



强制性工程建设规范电气设计疑难问题解析

Analysis of Difficult Problems in Electrical Design of Mandatory Engineering Construction Codes

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Analysis of Difficult Problems in Electrical Design of Mandatory Engineering Construction Codes

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Analysis of Difficult Problems in Electrical Design of
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PART 01

《建筑节能与可再生能源利用规范》

GB 55015-2022相关电气问题



电气实训教材

1.0.2 新建、扩建和改建建筑以及既有建筑节能改造工程建筑节能与可再生能源建筑应用系统的设计、施工、验收及运行管理必须执行本规范。

【条文说明】

本规范适用范围。本规范适用于新建、扩建和改建的民用建筑及工业建筑；除新建建筑节能设计章节以及针对新建建筑的条文外，也适用于既有建筑节能改造。扩建是指保留原有建筑，在其基础上增加另外的功能、形式、规模，使得新建部分成为与原有建筑相关的新建建筑；改建是指对原有建筑的功能或者形式进行改变，而建筑的规模和建筑的占地面积均不改变的新建建筑。既有建筑节能改造是在建筑原有功能不变的情况下，对建筑围护结构及用能设备或系统的改善。

不适用于没有设置供暖、空调系统的工业建筑，也不适用于战争、自然灾害等不可抗条件下对建筑节能与可再生能源利用的要求。对使用期限为2年以下的临时建筑不做强制要求，可参照执行。

本规范只规定节能性能及相关节能技术措施，与节能措施相关的防火、电气及结构安全方面的要求，应按相应工程建设强制性规范执行。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovations. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑节能与可再生能源利用通用规范》GB 55015-2021不适用于没有设置供暖、空调系统的工业建筑，此处供暖、空调系统是否包括单体空调？没有设置供暖、空调系统的工业建筑是否可以不用执行《建筑节能与可再生能源利用通用规范》GB 55015-2021的电气专业条文？

个人观点

此处供暖、空调系统不包括单体空调。在没有设置供暖、空调系统的工业建筑、单体空调建筑，电气设计也要**执行**《建筑节能与可再生能源利用通用规范》GB 55015-2021规定。

3.3.1 电力变压器、电动机、交流接触器和照明产品的能效水平应高于能效限定值或能效等级3级的要求。

【条文说明】

提高产品的能源利用效率是电气和照明节能的基本手段，因此根据“促进能源资源节约利用”的要求，从降低建筑能耗的角度出发，设置此条文。本条要求建筑中使用的电力变压器、电动机、交流接触器和照明产品的能效水平要严于现有产品标准中规定的能效限定值(或能效等级3级)的数值要求。到目前为止，我国已发布的电气及照明产品能效相关标准如下表所示：

序号	标准编号	标准名称	能效标准	序号	标准编号	标准名称	分级标准
1	GB 17896—2012	管型荧光灯镇流器能效限定值及能效等级	1级、2级(节能评价价值)、3级(能效限定值)	8	GB 20052—2020	电力变压器能效限定值及能效等级	1级、2级、3级
2	GB 18613—2020	电动机能效限定值及能效等级	1级、2级、3级	9	GB 20053—2015	金属卤化物灯用镇流器能效限定值及能效等级	1级、2级(节能评价价值)、3级(能效限定值)
3	GB 19043—2013	普通照明用LED灯能效限定值及能效等级	1级、2级(节能评价价值)、3级(能效限定值)	10	GB 20054—2015	金属卤化物灯用镇流器能效限定值及能效等级	1级、2级(节能评价价值)、3级(能效限定值)
4	GB 19044—2013	普通照明用LED镇流器能效限定值及能效等级	1级、2级(节能评价价值)、3级(能效限定值)	11	GB 21518—2008	交流接触器能效限定值及能效等级	1级、2级(节能评价价值)、3级(能效限定值)
5	GB 19415—2013	LED模块用直流或交流电子控制装置能效限定值及能效等级	节能评价价值、能效限定值	12	GB/T24825—200	LED模块用直流或交流电子控制装置性能要求	1级、2级、3级
6	GB 19573—2004	高压钠灯能效限定值及能效等级	1级、2级(节能评价价值)、3级(能效限定值)	13	GB 30255—2019	室内照明用LED产品能效限定值及能效等级	1级、2级、3级(能效限定值)
7	GB 19574—2004	高压钠灯用镇流器能效限定值及节能评价价值	能效限定值、节能评价价值	14	GB 38450—2019	普通照明用LED平板灯能效限定值及能效等级	1级、2级、3级(能效限定值)

QUESTION & ANSWER

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您的问题

《建筑节能与可再生能源利用通用规范》GB 55015-2021 第3.3.1条，灯具应如何标注，是标注灯具的光效吗？

个人观点

设计中光源和灯具选型，应满足我国已发布的电气及照明产品**能效**相关标准。

设计文件中应有相关的表达。

3.3.2 建筑供配电系统设计应进行**负荷计算**。当功率因数未达到供电主管部门要求时，应采取无功补偿措施。

【条文说明】

供配电系统的无功补偿不仅是建筑节能的重要措施，而且对保证系统安全稳定与经济运行起着重要作用。供配电系统负荷计算包括有功功率、无功功率、视在功率和无功补偿等。《电力系统电压质量和无功电力管理规定》规定：35kV及以上供电的用户，在变电站主变最大负荷时，其高压侧功率因数应不低于0.95；100kVA及以上10kV供电的用户，其功率因数宜达到0.95以上；其他用户，其功率因数宜达到0.9以上。具体设计应满足建筑当地供电主管部门要求。

当功率因数低于规定要求时，35kV及以下变电所，除供电主管部门要求在高压侧设置无功补偿装置外，宜在所内变压器低压侧设置集中无功补偿装置；对于容量较大且负荷平稳用电设备及气体放电灯的无功功率宜就地单独补偿。对于三相不平衡或单相负荷较多的供配电系统，建议采用分相无功自动补偿装置。

3.3.3 季节性负荷、工艺负荷卸载时，为其单独设置的 变压器应具有退出运行的措施。

【条文说明】

季节性负荷主要是指季节变化较大地区的空调负荷，工艺负荷主要是指体育场馆比赛专用设备及供演出等活动用专用设备负荷，当用电负荷较大时，为这些负荷独立设置的变压器，应可以退出运行，以减少变压器的空载损耗和负载损耗，达到节能的目的。退出变压器运行的功能，一般手动完成。



QUESTION & ANSWER

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您的问题

《建筑节能与可再生能源利用通用规范》GB 55015-2021的第3.3.3条，退出运行的具体措施可采取什么措施？

个人观点

空调负荷，工艺负荷在不同季节较大地区，**为其供电变压器可以独立设置**，以便于可以退出变压器运行（**不使用时停电**）的功能，达到节能的目的。

3.3.4 水泵、风机以及电热设备应采取节能自动控制措施。

【条文说明】

在公共建筑和居住建筑中普遍使用的水泵及风机等设备耗能较大，当需要调速时，采用较为成熟的变频技术，即可取得很好的节能效果。同时，对于其他一些机电设备或装置也应有针对性地采取一些节能控制措施。例如，公共建筑中的电开水器等电热设备可以采用时间控制模块，确保在无人使用的时间段暂时停机。



QUESTION & ANSWER

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您的问题

《建筑节能与可再生能源利用通用规范》GB 55015-2021第3.3.4条，是否所有的水泵、风机、电热设备（如热风幕）必须采取节能自动控制措施？此条由暖通、给排水专业提资，还是电气专业主导确定？

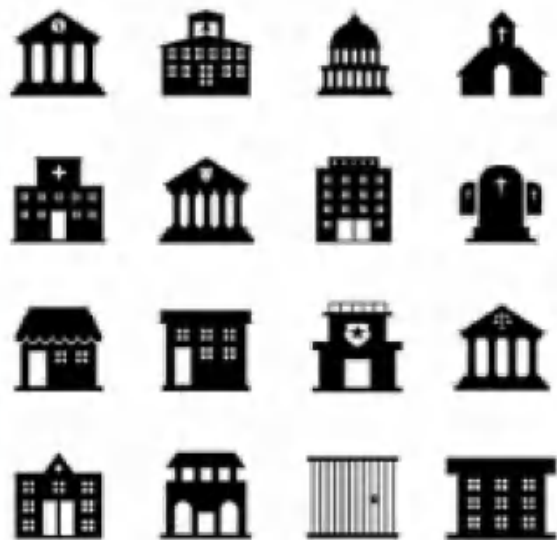
个人观点

《建筑节能与可再生能源利用通用规范》GB 55015-2021第3.3.4条，所有的**长时间工作**的水泵、风机、电热设备（如热风幕）必须采取节能自动控制措施，确保在无人使用的时间段暂时停机。在实际工程中，由暖通、给排水专业提资，由**电气专业**协助在**工程中落实具体措施**。

