”两种选择，用户可以根据需要进行设置。

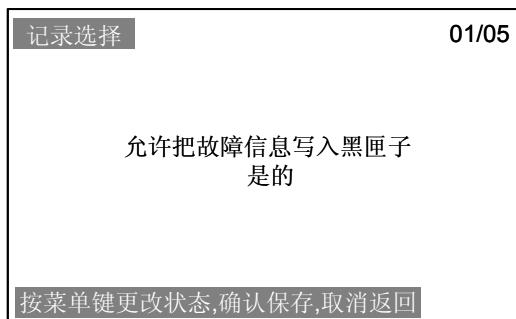


图17 记录选择功能的界面

系统管理 在调试菜单中按【6】键进入系统管理功能（图18），系统管理中有以下几个重要的运行参数：

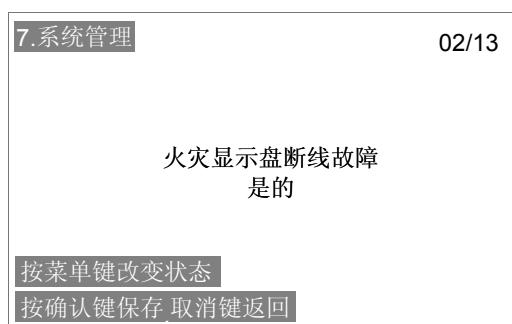


图18 系统管理功能界面

- 1) 火灾显示盘断线故障：是否允许巡检火灾显示盘，如果是，当与火灾显示盘的通讯发生故障就控制器就要报出。
- 2) 本机号码：用来设置控制器的号码。
- 3) 仅自动状态下链接启动：如果是，控制器只有处在自动状态时，才能自动启动。
- 4) 给VDR发报警信息：是否给VDR发送报警信息。
- 5) 本机容量：本机型的最大容量是可带500点总线器件，但出于用户需求的考虑，可能会以低于这个限制的容量的发行，这个容量就是本机容量，是在出厂时设置的，这里只能看看，不能改。
- 6) 空闲时关闭LCD背光：如果选择“是的”，控制器将在无任何报警（主、备电故障除外）的情况下，关闭LCD的背光，当系统仅靠备电运行时可以减少系统的功耗，延长备电使用时间。
- 7) 系统语言：中文或者英文。
- 8) 火警延时输出：0~250秒可调。
- 9) 监管自动取消：如果选择“是的”，则当监管信号撤销时，监管报警自动取消。
- 10) 故障输出常闭：如果选择“是的”，则正常状态下故障输出接点常闭，当发生故障报警或者控制器断电时故障输出接点变成常开。
- 11) 电源故障输出常闭：如果选择“是的”，则正常状态下电源故障输出接点常闭，当发生电源故障或者控制器断电时电源故障输出接点变成常开。
- 12) 灭火分区同时启动总数：当用作固定式局部水基灭火系统的控制功能时允许同时启动的灭火分区总数。
- 13) 接地故障等级：用于调整控制器的内部线路与地之间绝缘电阻过低报警的报警等级，10级为最低，1级最高，当设为0级时，不检测接地故障。

工作间屏蔽 如果设置在“信号源”中的设备发生监管报警，则“屏蔽范围”内的设备将被屏蔽，当对应的监管报警消失后，屏蔽自动解除。在调试菜单中依次按【7】键→【4】键可进入工作间屏蔽功能。工作间屏蔽功能的设置方法和联动编程的设置方法类似。如图19所示。只有信号输入模块可以做为信号源。

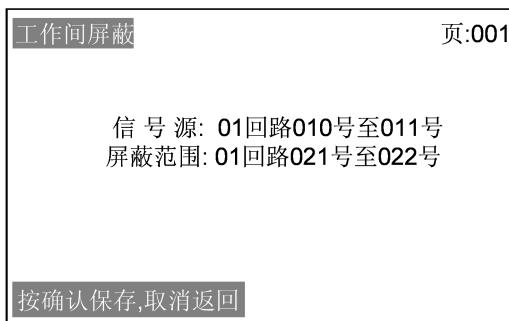


图19 工作间屏蔽功能界面

现场控制盒设定 本控制器具有固定式局部水基灭火系统的控制功能，当灭火分区发生火警时可以自动或者手动启动灭火分区的电磁阀以及泵。调试菜单中的现场控制盒设定功能（在调试菜单中依次按【7】键→【5】键）即是设置灭火分区的启动条件和对象，如图20所示。

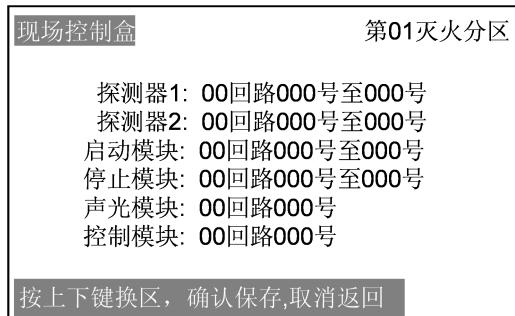


图20 现场控制盒设定

当控制器处于自动状态时，设置在“探测器1”范围内的任意一个探测器和设置在“探测器2”范围内的任意一个探测器同时报警，则控制器启动声光模块和控制模块，声光模块一般指灭火区内的声光警报器，控制模块一般用来控制本灭火区的电磁阀以及

泵。启动模块是现场控制盒上的启动按钮地址，停止模块是现场控制盒上的停止按钮地址。

无论控制器处于自动还是手动状态，按下启动按钮总能启动声光模块和控制模块，按下停止按钮总能关闭声光模块，但是泵的关闭要全部灭火区的电磁阀关闭后才能关闭。

系统允许同时启动1个以上的灭火区，这个可以在系统管理菜单中设定。系统最大可以设置16个灭火分区，也允许同时最多启动16个分区，如果需要启动的分区数大于允许启动的分区数，则采用“先进先出”的原则，最先启动的灭火区将被关闭，然后再启动新的灭火区。

现场控制盒的设定方法和联动编程的设置方法类似，如果“探测器1”的回路被设置为0，则本区以及后面灭火区的设置数据将不能被保存。

设置完各种参数后返回到待机界面，系统将转入正常监控状态。

6 使用、操作

6.1 信息显示与查询

本控制器具有火灾报警、监管报警、火灾报警控制（联动控制）、故障报警、屏蔽等功能，当控制器处于这些状态时 LCD 屏幕上会有相应的显示以表明各种状态的具体信息。

如图 21 为火警信息显示界面。



图 21 火警信息显示界面

图 20 中，火警总数为 2 个，首火警报警的号码为 1004，类型为烟感，报警时间为 9 时 21 分，报警地点为会议室。首火警显示的位置是固定的，即在火警页面无论如何翻页，首火警都显示在这个位置。

在信息显示界面，按上下光标键可以选中某条信息，被选中的信息将反色显示（如上图中的第 2 条火警），此时按确认键将确认本条信息。如果信息被确认过，则当信息被选中时，对应的报警指示灯将常亮；如果信息没有被确认，则当信息被选中时，对应的报警指示灯闪亮。注意，隔离信息无需确认，因此有隔离信息时隔离指示灯都将常亮。

“故障>>”表示当前除了有火警外，还有故障报警存在，按右箭头键可以翻到故障界面，查看相应的故障信息。

6.2 火灾报警

在正常监视状态下控制器巡检已登记的每个探测器，密切监视每个探测器的当前烟浓度或温度数值，并将这个参数根据算法进行运算、识别，若符合火警建立条件，则立即进入火灾报警状态。此时控制器将执行如下动作：

- 1) 发出火警的声音，点亮面板上的火警指示灯。
- 2) 在显示屏上显示出当前火警的详细信息，更新火警总数等。
- 3) 控制器的火警立即输出接点动作。
- 4) 如果联动处于自动状态，则控制器根据事先编制的逻辑关系给联动设备发出控制信号。
- 5) 向黑匣子写入报警记录。
- 6) 向火灾显示盘、VDR 发出火警信息（如果允许发送）。
- 7) 火警延时输出接点开始延时，延时结束后，输出接点动作。**注意，如果延时中按下消音键，则延时中断，输出接点动作。**

控制器的火警状态仅能通过手动复位操作消除。在火警状态下，如果 30 秒内无操作，则自动返回到最新的火警页面。

6.3 监管报警

监管信号是指接入控制器的输入信号，但这些信号不是火灾报警系统内部应具有的信号。如水位探测、防盗探测、压力、温度、空调等其它各类信号。当控制器接收到这些输入信号时，将进入监管报警状态。此时控制器将执行如下动作：

- 1) 发出监管报警声，点亮面板上的监管指示灯。
- 2) 在显示屏上显示出当前监管的详细信息，更新监管总数等。
- 3) 如果联动处于自动状态，则控制器根据事先编制的逻辑关系给联动设备发出控制信号。
- 4) 向黑匣子写入报警记录（如果允许写入）。
- 5) 向火灾显示盘、VDR发出监管信息（如果允许发送）。