3.3.5 甲类公共建筑应按功能区域设置电能计量。

【条文说明】

甲类公共建筑是指单栋建筑面积大于 300m^2 ，或单栋建筑面积小于或等于 300m^2 但总建筑面积大于 1000m^2 的建筑群。甲类公共建筑各功能分区较多，各自功能不同，按功能区域设置计量，有利于责任到位，落实节能措施。功能分区可以到层，也可以到区域。对照明插座、空调、电力、特殊用电设备等分项计量，可以进行能效分析和用能管理。



QUESTION & ANSWER

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您的问题

《建筑节能与可再生能源利用通用规范》GB55015-2021第3.3.5条，甲类公共建筑应按功能区域设置电能计量。请问：同一个业主的不同楼层使用功能类似或相同时（例如同一个单位的不同楼层的办公室），必须分层设置电能计量吗？

个人观点

同一个业主的不同楼层使用功能类似或相同时（例如同一个单位的不同楼层的办公室），应有总电能计量，各层**宜设置**分层电能计量，便于用户内部管理。

3.3.6 建筑面积不低于20000 m²且采用集中空调的公共建筑应设置建筑设备监控系统。

【条文说明】

大型公共建筑(20000m²及以上)设置建筑设备监控系统,可以实现对机电设备的统一集中管理和节能控制,是实现节能的重要手段之一。



QUESTION & ANSWER

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您的问题

《建筑节能与可再生能源利用通用规范》GB55015-2021第3.3.6条，暖通专业认为，多联机也属于集中空调，设置了多联机的办公建筑是否也应设置建筑设备监控系统？

个人观点

多联机属于区域性空调系统，**不属于**集中空调。

3.3.7 建筑照明功率密度应符合表3.3.7-1~表3.3.7-12的规定；当房间或场所的室形指数值等于或小于1时，其照明功率密度限值可增加，但增加值不应超过限值的20%；当房间或场所的照度标准值提高或降低一级时，其照明功率密度限值应按比例提高或折减。

表3.3.7-12 公共建筑和工业建筑非爆炸危险场所通用房间或场所照明功率密度限值

房间或场所	照度标准值 (lx)	照明功率密度限值 (W/m ²)	
仓库	大件库	50	≤2.0
	一般件库	100	≤3.5
	半成品库	150	≤5.0
	精细件库	200	≤6.0
公共机动车库	车道	50	≤1.9
	车位	30	
车辆加油站	100	≤4.5	

QUESTION & ANSWER

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您的问题

《建筑节能与可再生能源利用通用规范》GB 55015-2021第3.3.7条，建筑照明功率密度限值与《建筑照明设计标准》GB/T50034-2024与第6.3节不一致时，按哪本执行？

个人观点

首先要满足《建筑节能与可再生能源利用通用规范》GB 55015-2021第3.3.7条要求。如果投资允许可以《建筑照明设计标准》GB/T50034-2024与第6.3节 照明功率密度限值执行。

QUESTION & ANSWER

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您的问题

乡村公路照明应遵循哪个规范设计照度和功率密度值？

个人观点

《城市道路照明设计标准》CJJ 45-2015，第7.1.2条。

3.3.8 建筑的走廊、楼梯间、门厅、电梯厅及停车库照明应能够根据照明需求进行**节能控制**；大型公共建筑的公用照明区域应采取**分区、分组及调节能照度**的节能控制措施。

【条文说明】

走廊、楼梯间、门厅、电梯厅、停车库等场所，无人主动关注照明的开、关，可采用就地感应控制，包括红外、雷达、声波等探测器的自动控制装置，通过自动开关或调光实现节能控制。大型公共建筑的公用照明区域，根据建筑空间形式和空间功能进行分区分组，当空间无人时，通过调节降低照度，以实现节能。但值得注意的是，对于医院病房楼、中小学校及其宿舍、幼儿园（未成年人使用场所）、老年公寓、旅馆等场所，因病人、儿童、老年人等人员在灯光明暗转换期间易发生踏空等安全事故，因此不宜采用就地感应控制。此外，也可采用集中控制或智能控制系统，促进场所安全及节能。

根据《关于加强大型公共建筑工程建设管理的若干意见》（建质〔2007〕1号），大型公共建筑一般指单栋建筑面积20000m²及以上的办公建筑、商业建筑、旅游建筑、科教文卫建筑、通信建筑以及交通运输用房。

QUESTION & ANSWER

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您的问题

《建筑节能与可再生能源利用通用规范》GB 55015-2021

第3.3.8条，对于医院病房楼、中小学校及其宿舍、幼儿园（未成年人使用场所）、老年公寓、旅馆等场所，因病人、儿童、老年人等人员在灯光明暗转换期间易发生踏空等安全事故，因此不宜采用就地感应控制。条文解释中场所不宜如何执行？还能否设置就地感应控制灯具？若设置其他控制方式，如就地开关，是否也会造成无人开启等不便？若设置集中控制，是否也会存在开灯不及时等麻烦？

个人观点

在保证这些场所最低照度灯具不宜采用就地感应控制，其他灯具可以通过**照度传**

感器集中控制，实现节能。

3.3.9 有天然采光的场所，其照明应根据采光状况和建筑使用条件采取**分区、分组、按照度或按时段调节的节能控制**措施。

【条文说明】

充分利用天然是实现照明节能的重要技术措施。根据人的行为习惯和视觉特点，在天然采光从不满足使用需求过渡到能够满足视觉作业需求时，很难通过手动的方式关闭或调节灯具来实现照明节能。因此，对于建筑内天然采光区域，其照明采取相应控制措施，可以达到照明效果及节能目的。在具有天然采光的区域，照明设计及照明控制应与之结合，根据采光状况和建筑使用条件，对人工照明进行分区、分组控制(如办公室、教室、会议室等)，其目的就是在充分利用天然光的同时，也不影响此区域正常使用。

楼梯间和楼道等类似场所，利用天然采光可在较大程度上满足人们的视觉功能需求，应通过照度感应控制或按时段的时间表控制来自动实现人工照明的补充，确保在采光充足时关闭相应的灯具或降低照度，避免造成能源的浪费。

If learning only in the institutions, as we usually have access, there will be no technology. Master new technology, be good at learning, must be good at thinking. The key to learn is not to know. Our cause is to learn to learn, and strive to accumulate more knowledge, broaden the knowledge. Society will have great progress, the future of human progress lies in this. Success is not an important thing, it is an important effort. Not to find an answer for future, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering. (Wen Jie, given a promise given)

您的问题

《建筑节能与可再生能源利用通用规范》GB 55015-2021第3.3.9条，有天然采光的办公室、教室、会议室等，仅需要对人工照明进行分区、分组控制，不需要再通过照度感应控制或按时间段自动控制；有天然采光的楼梯间和廊道，采取通过照度感应控制或按时段自动控制其中一种措施即可满足规范要求？

个人观点

办公室、教室、会议室等，结合采光状况和建筑使用条件需要对人工照明进行分区、分组控制，有条件下，也可以通过**照度感应**控制或**按时间段**自动控制。有天然采光的楼梯间和廊道，可以采取通过照度感应控制或按时段**自动控制**其中一种措施。

3.3.11 建筑景观照明应设置平时、一般节日及重大节日多种控制模式。

【条文说明】

住房和城乡建设部发布了《城市照明管理规定》《“十二五”城市绿色照明规划纲要》等有关城市照明的文件，对夜景照明的规划、设计、运行和管理提出了严格要求。其中，对景观照明实行统一管理，采取实现照明分级、限制开关灯时间等措施对于节能有着显著的效果，也符合相关文件和标准规范的要求。



QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑节能与可再生能源利用通用规范》GB 55015-2021第3.3.11条，要求多种控制模式，具体怎么做？

个人观点

与景观照明专业配合。

5.2.1 新建建筑应安装**太阳能**系统。

【条文说明】

为完成我国2030年达到碳排放高峰，2060年达到碳中和的目标，必须强化太阳能等清洁能源在建筑中的推广力度。太阳能系统可分为太阳能热利用系统、太阳能光伏发电系统和太阳能光伏光热(PV/T)系统，这三类系统均可安装在建筑物的外围结构上，将太阳辐射能转换为热能或电能，替代常规能源向建筑供电、供热水、供暖/供冷，既可降低常规能源消耗，又可降低相应的二氧化碳碳排放，是实现我国碳中和目标的重要技术措施。



QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑节能与可再生能源利用通用规范》GB 5015-2021第5.2.1条，该要求是按照各单体楼还是整个项目设置？

个人观点

《建筑节能与可再生能源利用通用规范》GB55015-021第5.2.1条的要求，应该是按照**整个项目**进行设置。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

东西走向或在高大建筑物遮挡之下的小规模无法采用水暖新能源设计的新建建筑，如何执行GB55015-2021中关于新建建筑必须考虑光伏应用的规范内容？

个人观点

满足项目当地要求。

5.2.5 太阳能系统与构件及其安装安全，应符合下列规定：

- 1 应满足结构、**电气及防火安全**的要求；
- 2 由太阳能集热器或光伏电池板构成的围护结构构件，应满足相应围护结构构件的安全性及功能性要求；
- 3 安装太阳能系统的建筑，应设置安装和运行维护的安全防护措施，以及防止太阳能集热器或**光伏电池板损坏后部件坠落伤人**的安全防护设施。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovations. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

“安装太阳能系统的建筑，应设置安装和运行维护的安全防护措施，以及防止太阳能集热器或光伏电池板损坏后部件坠落伤人的安全防护设施。”如何设置防护设施？

个人观点

建筑设计时应考虑在安装太阳能集热器或光伏电池板的墙面、阳台或挑檐等部位，为防止集热器或光伏电池板损坏而掉下伤人，**应采取必要的技术措施**，如设置挑檐、入口处设雨篷或进行绿化种植等，使人不易靠近。集热器或光伏电池板下部的杆件和顶部的高度也应满足相应的要求。

Analysis of Difficult Problems in Electrical Design of
Mandatory Engineering Construction Codes

PART 02

《建筑环境通用规范》 GB 55016-2021

相关电气问题



1.0.2 新建、改建和扩建民用建筑及工业建筑中辅助办公类建筑的声环境、光环境、建筑热工及室内空气质量的设计、检测及验收必须执行本规范。

【条文说明】

本规范适用于新建、改建和扩建民用建筑，以及工业建筑中辅助办公建筑，规定了其声环境、光环境、建筑热工及室内空气质量应达到的通用性的控制底线要求及技术措施。本规范的内容不适用于生产工艺用房的建筑热工、防爆防火要求，以及战争、自然灾害等不可抗力条件下对建筑环境技术的要求。本规范技术措施要求也适用于既有建筑改造设计、检测及验收，除受客观条件限制无法实施的情况外，既有建筑改造后也应达到本规范底线技术要求。

本规范仅规定了建筑热工的基本要求，其中建筑保温及隔热还应符合现行国家标准《建筑节能与可再生能源利用通用规范》GB 55015的有关规定，与供暖、通风与空气调节相关的热湿环境要求在现行国家标准《民用建筑供暖通风与空气调节通用规范》中规定。在室内空气质量方面，本规范仅针对建筑主体材料及装饰装修材料产生的空气污染物提出控制要求，新风量以及与通风净化相关的规定在现行国家标准《民用建筑供暖通风与空气调节通用规范》GB 55015中规定。

有关电磁环境的相关技术措施在现行国家标准《建筑电气与智能化通用规范》中有相关规定；特殊洁净环境，如生物安全实验室等的基本要求在现行国家标准《民用建筑供暖通风与空气调节通用规范》中规定。

QUESTION & ANSWER

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您的问题

好多精细化作业的厂房（如精密加工、电子工业等类别的厂房），对照明质量有很高的要求，这类厂房的光环境是否也应参照执行该通用规范？

个人观点

照明质量有很高的要厂房的光环境**应满足工艺特殊要求**，同时应考虑**节能**的要求。

3.1.1 对光环境有要求的场所应进行采光和**照明设计计算**，并应符合本规范规定。

【条文说明】

根据“保障人身健康，以及促进能源资源节约利用”的要求，设置此条文。

在设计阶段应对采光和人工照明效果进行设计计算，有效保证工程质量，确保采光和照明光环境满足设计要求。



QUESTION & ANSWER

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您的问题

装修要求的公共建筑，是否可在设计说明中明确照度及功率密度值、灯具选择要求，而不做具体设计？有审图按此条要求补充设计等。

个人观点

装修要求的公共建筑，**一次设计**应在设计说明中**明确照度及功率密度值**要求，可不**做具体设计**。**二次设计**应有**照明设计计算**，并应满足一次设计提出的**照度及功率密度值**要求。

3.3.3 光环境要求较高的场所，照度水平应符合下列规定：

- 1 连续长时间视觉作业的场所，其照度均匀度不应低于**0.6**；
- 2 教室书写板板面平均照度不应低于500lx，照度均匀度不应低于**0.8**；
- 3 手术室照度不应低于750lx，照度均匀度不应低于**0.7**；
- 4 对光特别敏感的展品展厅的照度不应大于**50lx**，年曝光量不应大于50klx·h；对光敏感的展品展厅的照度不应大于**150lx**。年曝光量不应大于**360klx·h**。

【条文说明】

建筑照明应提供足够的照明来保证人身安全和不同的使用功能。对于展厅，由于紫外辐射易引起展品变褪色，而红外辐射使展品温度上升，使展品产生干化、变形、裂纹等。展品变褪色损害程度取决于受辐射的程度，曝光时间和辐射光的光谱特性及不同材料吸收辐射的能力和经受影响的能力，环境因素如高温、高湿和大气中各种活性气体亦可增加展品变褪色速度。光对展品的损害作用的大小与展品上的曝光量(照度与时间的乘积)成正比，为此应将曝光量限制在最小范围内。曝光量包括展览及非展览时的全部光照。照度均匀度是指照度最小值与平均值的比值。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

请明确连续长时间视觉作业的场所?

个人观点

连续长时间视觉作业的场所：**办公、图书馆、学校、旅馆、宿舍、医疗、观演、商业、交通、车间、展览**等。

3.3.4 长时间视觉作业的场所，统一眩光值UGR不应高于19。

【条文说明】

各类照明场所的统一眩光值(UGR)是参照国际照明委员会(CIE)标准《室内工作场所照明(Lighting of Indoor Work Places)》CIE 5008/E-2001的规定制定。此计算方法根据CIE 117号出版物(室内照明的不舒适眩光(Discomfort Glare in Interior Lighting)) (1995)和CIE 147号出版物《小光源、特大光源及复杂光源的眩光(Glare from Small, large and complex sources)》(2002)的公式制定。



QUESTION & ANSWER

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您的问题

《建筑环境通用规范》GB 55016-2021第2.4.4条，居住建筑是否属于长时间视觉作业的场所？

个人观点

居住建筑属于长时间视觉作业的场所。

3.3.5 长时间工作或停留的房间或场所照明光源的颜色特性应符合下列规定:

- 1 同类产色容差不应大于5SDCM;
- 2 一般显色指数(R_a)不应小于80;
- 3 特殊显色指数(R_9)不应小于0。

【条文说明】

选用同类灯或灯具的颜色偏差应尽可能小,以达到最佳照明效果。美国国家标准研究院(ANSI)C78.376《荧光灯的色度要求》要求的荧光灯的色容差小于4SDCM,美国能源部(DOE)紧凑型荧光灯(CFL)能源之星要求的荧光灯的色容差小于7SDCM,以及美国国家标准研究院(ANSI)C78.377《固态照明产品的色度要求》的LED产品色容差小于7SDCM,而我国现行国家标准《单端荧光灯性能要求》GB/T 17627和《双端荧光灯性能要求》GB/T 10682等均要求荧光灯光源色容差小于5SDCM。根据国内已经完成的光源在照明项目的使用小情况,色容差7SDCM仍能够觉察出颜色偏差。因此,为提高照明质量,在本标准中规定长时间工作或停留的房间或场所照明色容差不应大于5SDCM。

一般显色指数与特殊显色指数是描述光源显色性的指标,其限值根据国际照明委员会(CIE)标准《室内工作场所照明(Lighting of Indoor Work Places)》CIE S 008/E-2001的规定制定,该标准 R_a 取值为90、80、60、40和20。此外,如果光谱中红色部分较为缺乏,会导致光源复现的色域大大减小,也会导致照明场景呆板、枯燥,从而影响照明环境质量。对于显示性不加限制势必会影响室内光环境质量,美国对用于室内照明的LED灯也限定其一般显色指数 R_a 不低于80,特殊显色指数 R_9 不应为负数。

3.3.6 儿童及青少年长时间学习或活动的场所应选用无危险类(RG0)灯具；其他人员长时间工作或停留的场所应选用无危险类(RG0)或1类危险(RG1)灯具或满足灯具标记的视看距离要求的2类危险(RG2)的灯具。

【条文说明】

根据现行国家标准《灯和灯系统的光生物安全性》GB/T20145/CIE 5 009/E:2002对灯具的分类，从光生物安全角度可将灯分为四类，包括无危险类(RG0)、I类危险(RG1)、II类危险(RG2)和III类危险(RG3)。

1) 无危险类。无危险类是指灯在标准极限条件下也不会造成任何光生物危害，满足此要求的灯应当满足以下条件：在9h(30000s)内不造成光化学紫外危害；在1000s内不造成近紫外危害；在10000s内不造成对视网膜蓝光危害；在10s内不造成对视网膜热危害；在10000s内不造成对眼睛的红外辐射危害。

2) I类危险。该分类是指在曝光正常条件限定下，灯不产生危害，满足此要求的灯应当满足以下条件：在10000s内不造成光化学紫外危害；在300s内不造成近紫外危害；在100s内不造成对视网膜蓝光危害；在10s内不造成对视网膜热危害；在100s内不造成对眼睛的红外辐射危害。

QUESTION & ANSWER

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您的问题

《建筑环境通用规范》GB 55016-2021第3.3.4条、第3.3.5条、第3.3.6条，长时间视觉作业、长时间工作或停留的有无具体时间限定？有人说30分钟，有人说2小时，该如何把握？

个人观点

长时间视觉作业、长时间工作或停留场所，人们需要长时间工作学习和生活的场所，

办公、图书馆、学校、旅馆、宿舍、医疗、观演、商业、交通、车间、展览等。

3.3.10 各场所设置的疏散照明、安全标识牌亮度和对比度应满足消防安全的要求。

【条文说明】

为确保紧急情况下人员安全有序疏散，各场所的疏散路径有必要设置疏散照明，其设置按照消防应急照明的要求执行。此外，建筑各类公共场所的安全标识牌得到了广泛的应用，为保证这些安全标识牌能够正常发挥作用，避免因看不清安全标识牌而带来的潜在危险，其应有足够的亮度和对比度并清晰可见。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

应急照明A型箱出线回路可以和火灾报警的线槽合用吗？还是需要分别单独设置线槽？

个人观点

应分别单独设置线槽。

QUESTION & ANSWER

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您的问题

汽车库内设置的方向标志灯仅设置在疏散角道的上方，未设置在距地面高度1m以下的墙面、柱面上，是否可以？

个人观点

不可以。

Analysis of Difficult Problems in Electrical Design of
Mandatory Engineering Construction Codes

PART 03

《建筑电气与智能化通用设计规范》

GB 55024-2022相关电气问题



电气实训教材



2.0.3 建筑物**电气设备用房**和**智能化设备用房**应符合下列

规定：

- 1 不应设在卫生间、浴室等经常积水场所的直接下一层，当与其贴邻时，应采取防水措施；
- 2 地面或门槛应高出本层楼地面，其标高差值不应小于**0.10m**，设在地下层时不应小于**0.15m**；
- 3 无关的管道和线路不得穿越；
- 4 电气设备的正上方不应设置水管道；
- 5 变电所、柴油发电机房、智能化系统机房不应有变形缝穿越；
- 6 楼地面应满足电气设备和智能化设备荷载的要求。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第2.0.3条，因条件有限，常有水暖井与电井相邻现象，可否按这条做防水处理即可？

个人观点

常有水暖井与电井相邻时，建议做双墙，并竖向做防水措施。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

根据《建筑电气与智能化通用规范》GB55024-2022第2.0.3条，请问：建筑物电气设备用房和智能化设备用房设置于地下室，地下室上面有1.5m覆土，水专业上面有卫生间需在覆土内走水管，这种情况属于不属于直接下一层。

个人观点

建筑物电气设备用房和智能化设备用房设置于地下室，地下室上面有1.5m覆土，电气设备用房和智能化设备用房上方应做**双重防水**措施。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn, to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第2.0.3条，一般消防水泵房、生活水泵房等设备配电柜和控制柜均在机房内设置，此种情况是否需要避免泵房在积水场所直接下一层？如何采取相应的防火措施？

个人观点

一般消防水泵房、生活水泵房等设备配电柜和控制柜均设置在机房内或专用配电间内，此种情况需要避免泵房在积水场所直接下一层，并根据配电柜设置场所选择适宜配电柜的防护等级。这种情况下防火措施依据建筑防火设计即可。

《建筑电气与智能化通用规范》 GB 55024-2022 General code for building electricity and intelligence

2.0.7 建筑电气和智能化系统使用时，应当制定**运行维护方案**，并应严格执行。

【条文说明】

建筑电气及智能化设施产权单位或其委托管理建筑电气及智能化设施的单位，应制定建筑电气及智能化设施的运行维护方案，明确管理归口部门、管理人员及其工作职责。是为了保证建筑电气及智能化设施的安全运行。



QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第2.0.7条，运维方案是否需要在施工图设计文件中体现？

个人观点

运维方案应是设计发展方向，施工图设计文件中应需要不断丰富。

3.1.1 民用建筑主要用电负荷的分级应符合本规范表3.1.1的规定。

用电负荷级别	用电负荷分级依据	适用建筑物示例	用电负荷名称
特级	1) 中断供电将危害人身安全、造成人身重大伤亡； 2) 中断供电将在经济上造成特别重大损失； 3) 在建筑中具有特别重要作用及重要场所中不允许中断供电的负荷	高度150m及以上的一类高层公共建筑	安全防范系统、航空障碍照明等
一级	1) 中断供电将造成人身伤害； 2) 中断供电将在经济上造成重大损失； 3) 中断供电将影响重要用电单位的正常工作，或造成人员密集的公共场所秩序严重混乱	一类高层建筑	安全防范系统、航空障碍照明、值班照明、警卫照明、客梯、排水泵、生活给水泵等
二级	1) 中断供电将在经济上造成较大损失； 2) 中断供电将影响较重要用电单位的正常工作或造成公共场所秩序混乱	二类高层建筑 一类和二类高层建筑	安全防范系统、客梯、排水泵、生活给水泵等 主要通道、走道及楼梯间照明等
三级	不属于特级、一级和二级的用电负荷	-	-

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑电气与智能化通用规范》GB55024中要求特级负荷应有应急电源组成，一级负荷（或二级负荷）由一路10kV电源和一路柴油发电机组作为备用电源供电时，此时的消防负荷和非消防负荷共用柴油发电机组，是否需要在柴油发电机组电源总配电柜处分别设置备用电源和应急电源主开关？

个人观点

除只有一个备用电源配电回路外，柴发机组电源总配电柜处仅设置备用电源主开关即可。

3.1.2 一级用电负荷应由**两个电源供电**，并应符合下列规定：

1 当一个电源发生故障时，**另一个电源不应同时受到损坏**；

2 **每个电源的容量应满足全部一级、特级用电负荷的供电要求。**

【条文说明】

本条所指的两个电源包括从城市电网引接的**双重电源**，也包括一个城市电网电源和一个自备电源，如：柴油发电机组电源。这里所指的双重电源可以是来自不同城市电网的电源，也可以是来自同一城市电网但在运行时电源系统之间的联系很弱的电源。一个电源系统任意一处出现异常运行或发生短路故障时，另一个电源仍能不间断供电，这样的电源都可视为双重电源。

本条对一级负荷的供电作了规定，一级负荷应由两个电源供电，而且不能同时损坏。因为只有满足这个基本条件，才可能维持其中一个电源继续供电。另外两个电源中的每个电源的容量均应满足全部一级及特级用电负荷的供电要求。这里要说明一下，本规范中所定义的一级用电负荷容量中是不包含特级用电负荷容量的。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

通用规范中两个电源和双重电源是否为同一个概念？

个人观点

同一个概念。两个电源包括从城市电网引接的双重电源，也包括一个城市电网电源和一个自备电源。

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑电气与智能化通用规范》GB55024-2022第3.1.3条，第2款，应急电源的容量应满足同时工作最大特级用电负荷的供电要求。柴油发电机组选型时应急容量是否仅考虑特级用电负荷就可以，一级负荷是否还考虑？