如果把“系统管理>>监管报警自动恢复”设为“是的”，则当监管信号消失后监管报警自动取消，否则监管报警状态只能通过手动复位操作消除。

6.4 火灾报警控制（即联动控制）

当火灾声光警报器或其它的消防联动设备启动后，控制器将执行如下动作：

- 1) 发出联动声音，点亮面板上的联动指示灯。
- 2) 在显示屏上显示出当前联动的详细信息，更新联动总数、启动总数以及反馈总数等。
- 3) 当接收到启动设备的反馈信号后根据事先编制的逻辑关系给联动设备发出控制信号，即链接启动（手动状态下是否可以链接启动要看“系统管理”中的“仅自动状态下链接启动”的设置）。
- 4) 向黑匣子写入联动记录（如果允许写入）。
- 5) 向火灾显示盘、VDR发出联动信息（如果允许发送）。

6.5 故障报警

当有下述情况发生时控制器发出故障报警信号：

- 1) 控制器与探测器的联机断路、短路，探测器与底座间连接断路以及探测器本身损坏等造成的控制器对探测器之间的监视异常。
- 2) 控制器与火灾显示盘之间连接线的断路、短路等造成的通讯异常。
- 3) 控制器与火灾声光警报器或消防联动设备间连接线的断路、短路等造成的监视异常。
- 4) 主电源（即交流220V电源）电压低于187V（包括断电）。
- 5) 备电源断电或内部24V输出低于21. 6V。

对于上述 1)、2)、3) 项故障控制器将执行如下动作：

- 1) 发出故障告警声音，点亮面板上的故障指示灯。
- 2) 在显示屏上显示出当前故障的详细信息，更新故障总数等。
- 3) 向黑匣子写入故障记录（如果允许写入）。
- 4) 向火灾显示盘、VDR发出故障信息（如果允许发送）。
- 5) 故障输出接点动作。

对于上述 4)、5) 项故障控制器将执行如下动作:

- 1) 发出故障声, 点亮对应的主、备电故障指示灯。
- 2) 在显示屏上显示电源故障的信息, 更新故障总数等。
- 3) 故障输出接点及电源故障输出接点动作。
- 4) 向黑匣子写入故障记录(如果允许写入)。
- 5) 向火灾显示盘、VDR发出联动信息(如果允许发送)。

* 所有故障信号在故障排除后, 可以手动或自动复位。

6.6 屏蔽功能

屏蔽是指在工程调试、临时改变某一环境的使用用途或在正常使用过程中有部件异常时, 需要将某个或多个外部设备通过控制器本身操作暂时关闭其功能的情况。在“屏蔽设置”中可以对设备进行屏蔽或解除屏蔽操作。监视状态下, 按【菜单】键显示屏提示输入口令“833115”(图22), 口令正确后进入功能菜单(图23), 功能菜单中有屏蔽设置(图24)、历史记录和时间设置3个功能项, 按【1】就可进入屏蔽设置功能。



图22 进入功能菜单的口令验证界面

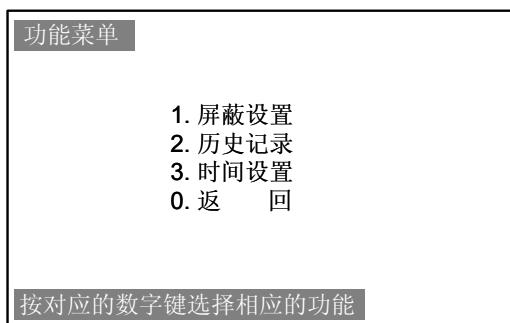


图23 功能菜单界面



图24 屏蔽设置功能界面

控制器可以屏蔽的设备有：总线设备、报警总线、控制输出接点、火灾声光警报器等。当有设备被屏蔽时，控制器面板上的屏蔽指示灯点亮，屏蔽信息被显示在屏蔽页面中（最新的屏蔽信息总是被显示在最前面）。

6.7 历史记录

历史记录即黑匣子记录，控制器可以记录最近的999条火警及999条其它相关信息，且在控制器断电后能保持数十年之久，用户可以根据这些记录来判断控制器、探测器及其它外部设备的工作状况。控制器可以记录的信息类型有：火警、监管、联动（包括启动和反馈）、故障、事件（如开机、关机）等。除火警记录必须记录外，其它类型的记录可以选择是否记录，具体参见“记录选择”功能。在功能菜单中按【2】就可进入历史记录查阅功能，界面如图25、图26。

历史记录>>火警		总数:003
001:火警 1006		2006/10/17 11:38
002:火警 1005		2006/10/17 11:26
003:火警 1004		2006/10/17 11:23
上下键翻页,左右键切换类型,取消返回		

图25 火警历史记录查阅界面

历史记录>>其它		总数:006
001: 监管 1022		2006/10/17 10:59
002: 事件 复位		2006/10/17 10:36
003: 启动 1057		2006/10/17 10:33
004: 故障 1112		2006/10/17 10:33
005: 故障 1112		2006/10/17 10:19
006: 事件 开机		2006/10/17 10:00
上下键翻页,左右键切换类型,取消返回		

图26 其它历史记录查阅界面

6.8 声音

控制器可以发出3种不同的声音以区别不同的报警状态，当有火警发生或有火灾报警控制信号输出时控制器发出救火车的声音，当有故障报警时控制器发出救护车的声音，当有监管报警时控制器发出警车的声音。

当有新的报警信息到达时控制器是否发出对应的报警声还取决于控制器当时的状态，控制器的报警状态按火灾报警、监管报警、火灾报警控制、故障报警顺序由高到低排列，如果控制器正在发高等级的报警声音，则低等级的报警信息到达时就不发该等级对应的声音，如果控制器处于无声状态，则来什么报警就发什么报警声音。

报警声音可以按【消音】键手动消除，此时面板上的消音指示灯亮。如果控制器处于发声状态或无报警的监视状态，则面板上的消音指示灯灭掉。

6.9 复位

当有火警、监管、火灾报警控制及故障信息存在时，在信息界面或待机界面按【复位】键能手动消除这些信息，但如果这些报警信号依然存在，控制器又会很快的重新建立这些信息。屏蔽信息只能通过解除屏蔽的操作进行，无法复位清除。系统复位时的界面如图27。



图27 系统复位时的界面

6.10 自检功能

在信息界面或待机界面按【自检】键就可以对控制器的显示屏、面板上的指示灯以及音响进行检查，检查完后自动返回巡检状态。系统自检时的界面如图28。



图28 系统自检时的界面

6.11 手动/自动切换

在自动状态下，当发生火警后，控制器会根据联动编程中设置的逻辑关系发出联动设备的控制信号，手动状态下则无此动作。在信息界面或待机界面按【F】键，输入正确的口令“833115”，根据选项就可就可进行自动/手动状态的切换。控制器处于自动状态时面板上的自动/手动指示灯常亮(即消音灯旁边的指示灯)，处于手动状态时该灯灭掉。

在待机界面，自动/手动状态会显示在日期时间的前面。在报警状态，自动/手动状态会显示在屏幕最底一行。

6.12 锁键/解锁

在信息界面或待机界面按【F】键，输入正确的口令“833115”，根据选项就可进行锁键/解锁状态的切换。处于锁键状态时只能消音和查看信息，不能进行其它操作。

在待机界面，锁键状态会显示在日期时间的前面。在报警状态，锁键状态会显示在屏幕最底一行。

7 故障分析与排除

表2 故障及排除方法

故障现象	原因分析	排除方法	备注
开机不自检，控制器无任何反应	主、备电源是否正常	检查主、备电是否正常	
开机自检时灯闪烁较慢，声音无力	程序片没有插紧	重新插好芯片	
开机后液晶屏显示乱码	字库片或程序片已坏或没有插紧	更换或重新插好芯片	
开机后控制器灯及音响自检正常但液晶屏无背光及显示	液晶屏对比度太小，所以看不出显示内容	调节主板上的对比度电位器	
开机时屏幕左上角显示“校验和错误！”	1. 控制器主、备电电压低； 2. 存储数据的芯片损坏。	关电后重新开机，如果仍不能解决请与厂家联系。	
开机时屏幕左上角显示“主备电电压低！”	主、备电电压太低，系统无法正常运行。	检查220V主电是否正常。	
个别探测器报故障	1. 探测器与控制器之间连接短路或断路； 2. 探测器脱落； 3. 探测器损坏；	1. 检查该探测器底座上的24V是否正常； 2. 如果线路正常且底座上的电压正常请更换探测器。	
某条支路上的探测器报故障	1. 该支路线路与主线路之间的联机短路或断路； 2. 支路上的某个探测器故障导致隔离器动作	1. 检查该支路上电压是否正常； 2. 检查支路上的隔离器是否动作。如果动作，可确定为隔离器后面线路上的某个探测器有故障，重新开机进入“参数测试”功能查看该支上探测器的工作状态，以便找出有问题的探测器。	
探测器检测区内没有火灾或烟雾等导致报警的诱因但探测器却报火警	探测器里落入灰尘或损坏。	更换探测器	
主电源故障灯亮	主电电压低于187V	检查主电源供电是否正常	

8 保养、维修

火灾报警控制器属消防专用设备，其操作人员必须经过本公司的专门培训，合格后方能上岗。平时应有专人值班、管理及保养，定期检查其功能的正常与否，并随时做好值班记录，当出现故障时应及时处理，如果不能自行解决应请专业人员或通知厂家修理。

9 开箱及检查

开箱后检查控制器外观是否完好，控制器型号是否与包装箱上的一致。

包装箱内物品清单：

- 1) 控制器一台；
- 2) 使用说明书一份；
- 3) 合格证一份；
- 4) 钥匙一把（2个）；
- 5) 保险丝（2A、0.5A、0.75A各3个）。

10 其它

10.1 服务承诺

凡我公司提供的产品，均由我公司及我公司在各地的维修服务部为用户提供相关技术数据及技术支持，为用户承担系统的开通调试和投入使用后的维修服务工作。我公司将建立专门的用户档案，用计算机管理并作质量跟踪，诚挚的为用户服务。

10.2 质量保证

设备的保修期为 12 个月，在保修期内，如因我公司产品质量问题而发生故障或损坏，我公司负责免费修理或更换。

10.3 联系方式

工程技术服务：+86-510-83302969

传真：+86-510-83315517

附录 A 设备地址分配表

回路	位号	设备或描述
1	1~250	对应1回路报警总线上的设备，位号与总线设备的编码对应
2	1~250	对应2回路报警总线上的设备，位号与总线设备的编码对应
3	1~6	外控1~6
3	7	灭火控制器1
3	8	灭火控制器2
3	9	灭火控制器3
3	10	灭火控制器4
3	11	声光警报器
3	12	总线短路1
3	13	总线断路1
3	14	总线故障1
3	15	总线短路2
3	16	总线断路2
3	17	总线故障2
3	18	火灾显示盘1
3	19	火灾显示盘2
3	20	火灾显示盘3
3	21	火灾显示盘4
3	22	火灾显示盘5
3	23	主电源
3	24	备电源
3	25	开机
3	26	关机
3	27	锁键
3	28	解锁
3	29	复位
3	30	自动
3	31	手动
3	32	自检
3	33	系统故障
3	34	设置模式
3	35	运行模式
3	36	总线1
3	37	总线2
3	38	打印机
3	39	灭火控制器
3	40	Loop 1 T+ 断路
3	41	Loop 1 T- 断路
3	42	Loop 2 T+ 断路
3	43	Loop 2 T- 断路
3	44	接地故障
3	45	电池故障
3	46	充电器故障

附录 B VDR 通讯协议

输出信号：RS485

接线端子：VDR+、VDR-

通讯参数：9600, n, 8, 1

传输方式：ASCII

传输方向：从控制器到 VDR，单向，报警时即时发送 2 遍

信息格式：

帧头	分隔符	报警类型	分隔符	回路号	设备号	结束符
\$FACTL	,	2 字节	,	1 字节	3 字节	<CR><LF>

说明：

1) 报警类型 2 字节，定义如下

报警类型	定义
01	火警
02	监管
03	联动
04	故障
06	监管恢复
07	联动恢复
08	故障恢复
09	启动
10	启动恢复
11	反馈
12	反馈恢复
13	屏蔽
14	取消屏蔽
98	复位
99	开机
00	联络信号

2) 当报警类型为 00, 98, 99 时，设备号、回路号及回路号前的分隔符 “,” 被省略。

3) 在 2 分钟以内系统会发一次联络信号。

举例：

1	当 1 回路 2 号设备发生火警时发送	\$FACTL, 01, 1001<CR><LF>
2	当 1 回路 250 号设备发生故障时发送	\$FACTL, 04, 1250<CR><LF>
3	当 1 回路 250 号设备故障恢复时发送	\$FACTL, 08, 1250<CR><LF>
4	联络信号	\$FACTL, 00<CR><LF>



JB-QB-5Ei Fire Alarm Control Panel
JB-QB-5Ei 型火灾报警控制器使用说明书

Users' Manual



JB-QB-5Ei fire alarm control panel is the most important in the JB-QB-5Ei fixed fire detection and fire alarm system, it controls all the system. This operation manual will lead you to understand the fire alarm control panel super functions step by step.

Our Stipulations

In below descriptions:

- ❖ Words or chart symbol included in 【】express press key, for example: 【△】expresses upturn page key, 【Reset】expresses reset key.
- ❖ Each device connected into fire alarm control panel has one logic address. This address is expressed by zone number and position number. The combination of zone number and position number has uniquely confirmed one device. For example, fire audible and visible sounder address is No.011 of No.3 zone. Main power supply address is No.023 of No.3 zone. Here, there is no inevitable relation between “zone”, “alarm zone” and “detection zone”. That is: they are not same concept. In addition, the devices in loop 1 alarm bus have been assigned to No.1 zone. The devices in loop 2 alarm bus have been assigned to No.2 zone. So in this system, “zone” and “loop” are same concept. Relevant device address assignment is referred to Annex A.
- ❖ Device address is expressed by 4 bits decimal base digits. Left 1 digit is zone (loop) number. Right side 3 digits is position number, for example, 1023 expresses the device of No.023 of No.1 zone.

1 General

1.1 Scope

The fire alarm control panel can be used for fixed fire detection & alarm and fixed water-based local application fire-fighting in ship and offshore installations.

1.2 Standards

- Chapter 3,Part Four of CCS Rules for the Classification of Sea-going Steel Ships 2012
- MSC.311(88), AMENDMENTS TO THE INTERNATIONAL CODE FOR FIRE SAFETY SYSTEMS(FSS CODE),CHAPTER 9
- MSC.339(91), ADOPTION OF AMENDMENTS TO THE INTERNATIONAL CODE FOR FIRE SAFETY SYSTEMS (FSS CODE), CHAPTER 9
- 《Guidelines for Type Approval Test of Electric and Electronic Products》 GD01-2006
- 《EN54: fire detection and fire alarm systems》
- MSC.1/Circ.1387 REVISED GUIDELINES FOR THE APPROVAL OF FIXED WATER-BASED LOCAL APPLICATION FIRE-FIGHTING SYSTEMS FOR USE IN CATEGORY A MACHINERY SPACES

1.3 Definitions

1.3.1 Supervisory signal: control panel monitored other input signal excluding fire alarm and fault signal, such as, water level detection, intrusion detection, pressure, temperature, air conditioner and so on.

1.3.2 Fire alarm trigger device: smoke detector, heat detector, manual call point, hydrant call point, smoke and heat complex detector, and so on.

1.3.3 Supervisory signal input device: signal input module device which can acquire supervising signal.

1.3.4 Fire alarm control (associated control) device: includes input/output module, external control output unit and audible and visible sounder control unit.

1.3.5 Bus device: fire alarm trigger device, supervise signal input device and remote control module for associated control application.

1.3.6 Start: fire alarm control panel sends out control signal to associated controlled device.

1.3.7 Response: feedback signal from associated control device

1.3.8 Analog value: digital code sent from bus device which express sensitive phenomenon value.

For example, smoke detector analog value has relation with site smoke density (direct ratio), heat detector analog value has relation with site temperature (direct ratio).

1.4 Characteristics

- ✧ Chinese and English information display.
- ✧ Black box record function.
- ✧ 500 units intelligent bus device capacity
- ✧ Alarm address information 2nd conversion-accurately positioning alarm address (Chinese and English input)
- ✧ Site programmable fire alarm control function
- ✧ Be able to send alarm information to fire alarm repeater and VDR
- ✧ Detector data quantification function
- ✧ Bus device type automatic recognition

2 Principle of operation

Fire alarm control panel operation principle: when fire parameter exceeds one threshold value, fire alarm trigger device will be activated and send out alarm signal to fire alarm control panel. After fire alarm control panel confirms fire alarm signal, it will send out audible and visible alarm signal. It will display fire alarm position simultaneously and record fire alarm time. Based on pre-set program, it will send out control command to associated operation devices. Fire alarm control panel operation principle diagram is show in Fig.1.

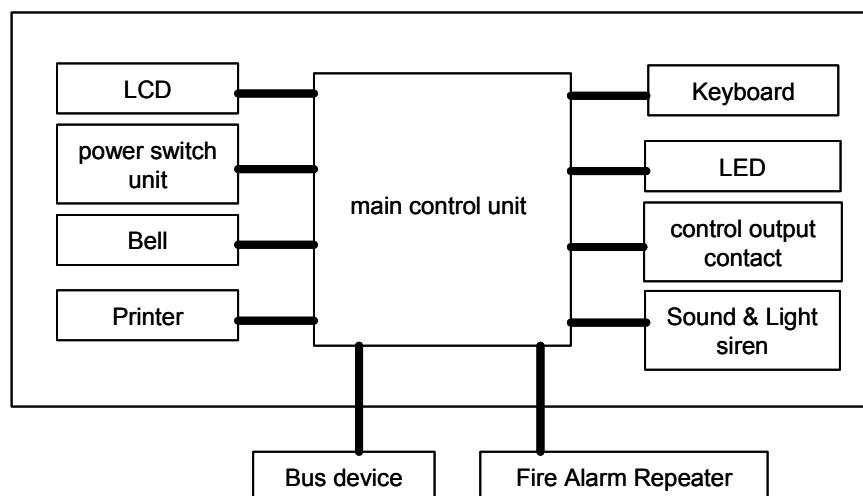


Figure 1 Fire alarm control panel schematic diagram

3 Technical parameters

Table 1 fire alarm control panel technical parameters

Main power supply	AC 220V (+10%~-15%) , 50HZ
Back-up power supply	DC 24V($\pm 10\%$)
work consumption	Supervising status: $\leq 3W$; alarm status: $\leq 10W$ (all 25 units fire detectors are in fire alarm status)
Basic supervise capacity	2 loops, 250 addressable points per loop;
Polling cycle	≤ 10 seconds (single point continuous detecting in abnormal situation)
Signal transmission distance	≤ 1000 m (RVS-2×1.0mm ²); ≤ 1500 m (RVS-2×1.5mm ²);
Alarm line wiring method	2-wire bus
Voltage in alarm bus	24V (18V~26V)
Operation temperature	0°C~55°C
Relative humidity	$\leq 95\%$
Black box record number	Be able to keep latest 999 fire messages records, 999 other messages including Power on machine, Power off machine, reset, fire alarm, supervising, associated operation and fault alarm).
Associated logic programmable number	100 , including OR1, OR2 & AND logic.
Location conversion capacity	2×250, each can have 10 Chinese Words or 20 English characters.
Fire alarm output	1 set, dry contact, activated after fire delay(delay time can be adjust between 0 and 250 second) 1 set, dry contact, activated after fire alarm
Fault output	1 set, dry contact, activated if power fault occur 1 set, dry contact, activated if fault occur
Max. fire fighting zones(used in the fixed water-base local application fire fighting system)	16
Weight	10kg

4 External appearance、size

This control panel has two types: wall type and flush mounting type.