个人观点

柴油发电机组选型容量应按应急电源需求、备用电源需求两种状况最大值选取。如果一级负荷根据实际情况，属于需要备用电源供电，则应需要考虑。

3.1.3 特级用电负荷应由3个电源供电，并应符合下列规定：

1 3个电源应由满足**一级负荷要求**的两个电源和一个**应急电源**组成；

2 应急电源的**容量**应满足同时工作最大特级用电负荷的供电要求；

3 应急电源的**切换时间**，应满足特级用电负荷允许最短中断供电时间的要求；

4 应急电源的**供电时间**，应满足特级用电负荷最长持续运行时间的要求。



QUESTION & ANSWER

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您的问题

按《建筑电气与智能化通用规范》GB 55024-2022第3.1.3条：当项目设置柴油发电机组作为备用电源和应急电源时，最高负荷等级为特级负荷。但消防负荷为一级负荷时，消防是由备用母线段供电还是应急母线段供电？如果为应急母线段供电，是否和规范要求的特级负荷由应急母线段带冲突？

个人观点

消防与非消防应分开不同母线段。

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您的问题

《建筑电气与智能化通用规范》GB55024-2022第3.1.3条，特级用电负荷由三个电源供电，当第二第三电源均使用柴油发电机时，请问是否可以合用一台柴油发电机组？或者设置两台柴油发电机组时，是否可设置在一个柴油发电机机房内？

个人观点

特级用电负荷由三个电源供电，当第二第三电源均使用柴油发电机时，最好设置两台柴油发电机组并机，设置两台柴油发电机组可设置在一个柴油发电机机房内，有条件可以房间设置。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

根据《建筑电气与智能化通用规范》GB 51303-2022第3.1.3条，特级用电由单路市电+柴油发电机+UPS供电时，柴油发电机和UPS是否全算应急电源，供电时间怎么算？

个人观点

市电、备用柴油发电机供电在容量、切换时间、供电时间，应满足特级用电负荷运行的要求。UPS供电在容量、切换时间、供电时间根据负荷需求进行配置。

3.1.5 当符合下列条件之一时，**用电单位应设置自备电源：**

- 1 特级负荷的应急电源不能满足本规范第3.1.4条第1款的规定；
- 2 提供的第二电源不能满足一级负荷要求的；
- 3 两个电源切换时间不能满足用电设备允许中断供电时间要求的。

【条文说明】

本条规定了建筑物中设置自备电源的场所。自备电源含备用电源和应急电源，但两者是两个完全不同用途的电源，只有特级负荷才需要设置应急电源。通常用户设置的自备电源，主要是作为应急电源使用，但在一些取得电源较为困难的地区，也可能是作为正常工作电源或备用电源使用的，一般作为正常工作电源或备用电源使用的自备电源对其容量、使用时间、电源切换要求没有特别规定，通常是根据用户自行的需求而进行选择。

1 本款规定了设置自备电源作为第三电源的条件。对于特级负荷，除两个电源或双重电源外，还应增设自备应急电源；

2 本款规定了设置自备电源作为第二电源的条件。当第二电源不能满足一级负荷要求时，此时尚需要设置自备电源来满足一级负荷的供电要求；

3 两个电源在切换过程中，如果其切换时间不能满足用电设备允许中断供电时间要求，应设置自备电源来满足用电设备允许中断供电时间的要求。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovations. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

根据《建筑电气与智能化通用规范》GB55024-2022第3.1.5条的条文解释中明确，只有特级负荷才需要设置应急电源。那么给一、二级用电单位中的消防设备供电的电源，属于不属于应急电源，是否要按照应急电源的条件供电？

个人观点

特级负荷需要设置自备应急电源。给一、二级用电单位中的消防设备供电的电源，属于应急电源，因为消防设备电源属于维持重要安全设施电气装置或电气设备运行所需的电源，因此需要按照应急电源的条件供电。

3.1.9 光伏发电系统在并网处应设置并网控制装置，并应设置专用标识和提示性文字符号。

【条文说明】

光伏系统在并网后，一旦城市电网或光伏系统本身出现短路或外干检修状态时，两个并网系统应能可靠脱离，通过专用并网控制装置及时切断两者之间的联系。另外，系统各组件还需通过醒目的专用标识和提示性文字符号来提示光伏系统可能会危害人身安全。



3.2.1 变电所布置应符合下列规定：

- 1 配电室、电容器室长度大于**7m**时，应至少设置**两个出入口**。
- 2 当成排布置的电气装置长度大于**6m**时，电气装置后面的通道应至少设置两个出口；当低压电气装置后面通道的两个出口之间距离大于**15m**时，尚应增加出口。
- 3 变电所直接通向建筑物内非变电所区域的出入口门，应为甲级防火门并应向外开启。
- 4 相邻高压电气装置室之间设置门时，应能双向开启。
- 5 相邻电气装置带电部分的额定电压不同时，应按较高的额定电压确定其安全净距；电气装置间距及通道宽度应满足安全净距的要求。
- 6 变电所的**电缆夹层、电缆沟和电缆室应采取防水、排水措施**。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

根据《建筑电气与智能化通用规范》GB 51301-2022第3.2.1条，这里的配电室电压等级是否有要求，如35kV、10kV、0.4kV配电室或开闭所均包含？两个出口间距离是否有要求？

个人观点

35kV、10kV、0.4kV配电室或开闭所长度大于7m时，应至少设置两个出入口。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51302-2022第3.2.1条，第1款，这两个出入口是否必须设置在两端？条件受限，靠近一侧是否可行？

个人观点

配电室、电容器室长度大于7m时，应至少设置两个出入口，两个出口间距离不应过近，一般要大于5m。

3.2.4 柴油发电机房布置应符合下列规定：

1 柴油发电机房内，机组之间、机组外廊至墙的距离应满足设备运输、就地操作、维护维修及布置辅助设备的需要；

2 柴油发电机间、控制室长度大于**7m**时，应至少设**两个出入口**。

【条文说明】

本条对柴油发电机房的布置提出了要求。

1 本款规定了柴油发电机组安全间距的要求。因柴油发电机组外廊的尺寸与机组的容量有关，不是一个固定值，机组之间，机组外廊至墙的距离需设计人员根据所选机组尺寸给出。机组之间、机组外廊至墙的距离应满足设备运输、就地视作、维护检修或布置辅助设备的需要，保证运行和人员安全。可见《民用建筑电气设计标准》GB51348-2019表6.1.4和图6.1.4的要求。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

民用建筑中的柴油发电机房是否需要按照爆炸危险环境设计?

个人观点

《建筑设计防火规范》GB 50016 第5.4.13 条条文明明要求设置在建筑内的柴油发电机,柴油闪点不应低于50℃,属于丙类液体,因此民用建筑中的柴油发电机房不属于爆炸危险环境或场所,不需要按照爆炸危险环境进行设计,储油间也无需设可燃气体探测装置。设计图纸中应标注柴油闪点要求。

考虑到柴油发电机房工作环境,发电机房及储油间内灯具建议采用防尘型。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

布置在民用建筑内的柴油发电机房是否可以设置多个储油间，每个储油间的总储存量不大于 1m^3 ？

个人观点

可以，建筑内设置多台柴油发电机组时，**每台柴油发电机只可设置1个储油间**，设计时每个储油间要严格限制其总储存量不大于 1m^3 ，如果建筑内柴油发电机数量超过5台时，**储油间数量也不应超过5个**。

3.2.5 专用蓄电池室应采用**防爆型灯具**，室内**不得装设普通型开关和电源插座**。

【条文说明】

专用电池室因爆炸危险性较高，所以规定有电气连接的照明、开关、电源插座等，安装在室内时应采用防爆型产品。否则应安装在室外。



QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

根据《建筑电气与智能化通用规范》GB 51302-2022第3.2.5条，什么叫专用蓄电池室？配电间内设置UPS成套装置内含蓄电池，需不需要执行这个规定？

个人观点

专用蓄电池室指为蓄电池设置大专用房间。配电间内设置UPS成套装置内含蓄电池，可不执行这个规定。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