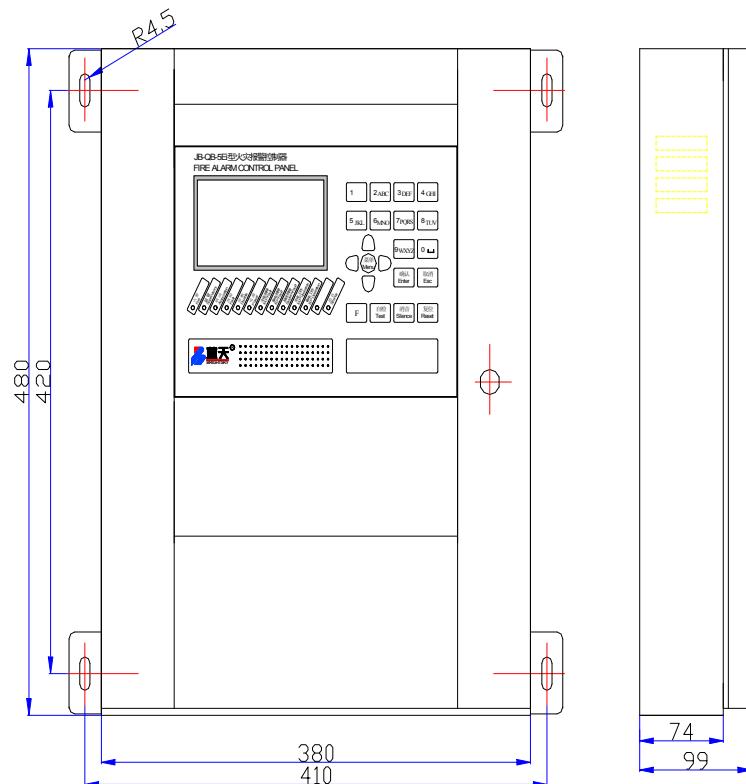


Figure 2 wall type installation dimensions

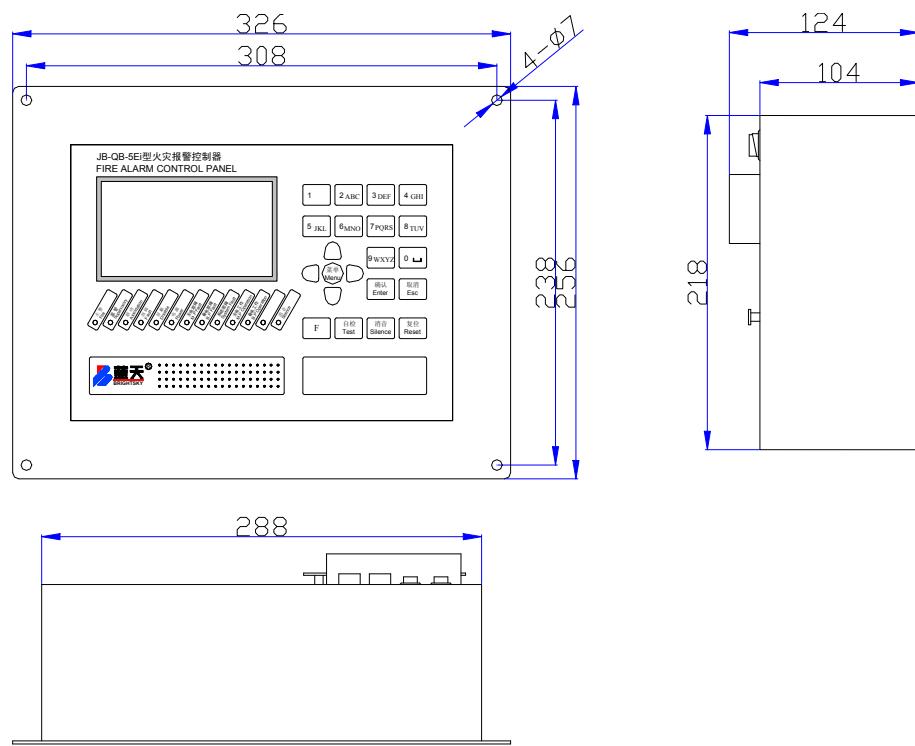


Figure 3 flush mounting type installation dimensions

5 Installation, debugging

5.1 External wiring terminal layout diagram

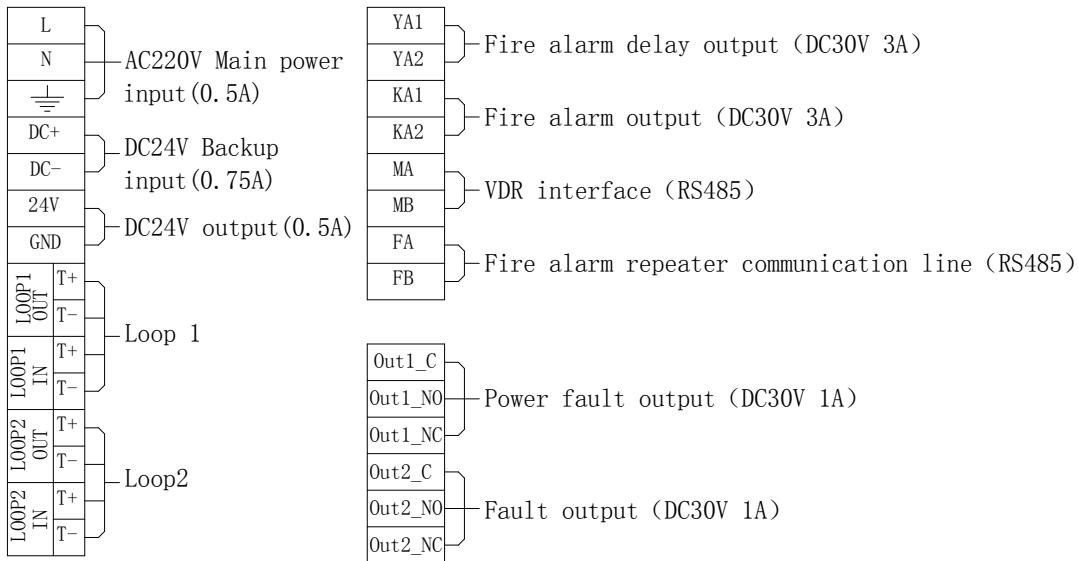


Figure 4 fire alarm control panel external wiring terminal layout diagram

Note:

- 1) only open dry contacts for fault output and power fault output in flushing mounting type control panel, their output logic can be set in system setting menu;
- 2) the VDR interface output real marks may be different, for example: VDR+,VDR-

5.2 Installation Technical Requirement

- ❖ Fire alarm control panel should be in good earth protection. There is earth symbol inside the panel.
- ❖ Fire alarm control panel should be installed in the room or location where there is person in charge. The distance from the panel bottom side to the floor should be 1.5 meters. Both sides should have more than 0.5 meters space to make operation and maintenance as easy as possible.
- ❖ 24V power supply line adopts fire resistant multi-core plastic flexible cable whose size is no less than 2.5mm². When the transmit distance is less than 1000 meters, the signal line can be RVS-2×1.0mm² twin-color twisted multi-core plastic flexible wire. When the transmit distance is less than 1500 meters, the signal line can be RVS-2×1.5mm² twin-color twisted multi-core plastic flexible wire.
- ❖ Before debugging, construction side should install bus devices into proper positions and connect them into alarm bus based on construction blueprint and various bus device operation manuals.

5.3 the steps in debugging

5.3.1 Wiring

- 1) Based on construction blueprint, check and make sure that all input output lead lines specifications which are connected to this panel will meet design drawing requirement.
- 2) Use 500V mega-meter to check all input output terminal wires, whose earth resistor value should be equal or great than 20MΩ. If the terminal wires cannot meet this requirement, please solve this problem , then start next step.
- 3) Connect the wire to the terminals based on “external wiring terminal layout diagram”.

5.3.2 Power on machine

Open fire alarm control panel front door, simultaneously power on main power supply and back-up power supply switch. The fire alarm control panel is initialized, indicator LEDs and sounders will be in self-testing and in normal operating mode showed in Figure 5. The power supply LED flashes. At this time, press the 【menu】key and control panel enters debugging status. Input the correct password (Figure 6) and the control panel will be in debugging menu (Figure 7). Attention! The number in the debugging menu can't mean debugging steps or sequence.

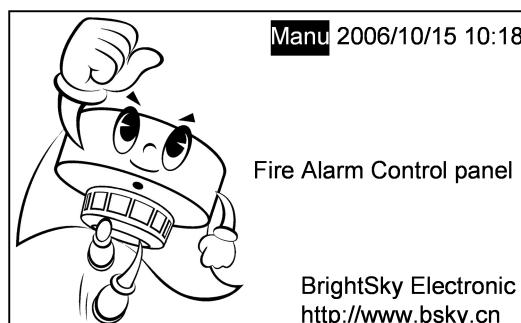


Figure 5 FACP normal operating mode

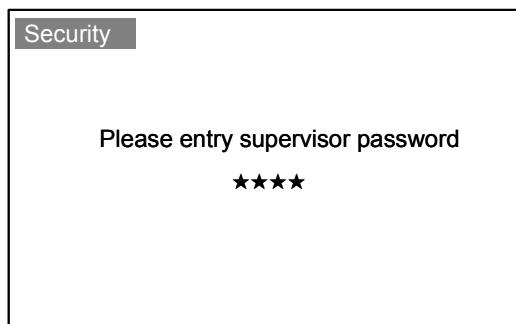
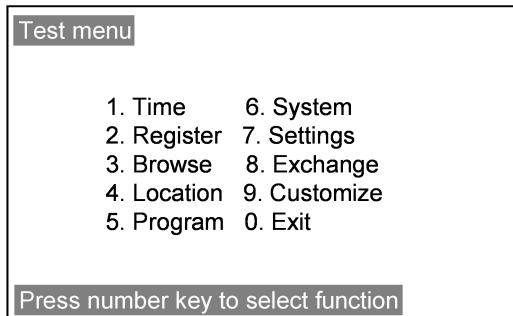
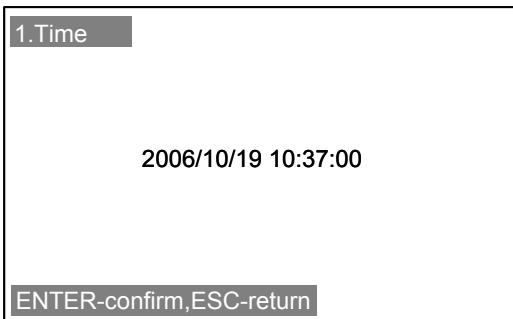


Figure 6 input password

**Figure 7 debugging menu**

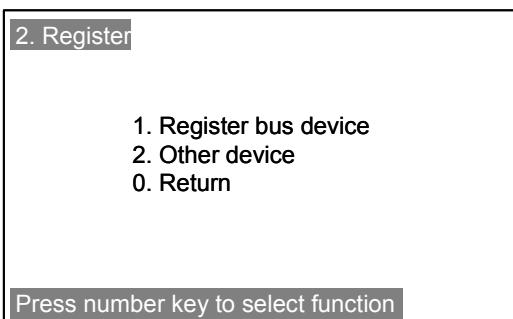
5.3.3 Setup time

In the debugging menu, press the **【4】** key to set system time (Figure 8). Attention! wrong time will not be accepted by the system.

**Figure 8 Time setup**

5.3.4 Register device

First, all external devices, which include detectors, input/output module and fire alarm repeater, should be registered in the system before they can be used. This register process is device registering. In debugging menu, press **【2】** key to enter device register function (Figure 9), is able to register bus device (Figure 10) and other external devices (Figure 11).

**Figure 9 Device Registering Menu**

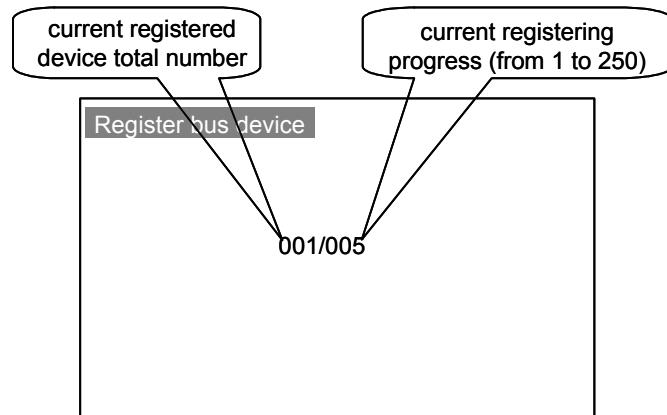


Figure 10 Register bus device display

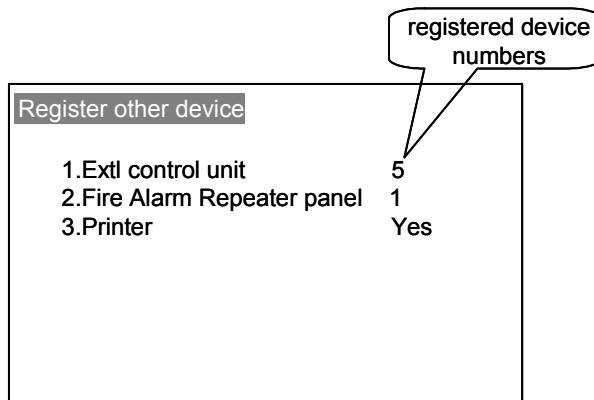


Figure 11 Register other external device display

5.3.5 Browse registered information

Browse system registered device state, such as device number, register value, position information, total numbers and so on. In debugging menu, press **【3】** key to enter register browse function (Figure 12).

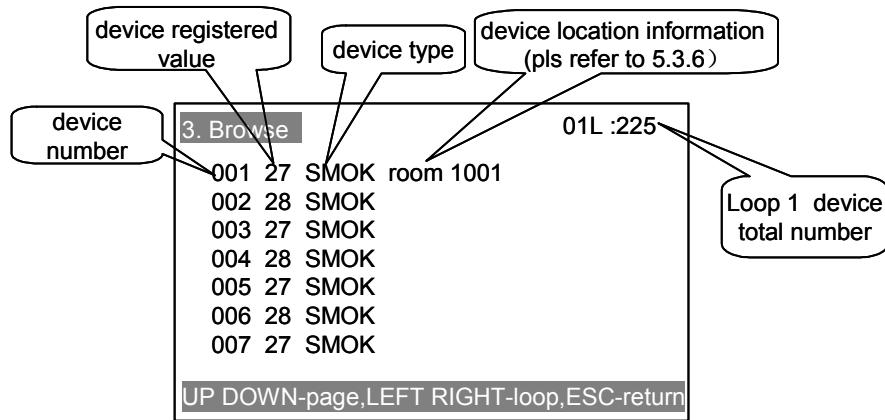


Figure 12 Browse registered information display

If the device has confirmed to be connected into the system, but in “register browse”, the operator cannot find this device number. The operator can check this device operation status in “parameter test”. In debugging menu press **【7】->【1】** key to enter parameter test function (Figure

13). There are two display methods for parameter test function. One is digital value display. Another is curve display. Push 【menu】 key to be able to make conversion between these two display methods.

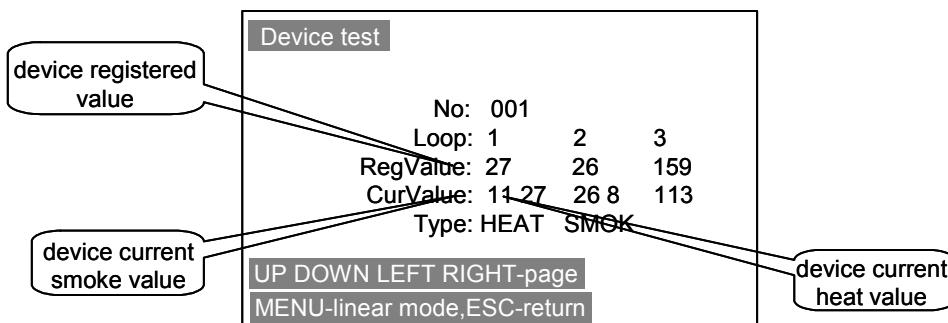


Figure 13 Device test interface

Each detector have 2 analogue values : smoke value and heat value. According to the detector type, we can know whether current value is smoke value or heat value. If the detector type is heat detector type, the current value is referred to the heat value. Other type devices are referred to smoke value. If the detector current value is lower than 12, the detector will be not registered into the system. It should be replaced.

If detector current type is not the same with the displayed type, the operator can change the detector type the current type in “type settings” menu. In debugging menu, push 【7】 key->【2】 key to enter type setting function (Figure 14).Attention: the smoke or heat detector’s type can be changed to other type.

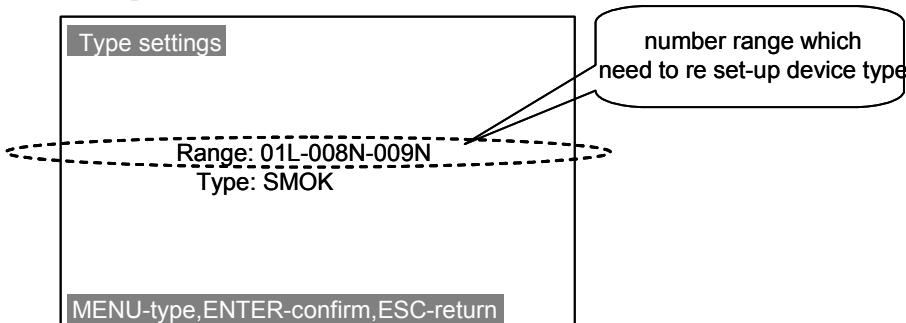


Figure 14 type setting

5.3.6 Edit device position information

Position information is the detector installation position. If there is fire alarm, the operator will accurately find the alarm position. In debugging menu, press 【4】 key to enter position information editing function(position description) (Figure 15).