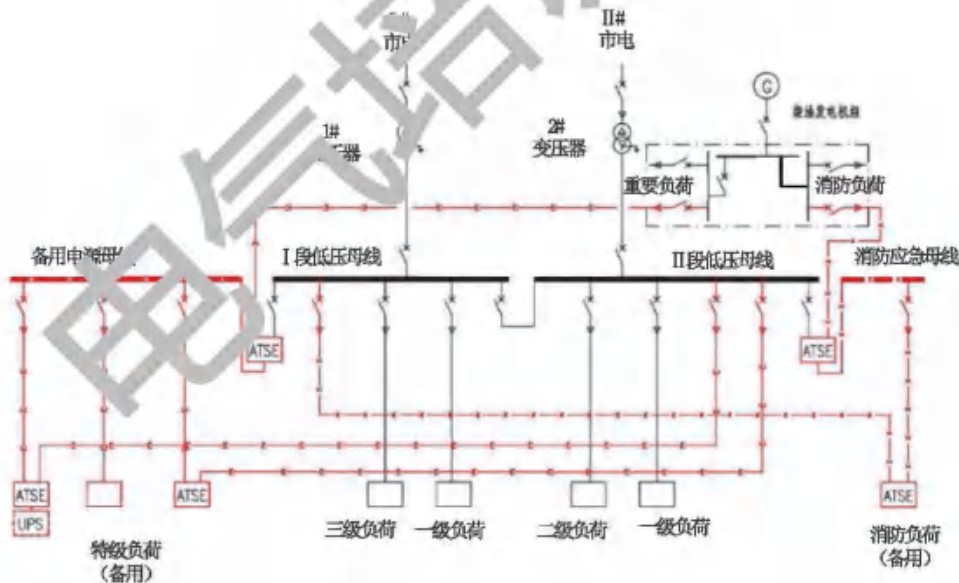
根据《建筑电气与智能化通用规范》GB 51302-2022第3.2.5条，弱电机房、手术室等设置UPS的配电间是否需按3.2.5条执行？

个人观点

弱电机房、手术室等设置UPS的配电间不需按3.2.5条执行。

4.1.4 备用电源和应急电源**共用柴油发电机组**时，应符合下列规定：

- 1 备用电源和应急电源应有各自的**供电母线**及回路；
- 2 备用电源的用电负荷不应接入应急电源供电回路。



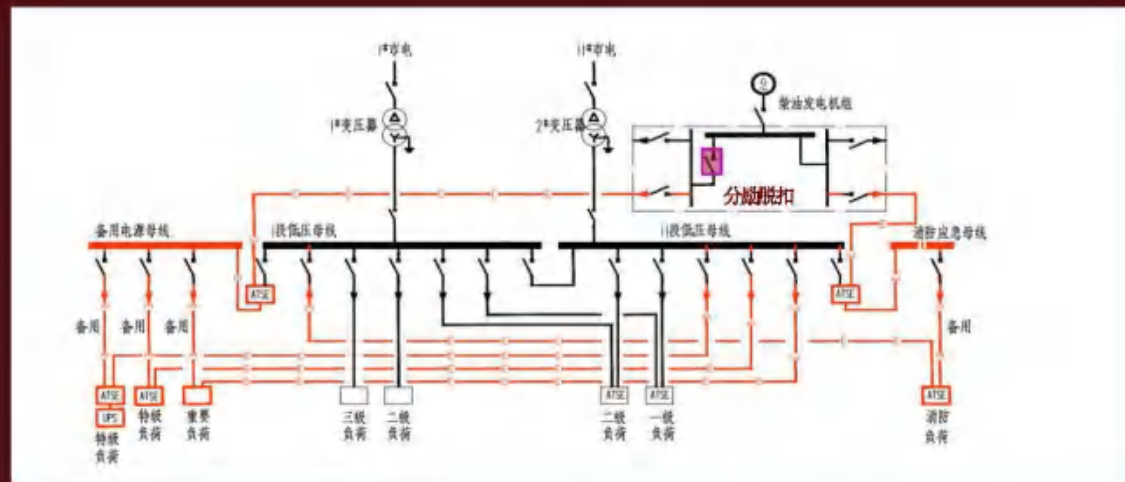
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您的问题

《建筑电气与智能化通用规范》GB 55024-2022 第4.1.4条，备用和应急及消防和非消防共用柴油发电机组时，需要设置三段母线（备用、应急、消防）？

个人观点

备用和应急及消防和非消防共用柴油发电机组时，**应将消防与非消防分不同母线段。**



QUESTION & ANSWER

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您的问题

《建筑电气与智能化通用规范》GB 55024-2022 第4.1.4条中“备用电源的用电负荷不应接入应急电源供电回路”如何理解？要从发电机开始就分开吗？

个人观点

应根据具体情况确定是否发电机开始就分开。建筑内设置变电所和柴油机房，应从变电所和柴油机房分开。建筑外设置变电所和柴油机房，应从建筑内配电所分开。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

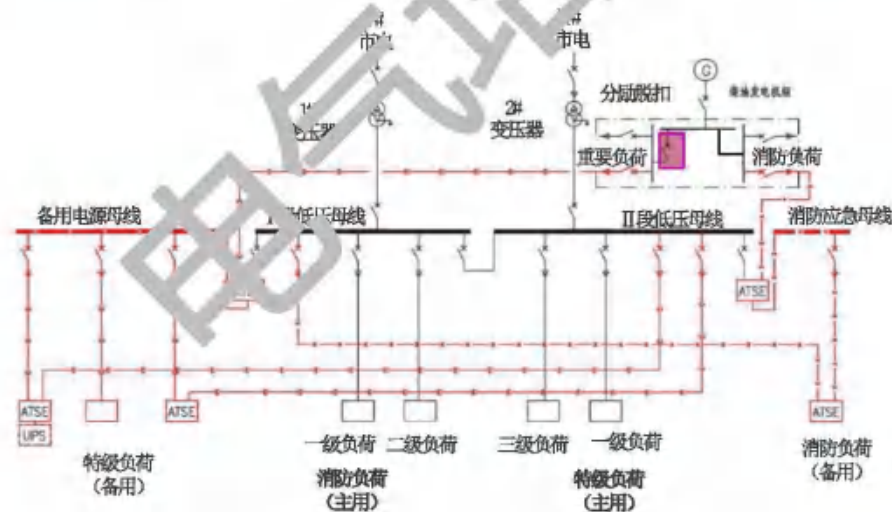
《建筑电气与智能化通用规范》GB 55024-2022 第4.1.4条，对于供电系统相对简单的住宅项目中设置的柴发机组，仅设置一段母线，消防与非消防负荷分设在不同配电柜内，是否满足规范要求？

个人观点

不符合要求。

4.1.5 当民用建筑的**消防负荷**和**非消防负荷**共用柴油发电机组时，应符合下列规定：

- 1 消防负荷应设置**专用的回路**；
- 2 应具备火灾时**切除非消防负荷**的功能；
- 3 应具备**储油量低位报警或显示**的功能。



QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第4.1.5条，要求柴油发电机的备用电源和应急电源应分母线段。对超高层建筑，消防负荷为特级负荷，应为应急电源回路，是否能与非消防应急电源回路，如航空障碍灯、安防电源等共用母线段？

个人观点

对超高层建筑，航空障碍灯、安防电源严格讲属于消防负荷，在发生火灾时，对灭火有辅助作用。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第4.1.5条，第3款，储油量低位报警或显示的功能，其信号是否要传到消防控制室？储油量显示在何处，机械还是电子液位显示装置？

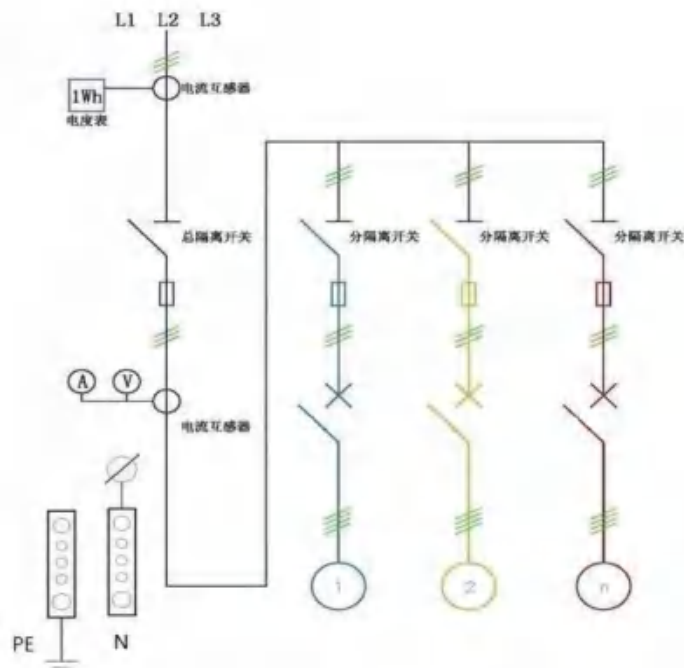
个人观点

当民用建筑的消防负荷和非消防负荷共用柴油发电机组时，应具备储油量低位报警或显示的功能，其信号要传到物业管理部门，同时给消防控制室。柴油罐可以选择雷达液位计、磁翻板液位计和浮球液位计，储油量显示装置应考虑防爆要求。