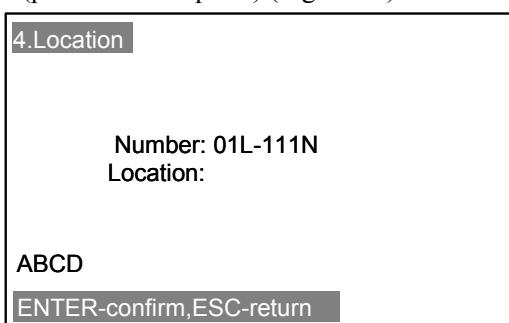


Figure 15 Edit position information setting

This function supports Chinese (pinyin), English and digits input. When input device number, if push 【menu】 key, one “*”symbol will be displayed after the “N” in LCD screen. At this time, if the operator press 【ENTER】 key to confirm input numbers, the control panel will not assign out original position information. The panel will treat current position place information as this number’s position information. This process is a very simple copy function for position information editing. Copy the last detector’s position information to this detector to simplify the device position information editing which has been installed in the same place.

5.3.7 Associated operation programming

In the automatic status, Associated operation programming is the auto-start logic which can control the fire fighting device according to the fire alarm signal. In debugging menu , press 【5】 key to enter associated operation programming function (Figure 16), the system supports 3 logic relations: “AND”, “OR1”, “OR2”.

“AND”logic expresses: any one piece device alarms which has been set into Condition 1 range, and any one piece device also alarms which has been set into Condition 2 range, it will send out control signal to associated operation device which has been set into activation range.

“OR1”logic expresses: any one piece device alarms which has been set into Condition 1 range, or any one piece device alarms which has been set into Condition 2 range, it will send out control signal to associated operation device which has been set into activation range.

“OR2”logic expresses: any two pieces devices alarm which have been set into Condition 1 range, or any two pieces device alarm which have been set into Condition 2 range, it will send out control signal to associated operation device which has been set into activation range.

After set up needed associated operation programming data, first data item in next page should be set to 0. If we set 5 pieces (one piece per page, start from Page 0) programming data, we need to set first data item in No.5 page to 0.

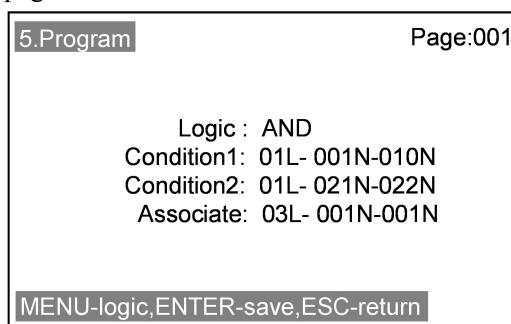


Figure 16 associated logic programming setting

5.3.8 Other parameters setting

Record select This control panel can record fire alarm, supervising, start, feedback, fault, event into black box. Beside fire alarm, all other type messages are optional . They can be record or non-record according to the setting. In debugging menu, press 【7】key->【3】key to enter record select function (Figure 17). Each item can be set to “Yes” or “No”. The users can set them according to their requirement.

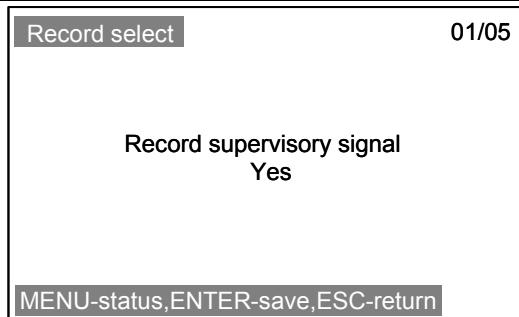


Figure 17 Record select function setting

System management, in debugging menu, press **【6】** key to enter system management function (Figure 18), there are several important operation parameters shown as below in the system management:

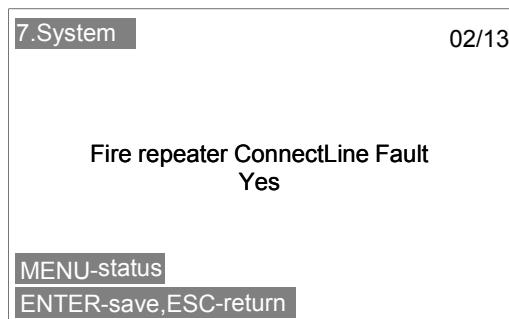


Figure 18 system management function setting

- 1) Fire repeater Connectline fault: whether to permit poll fire alarm repeater, if yes, when there is communication fault between the panel and fire repeater, it will send out fault information.
- 2) This panel number: to be used to set up this panel number.
- 3) Link-done only Autostatus: if yes, the controller can only auto start when it is in auto-status.
- 4) Send alarm information to VDR: whether to send alarm information to VDR or not.
- 5) This panel capacity: each loop can connect 250 addressable bus devices. But due to customer consideration, maybe we will reduce the addressable device points for each loop to meet specific project addressable points requirement. The panel loop capacity is fixed in our factory and the user cannot modify the capacity by themselves.
- 6) Shut down LCD backlight in spare time: if the “Yes” selected, the fire alarm control panel will shut down LCD backlight if no alarm occur(except main power and backup power fault). When the control panel is supplied by backup power, it can make the using time longer.
- 7) System language: Chinese or English
- 8) Alarm output delay: 0~250 seconds
- 9) Supervisory auto cancel: if “Yes” set in the menu, supervisory alarm can auto be canceled if the supervisory signal cancel.
- 10) Fault output close: if “Yes” set in the menu, the output contact is close in normal condition. If the fault alarm occur or the fire alarm control panel is powered off, the output contact will be changed to open.

- 11) Power fault output close: if “Yes” set in the menu, the power fault output contact is close in normal condition. If the power fault alarm occur or the fire alarm control panel is powered off, the power fault output contact will be changed to open.
- 12) Max. fire fighting zones in activating state: in water-base fire fighting system, the max. fire fighting zones which can be activated at the same time.
- 13) Earth fault level: adjust earth fault alarm level, sensitivity is decreased from level 1 to level 10. If the level is set to 0 , ignore the earth fault

Workspace disable: if the device set in the source send out supervisory alarm, the devices set in the disable range will be disabled, this disabled condition will be restored when the supervisory alarm is canceled(Figure 19).



Figure 19 workspace disable function setting

Local box setting this fire alarm control panel can be used to control fixed water base fire fighting system. When the fire fighting zone is in fire alarm state, relative valve and pump can be auto or manual started. The local box setting in debugging menu is used to set the starting source condition and target for fire fighting zone. Refer to figure 20

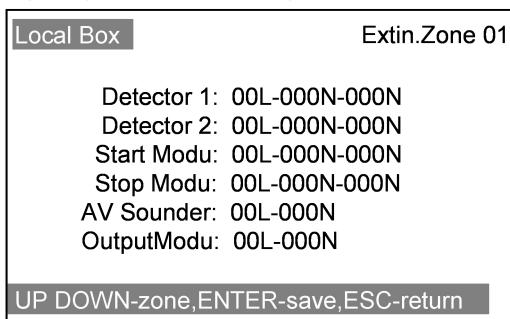


Figure 20 local box setting

When the fire alarm control panel is in auto state, one detector in the range of “detector 1” and another detector in the range of “detector 2” are in fire alarm state at the same time, the fire alarm control panel will activate “AV Sounder”(the aural-visual alarm) and “OutputModu”(input-output module, it is used to control zone’s valve and pump). “Start Modu” is the start key’s address, “Stop Modu” is the stop key’s address.

In auto or manual state, press the start key to start the AV sounder and module, press the stop key to stop relative AV sounder and module, the pump will be stop when all the activating valves are stop.

In this system, more than one fire fighting zone can be started at the same time, it can be set in the system management menu. The maximum fire fighting zones’ number is 16, so the max. activating fire fighting zones’ number is 16.if the needed zones’ number is larger than the number enabled in the setting, according the rule of “first in, first out”, the first started zone will be stop, then start new zone.

The setting method is similar with the logic setting, if the loop number in “detector 1” is set to 0, the settings in this page and in the following pages will not be stored.

After set various parameters, the panel returns to stand by interface. The system will move to normal supervising status.

6 Use、operation

6.1 information display and inquiry

This control panel has fire alarm, supervising alarm, fire alarm control (associated operation control), fault alarm and disable functions and so on. When control panel is under these statuses, relative various status information detail will be display in LCD screen.

Figure 21 is the fire alarm display.

FIRE ALARM:2	2012/12/30 09:23
FIRST ALARM:	
1004 SMOK 09:21	
meeting room	
1 1004 SMOK 09:21	
meeting room	
2 1005 SMOK 09:22	
room 1001	
Manu	Fault>>

Figure 21 fire alarm message display

The fire alarm message sum is 2 in figure 20. The fire alarm address number is 1004, its type is smoke type, the time of fire alarm is 9:21, the alarm place is meeting room. The first fire alarm display position is fixed, that's means : in fire alarm display status, the first fire alarm message is remain in this place when another fire alarm message is checked.

When the alarm messages displayed in the screen, press the arrow up or arrow down key to select one message , the selected message will be display in back color(such as second fire alarm message in figure 21), press the ENTER key to confirm this message, the relative alarm indicator will be changed from flickering to steady. So the relative alarm indicator is flickering when the selected alarm message is not confirmed and it will be steady when the selected alarm message is confirmed. Pay attention: disable condition can't be confirmed by pressing ENTER key, the disable alarm indicator will be in steady.

“Fault>>” means fault alarm also exist in the system, press the right arrow key to change to the fault display status, then check the relative fault message.

6.2 fire alarm

In normal operation status, the fire alarm control panel roll each detector registered in the system, monitor their smoke density value or heat value, if the value is larger than the setting value, control panel will be in fire alarm status. Then the control panel will enforce the following actions:

- 1) Send out fire alarm sound, light the fire indicator in the front panel.
- 2) Fire alarm message's detail will be displayed in LCD screen, the fire alarm sum will be updated, and so on.
- 3) The KA1/KA2 contacts of fire alarm relay will be short.
- 4) If the control panel is in auto status, control panel will control the relative devices according to the logic setting in the menu.
- 5) Record the fire alarm message to the black box.
- 6) Send out fire alarm message to fire alarm repeater and VDR(if the relative item is enable in the setting)

- 7) Control panel will be in time delay status, if the time delay finish, the YA1/YA2 contacts of fire alarm delay relay will be short. **Attention:** press the silence key during the fire delay, the time delay will be canceled and fire alarm delay relay will not be activated.

The fire alarm status of fire alarm control panel can only be reset by manually pressing the reset key. In fire alarm status, the display will return to the last fire alarm page if no operating occur during 30 second

6.3 supervisory alarm

Supervisory signal is the input signals connected to the fire alarm control panel . they are not the signal in the fire alarm control panel. Such as: water level detect, pressure, temperature, air condition, and so on. The fire alarm control panel will be in supervisory alarm status if these signals activated. Then the control panel will enforce the following actions:

- 1) Send out supervisory alarm sound, light the supervisory indicator in the front panel.
- 2) Display current supervisory alarm message detail in LCD screen, update the supervisory alarm sum, and so on.
- 3) If the control panel is in auto status, control panel will control the relative devices according to the logic setting in the menu.
- 4) Record the supervisory alarm message to the black box.
- 5) Send out supervisory alarm message to fire alarm repeater and VDR(if the relative item is enable in the setting)

If the item “system manage>>supervisory alarm auto reset” is set to “Yes”, the supervisory alarm status will be reset if the supervisory signal is canceled. If that item is set to “No”, the supervisory alarm status can only be reset by manually pressing the reset key.

6.4 Fire alarm control (association control)

If the fire alarm device or other fire fighting association control device are started, the control panel will enforce the following operations:

- 1) send out association control sound, light the association indicator in the front panel.
- 2) Current association message detail will be displayed in LCD screen, update the association sum, started sum and feedback sum, and so on.
- 3) If started device's feedback signal is received, control panel will control the relative devices according to the logic setting in the menu (in manual status, the setting is “start only in auto status” in “system manage”).
- 4) Record the association message to black box(if enable).
- 5) Send out association message to fire alarm repeater and VDR(if enable)

6.5 fault alarm

Fire alarm control panel will send out fault alarm if the following conditions are occurred.:

- 1) The wires between control panel and detector are broken, short, the detector is disconnected from the base and detector's bad
- 2) The communication lines between control panel and fire alarm repeater are broken or short
- 3) The wires between control panel and fire alarm device or fire fighting control device are broken or short .

4) The voltage of main power is lower than 187V (include power off)

5) The backup power or internal DC24V is lower than 21.6V

Control panel will enforce the following actions for the 1),2) and 3):

- 1) Send out fault alarm sound, light the fault indicator in the front panel.
- 2) Display the current fault message detail, update the fault alarm sum, and so on.
- 3) Record the fault messages to black box (if enable)
- 4) Send out fault alarm message to fire alarm repeater and VDR(if enable).
- 5) Activate the fault output relay

Control panel will enforce the following actions for the 4) and 5):

- 1) Send out fault alarm sound, light the main or backup power fault indicator in the front panel.
- 2) Display the current power fault message detail, update the fault alarm sum, and so on.
- 3) Activate the fault output relay and power fault output relay.
- 4) Record the fault messages to black box (if enable)
- 5) Send out fault alarm message to fire alarm repeater and VDR(if enable).

All the fault alarm can be auto or manual reset if the fault signal is canceled.

6.6 disable function

Disable function is used to shut down one or some outside device temperately if they can't work correctly in normal condition or their functions is changed for debugging. Set or cancel the disable operation in the item of “disable setting”. In monitoring status, press the 【menu】 key, then input password “833115” according to the reminding message in the screen(figure 22). The display will be changed to function menu(figure 23), there are 3 items: disable setting(figure 24),history record and time setting. Press 【1】 key to enter disable setting function

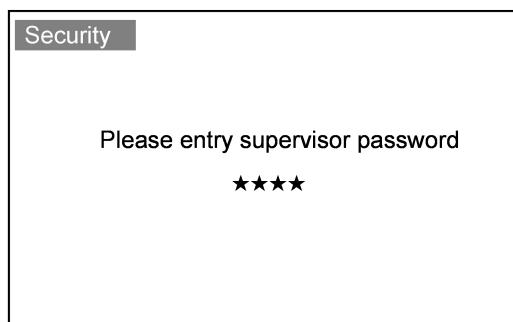


Figure 22 the password verify display

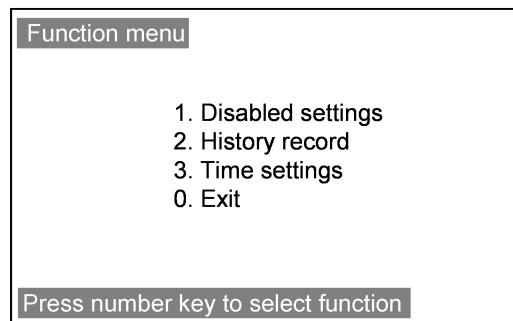
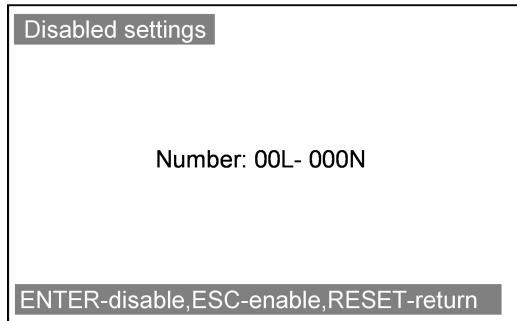


Figure 23 function menu display

**Figure 24 disable setting**

Control panel can disable the following device: bus-device, loop, output control, fire alarm device and so on . The disable indicator will be lit if any device in the system is disabled. Disabled messages will be displayed in disable page(last disable message is always displayed in the front place)

6.7 history record

History record is messages recorded in black box, control panel can record 999 fire alarm messages and 999 other messages. These messages can be stored for 10 years. User can identify the status of control panel, detectors and other outside devices. Following event type can be recorded: fire alarm, supervisory, association(include starting or feedback),fault , event(power on or power off),and so on. The fire alarm message must be recorded and other message can be set to record or not. Refer to the “record select” function for detail. Press the 【2】 key to enter history record check function, the display is in figure 25 and figure 26.

History record>>Fire		Sum:003
001:FIRE	1006	2006/10/17 11:38
002:FIRE	1005	2006/10/17 11:26
003:FIRE	1004	2006/10/17 11:23
UP DOWN-page,LEFT RIGHT-type,ESC-return		

Figure 25 fire alarm message recorded in the control panel

History record>>Other		Sum:006
001: SuSi	1022	2006/10/17 10:59
002: EVENT	Reset	2006/10/17 10:34
003: OPEN	S&L siren	2006/10/17 10:33
004: FAULT	1112	2006/10/17 10:33
005: FAULT	1113	2006/10/17 10:19
006: EVENT	Power On	2006/10/17 10:00
UP DOWN-page,LEFT RIGHT-type,ESC-return		

Figure 26 other messages recorded in the control panel

6.8 Sound

The control panel can send out 3 different sounds to make difference for different alarm status. When there is fire alarm or fire alarm control signal output, the control panel will send out fire brigade wagon sound. When there is fault alarm, the control panel will send out ambulance sound. When there is supervising alarm, the control panel will send out police vehicle sound.

When there is new alarm information coming, based on the control panel current status, the panel will decide whether it will send out corresponding alarm sound or not. The control panel alarm status is arranged from high to low as: fire alarm, supervising alarm, fire alarm control and fault alarm. If the control panel is sending out high level alarm sound, when the low level alarm information is coming, the control panel will not send out this low level alarm sound. If the control panel is in silence situation, when there is any level alarm information coming, the control panel will send out this level alarm sound.

Alarm sound can be manually eliminated by pushing 【silence】 key. At this time, the panel front silence LEDs will be illuminating. If the control panel is in sounding status or non-alarm supervising status, control panel front silence LEDs will be extinguished.