4.3.1 由建筑物外引入的低压电源线路应在**总配电箱（柜）**的受电端装设具有**隔离功能的电器**。

【条文说明】

对于由建筑物外引入的低压电源线路，其总配电箱(柜)通常作为室内分界点，在其受电端装设具有隔离功能的电器，是安全用电和操作、维护的基本要求。是否装设具有保护功能的电器应根据工程项目的具体情况确定。



QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

根据《建筑电气与智能化通用规范》GB 51024-2022第4.3.1条，若室外另建变电所，但设在建筑物贴临或20m范围内，变电所通过电缆沟配电至建筑物，是否可以按照建筑物内配电设计？

个人观点

若室外另建变电所，虽然距离建筑物贴临或20m范围内，变电所通过电缆沟配电至建筑物，也不可以按照建筑物内配电设计。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

根据《建筑电气与智能化通用规范》GB 513024-2022第4.3.1条，若车库内设变电所，车库正上方为单体楼（但不与车库连通），从车库内上翻给单体楼配电，单体楼是否可以按照由建筑物内引入电源设计？

个人观点

若车库内设变电所，车库正上方为单体楼（但不与车库连通），从车库内上翻给单体楼配电，单体楼不可以按照由建筑物内引入电源设计。

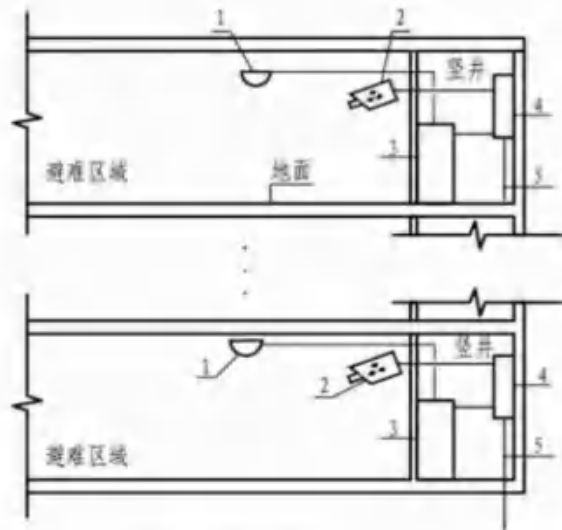
4.3.2 避难区域的用电设备应采用**专用**的供电回路。

【条文说明】

本条文的避难区域是指建筑物内所设避难层内用于人员暂时聚集避难的区域，特别是当高层建筑发生火灾时，通常救援难度比较大，建筑内部人员的安全状况和安全保障就显得非常重要。避难层是作为人员暂时躲避火灾及其烟气伤害的重要场所。

这里所说的避难区域的用电设备主要指视频监控摄像机，无线对讲和移动通信设备等。

专用供电回路是指由建筑物内变电所或低压进户配电间的低压配电箱(柜)引出的供电回路直接引至避难区域。由于避难区域的用电设备容量较小，不同避难区域在保证线路安全的情况下，经负荷计算确定是否可共用一个供电回路。



QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第4.3.2条，“避难区域的用电设备应采用专用的供电回路。”老年人照料设施和高层病房楼中的避难间每层都有，但每个避难间只有几只应急照明灯，如何执行？

个人观点

超高层避难层每层面积大，里面有防排烟风机、消防水泵、喷淋泵、转输水泵等设备，故有此要求；如老年人服务设施、医院等场所的避难间比较小，没有防排烟风机等设备，此类场所避难间的应急照明灯可在本楼层应急照明双切箱采用专用回路供电。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

消防栓泵与喷淋泵设在同一空间时，是否可共用同一个双电源切换开关？

个人观点

可以，消防栓泵与喷淋泵设在同一空间时，可共用一组双电源切换装置，此做法满足最末一级配电箱处设置自动切换装置的要求。当消防栓泵与喷淋泵合计容量较大，超过单根电缆供电容量时，消防栓泵与喷淋泵宜分组设置双电源切换开关。

4.3.4 在TN-C系统中，严禁断开保护接地中性导体

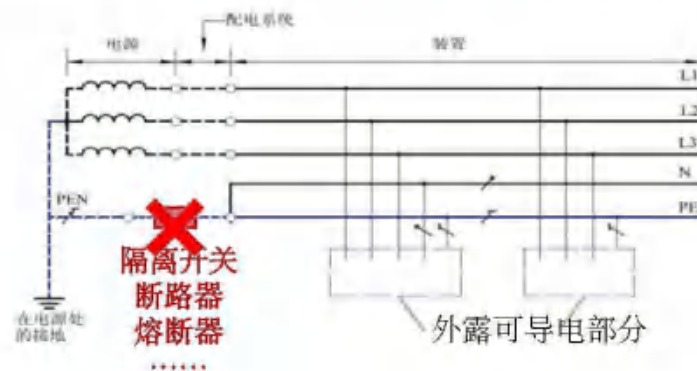
(PEN)，且不得装设断开保护接地中性导体 (PEN)

的任何电器。

【条文说明】

在TN-C系统(包括TN-C-S系统的TN-C部分)中，若保护接地中性导体(PEN)单独断开，由于不平衡电压或接地故障可能导致PEN带上危险电压，从而引起触电事故，危及人身安全。因此，在TN-C系统中，不仅规定严禁断开PEN，还要求不得装设能断开PEN的任何开关电器，诸如隔离开关、断路器，熔断器等。

无论是干线还是末端的PEN均不得通过开关电器断开，主要是为防止诸如中性极触头接触不良等情况的发生，造成PEN断线。



QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51303-2022第4.3.4条，能否明确什么情况下是4P开关，什么情况下是3P开关？

个人观点

三相四线制系统中四极开关的选用，应符合下列规定：

- 1 电源转换的功能性开关应作用于所有带电导体，且不得使所连接电源并联；
- 2 TN-C-S、TN-S系统中的电源转换开关，应采用切断相导体和中性导体的四极开关；
- 3 有中性导体的IT系统与TT系统之间的电源转换开关，应采用切断相导体和中性导体的四极开关；
- 4 正常供电电源与备用发电机之间的电源转换开关应采用四极开关；
- 5 TT系统中当电源进线有中性导体时应采用四极开关；
- 6 带有接地故障保护（GFP）功能的断路器应选用四极开关。