6.9 Reset

When there is fire alarm, supervising, fire alarm control and fault information, in information interface or stand by information (main power or back-up power supply fault does not need to be indicated by LEDs, it is not displayed in the information interface), push 【reset】 key to manually eliminate these information. But if these alarm signals are still existent, the control panel will quickly establish these information. Disable information can only be done through disable release operation. It cannot be eliminated by reset. When the system is reset, its interface is shown as Figure 27.

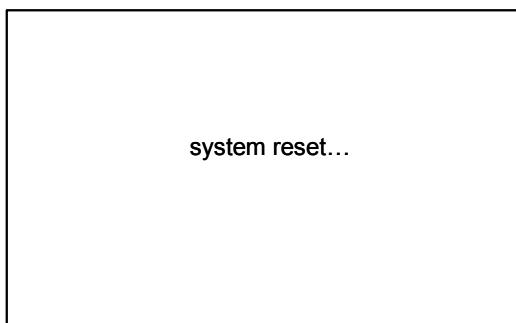


Figure 27 system reset interface

6.10 Self-testing function

In information interface or stand by interface, push 【self-testing】 key to make testing to LCD display screen, panel front LEDS and sounders. After self-testing, it will automatically come back to polling status. When the system is in self-testing, its interface is show in Figure 28.

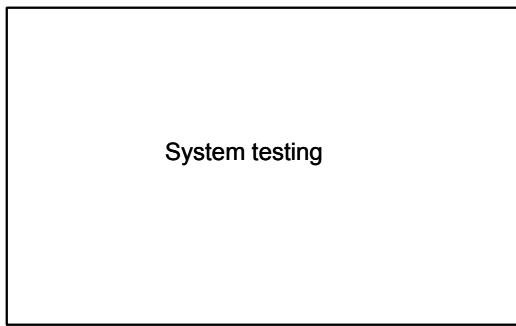


Figure 28 system self-testing interface

6.11 Auto/Manual Switch

In automatic status, when there is fire alarm, based on associated operation programming setting logic relation, the control panel will send out control signal to associated operation devices. In manual/hand status, there is no this kind of automatic activation. In information interface or stand by interface, push **【F】** key, input correct password "833115", it will do auto/manual status switching according to the item. If the control panel is in auto status, the control panel front auto/manual LEDs will be illuminating. When the control panel is in manual status, the LEDs will be extinguished.

In standby status, auto/manual status will be displayed in the front of time and date. In alarm status, it is displayed in the bottom of the screen.

6.12 Lock/unlock key

In information interface or stand by interface, push **【F】** key, input correct password "833115", it will do **Lock/unlock** status switching according to the item.

When the control panel is in lock status, the operator just can do "silence" and "check" operation. In stand by status, lock/unlock status will be displayed in the front of time and date. In alarm status, it is displayed in the bottom of the screen.

7 Fault analysis and elimination

Table 2 fault and elimination method

Fault phenomenon	Reason analysis	Elimination method	Remark
When the panel is open, it does not do self-testing, there is no any response from the control panel	whether the main power supply and back-up power supply work as normal	check whether main power supply and back-up power supply work as normal	
When the panel is open and do self-testing, the LEDs flashing is slow and the sound is not strong	Programming chip is not installed tightly	Fix the chip tightly once again	
When the panel is open, the LCD displays clobber characters	Library chip or programming chip is broken or does not fixed tightly	Replace or fix the chips tightly once again	
When the panel is open, control panel LEDs and sounder self-testing is ok, but the LCD screen does not have back-light and display	LCD screen contrast gradient is too small to see its display content	Adjust main board contrast gradient potentiometer	
When the panel is open, the left top side of LCD screen displays “verification and wrong!”	1. control panel main power supply and back-up power supply voltage is low; 2. chip which keeps data is broken.	Close down the power supply and open the panel once again, if it still cannot solve the issue, please contact the product manufacturer.	
When the panel is open, the left top side of LCD screen displays “ main power supply and back-up power supply voltage is lower!”	Main power supply and back-up power supply voltage is low and the system cannot work as normal.	Check whether the 220V main power supply is normal or not.	
Individual detector makes fault alarm	1. the connection line between fire detector and control panel is short circuited or broken; 2. fire detector falls off; 3. fire detector is damaged;	1. check whether this detector base 24V is working as normal; 2. If the line is normal and detector base voltage is normal, please replace the detector.	

Detector in one sub-line makes fault alarm	1. the connection line between this sub-line and main line is short circuited or broken; 2. one detector fault in sub-line makes isolator activated.	1. check whether this sub-line voltage is normal or not; 2. check whether sub-line isolator is activated or not. If it is activated, we can confirm that there is one fault detector behind this isolator. Please open the panel once again and enter “parameter testing” function to browse this sub-line detectors operation status to find fault fire detector.	
There is fire or smoke cause factor in the fire detector testing zone, but the fire detector makes fire alarm	There is dust or damage in the fire detector.	Replace fire detector	
Main power supply fault LEDs is illuminating	Main power supply voltage is lower than 187V	Check whether main power supply is working as normal	
Back-up power supply fault LEDs is illuminating	Back-up power supply is power failure or internal 24V output is lower than 21.8V.	Check whether back-up power supply is working as normal and whether the internal battery expired.	

8 Maintenance、repair

Fire alarm control panel is specialized fire device. The operator should be trained by our company. After the operator has passed our internal training, the person can do the normal operation. The panel should be located in the rooms where there is person in charge. It should have regular management and maintenance. The panel should be regularly checked to see whether it is working as normal and do duty record. When there is fault for the panel operation, the operator should eliminate the fault in time. If the operator cannot solve the panel issue by himself, he should invite professional persons or manufacturer to help him do panel repair work.

9 Open panel package and checking

After open panel package, check whether panel external appearance is complete and whether control panel model is same as package box model indication.

In package box, there are below items:

- 1) One set control panel;
- 2) One set control panel operation manual;
- 3) one set certificate of approval;
- 4) one set key, locking key and control panel front key;
- 5) five types fuse (2A, 3 fused for each type of 2A, 0.5A and 0.75A).

10 Others

10.1 Service promise

Concerning any produced provided by our company, our company and our sales office & after-sale service department will provide the customers with relevant technical data and technical support. We help the customer do system debugging and after-sale service, such as system and product maintenance and repair work. Our company has established specific customer files and use computer to manage these files and make quality tracking and we try our best to provide our customers with best service.

10.2 Quality guarantee

The system device guarantee time is 12 months. In this guarantee period, if our product quality has made the system product faulted or damaged, our company will make free repair or replacement.

10.3 Contact method

After-sale service department telephone: +0086-(0)510-83302969

Fax: +0086-(0)510-83315517

Annex.A Device address assignment sheet

Loop	Position number	Device description
1	1~250	Correspond to the devices in loop 1 alarm bus, position number is corresponding to bus device code
2	1~250	Correspond to the devices in loop 2 alarm bus, position number is corresponding to bus device code
3	1	Extl control 1
3	2	Extl control 2
3	3	Extl control 3
3	4	Extl control 4
3	5	Extl control 5
3	6	Extl control 6
3	7	Extinguish area 1
3	8	Extinguish area 2
3	9	Extinguish area 3
3	10	Extinguish area 4
3	11	AV Sounder
3	12	Loop 1 short
3	13	Loop 1 open
3	14	Loop 1 fault
3	15	Loop 2 short
3	16	Loop 2 open
3	17	Loop 2 fault
3	18	Repeater panel 1
3	19	Repeater panel 2
3	20	Repeater panel 3
3	21	Repeater panel 4
3	22	Repeater panel 5
3	23	MainPower
3	24	BackupPower
3	25	Power on
3	26	Shut down
3	27	Lock key
3	28	Unlock key
3	29	Reset
3	30	Auto
3	31	Manual
3	32	Test
3	33	System fault
3	34	Setting mode
3	35	Running mode
3	36	Loop 1

3	37	Loop 2
3	38	Printer
3	39	Extinguish card
3	40	Loop 1 T+ Open
3	41	Loop 1 T- Open
3	42	Loop 2 T+ Open
3	43	Loop 2 T- Open
3	44	Earth fault
3	45	Battery fault
3	46	Charger fault

Annex B VDR communication protocol

Communication mode: RS485

Terminal marks: VDR+、VDR-

Communication parameters: 9600, n, 8, 1

Transfer code: ASCII

Transfer direction: from control panel to VDR, single direction, send 2 times for alarm messages.

Signal format:

head	separator	Alarm type	separator	Loop number	Device number	terminator
\$FACTL	,	2 bytes	,	1 byte	3 bytes	<CR><LF>

description:

1) alarm type 2 bytes, definition as following

Alarm type	definition
01	fire
02	supervisory
03	association
04	fault
06	supervisory reset
07	association reset
08	fault reset
09	activate
10	activate reset
11	feedback
12	feedback reset
13	Disabled
14	cancel disabled condition
98	reset
99	power on
00	communication signal

2) when the alarm type is 00, 98 or 99, the device number, loop number and the separator “,” before loop will be eliminated

3) system send out communication signal one time within 2 minutes

For example:

1	If NO.1 device in loop1 send out fire alarm	\$FACTL, 01, 1001<CR><LF>
2	If NO.250 device in loop1 send out fault alarm	\$FACTL, 04, 1250<CR><LF>
3	If NO.250 device in loop1 send out fault reset	\$FACTL, 08, 1250<CR><LF>
4	Communication signal	\$FACTL, 00<CR><LF>



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