4.3.7 对于因**过负荷**引起**断电**而造成更大损失的回路，过负荷保护应**作用于信号报警**，**不应切断电源**。

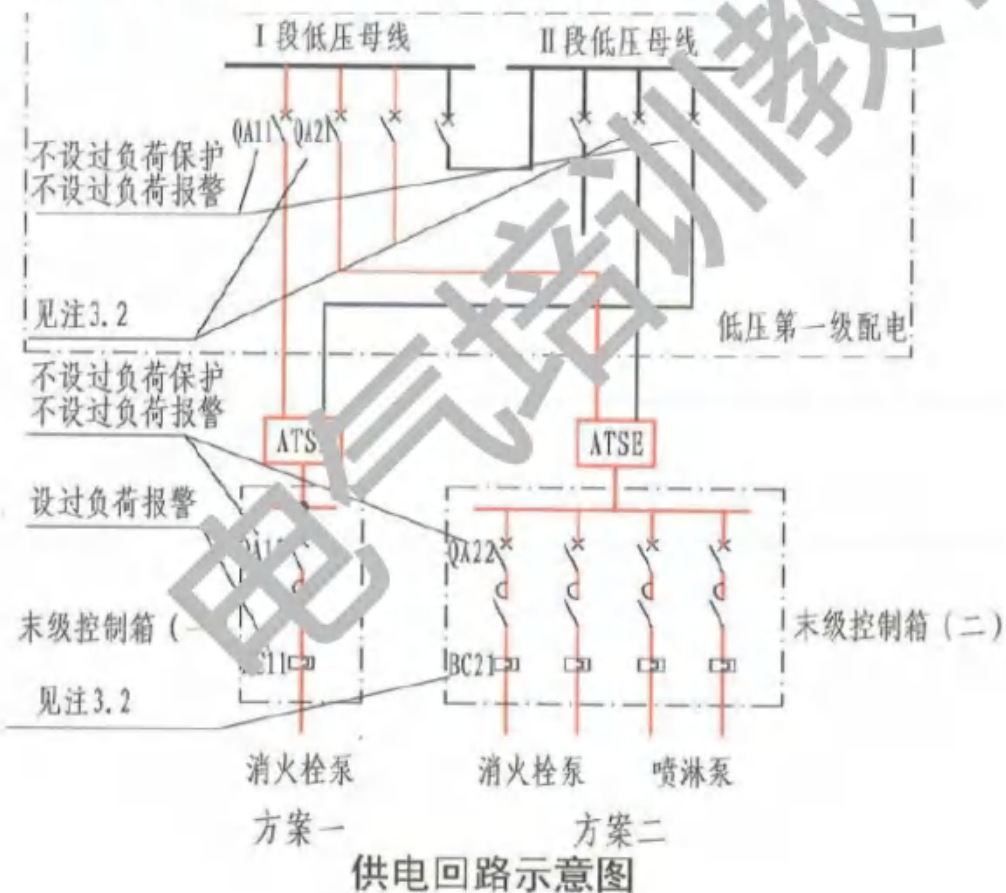
【条文说明】

过负荷保护通常指在过负荷电流引起的导体温升对导体的绝缘、接头(端子)或导体周围的可燃物质造成损害之前切断电源。但对于因过负荷引起断电而造成更大损失的供电回路，如：**消防灭火装置、安全设施(防盗报警器、瓦斯报警器等)**，停电可能造成人员伤亡或重大经济损失的工业生产设备等的供电回路，过负荷保护就不应切断电源，而是发出报警信号。

本条所指供电回路指的是从低压第一级配电至终端用电设备的供电回路，当供电回路发生过负荷时，应将过负荷信号发送至运维管理人员，运维管理人员应根据现场情况采取相应的措施，**供电回路发生短路时应立即断电**。该供电回路不允许接入其他非设计的用电设备(包括施工期间或建成使用后增加的用电负荷)。

终端用电设备的使用功能和保护方式应与工程应用相适应以交流电动机为例，交流电动机有过载保护、堵转保护、断相保护、温度保护、接地故障保护、短路保护等。**不设过载保护的交流电动机**，当运行中可能发生堵转且不断电可能引起火灾等次生灾害时，应装设交流电动机堵转保护/温度保护，**作用于断电**，避免次生灾害发生。

4.3.7 对于因**过负荷**引起**断电**而造成更大损失的回路，过负荷保护应**作用于信号报警**，不应切断电源。



If learning only in the institutions, as we usually have access, there will be no technology, master new technology, be good at learning must be good at thinking. The key is to learn to learn is not to think. Our cause is to learn to learn, and strive to accumulate more knowledge, increase of the knowledge, society will have great progress, the future of human progress lies in this. Success is not an important thing, it is an important effort. Not to find an easier way to think, only to find a way to succeed. The secret of success is the persistent pursuit of the goal. May I be strenuous, energetic and persevering. (Wang Jie, 1997)

您的问题

《建筑电气与智能化通用规范》GB55024-2022第4.3.7条，对应于消防设备供电回路是应取消过负荷保护装置还是应采用过负荷报警断路器？配电线路的范围如何确定？防火卷帘、挡烟垂壁、消防排污泵、应急照明电源回路的保护是否也按此条要求执行？

个人观点

- 1 消防设备供电回路断路器应采用单磁脱扣，过负荷时不切断电源。过负荷报警可通过采用过负荷报警断路器，或电力监控系统或消防电源监控系统实现，信号应传输至运维管理人员；
- 2 配电线路的范围是从低压第一级配电至终端用电设备的供电回路；
- 3 主要指消防灭火装置、安全设施（防盗报警器、瓦斯报警器）等动力设备。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51303-2022第4.3.7条，消防配电不设置过负荷保护是否可以只涉及风机水泵等配电，是否全程不应设置过负荷保护？

个人观点

消防配电不设置过负荷保护不仅风机水泵等配电，消防电梯、消防控制室等配电也需要，全程不需要过负荷保护。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is: the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

公共厨房、锅炉房的事后排风机，变电所气体灭火的事后排风机是否属于消防设备？

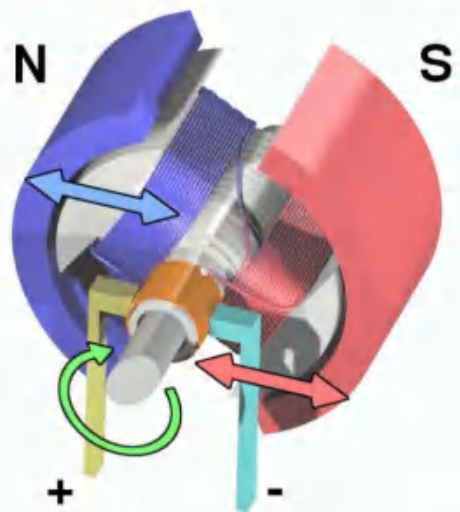
个人观点

如果事故排风机、事后排风机发生火灾时不需要工作，**不属于消防设备**，考虑到其重要性，可按二级及以上负荷等级要求供电，火灾时可切除。变电所气体灭火的事后排风机应当满足火灾后的使用要求。

4.3.9 当交流电动机**反转**会引起危险时，应有**防止反转**的安全措施。

【条文说明】

对于民用建筑中常见的自动扶梯、旋转门等用电设备，当采用的交流电动机发生反转时会引起危险，造成人员伤害和设备的损坏，因此应有防止反转的电气和机械安全措施。特别是自动扶梯在重载时要避免电气回路**过载**、短路、机械驱动链断链电动机力矩不足等故障发生。



4.3.10 当被控用电设备需要设置急停按钮时，**急停按钮**应设置在被控用电设备附近便于操作和观察处，且**不得自动复位**。

【条文说明】

对于民用建筑中擦窗机自动扶梯、旋转门等用电视备，在运行过程中由于突发事件，有可能会发生人员伤亡的事故。特别是在检修设备时，因误启动而造成维修人员伤亡的事件也时有发生，所以在被控用电设备附近便于识别、操作和观察处设置不能复位的急停按钮是十分必要的。根据产品和现场情况急停按钮可以单独设置，也可以设置在用电设备上，其手动操作的急停按钮应可直接断开主回路。



QUESTION & ANSWER

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您的问题

《建筑电气与智能化通用规范》GB55021-2022第4.3.9条，第4.3.10条，在电气施工图中怎么表达？仅在说明中提出要求，可以吗？

个人观点

电气施工图中，可以通过**二次原理图**表达，并应在说明中提出要求。

QUESTION & ANSWER

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您的问题

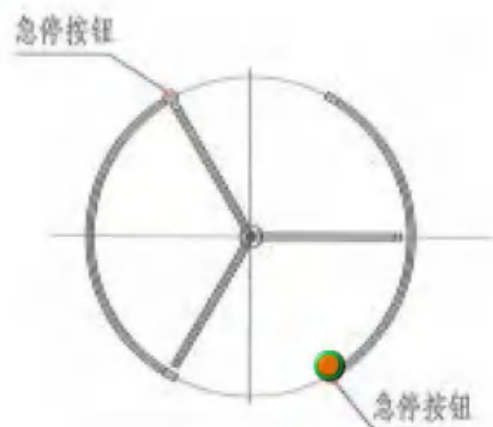
《建筑电气与智能化通用规范》GB55021-2022第4.3.10条，扶梯是否采用扶梯自带的急停按钮就可以？

个人观点

可以。

Analysis of Difficult Problems in Electrical Design of Mandatory Engineering Construction Codes

《建筑电气与智能化通用规范》
GB 55024-2022
General code for building electricity
and intelligence



自动门俯视图



自动门正视图



自动扶梯剖面图

自动扶梯立面图



4.4.2 特低电压配电回路的布线应符合下列规定：

- 1 特低电压配电回路的线缆应选用**铜芯导体**；
- 2 铜芯导体应满足**最小截面面积和机械强度**的要求；
- 3 当特低电压配电回路与交流220V/380V低压配电回路敷设在**同一金属槽盒内**时，应采用带接地的**金属隔离措施**。

【条文说明】

本条特低电压配电回路布线是指特低电压配电系统的布线，不同于智能化系统的布线，因为智能化系统布线主要考虑各种性能指标以及电磁干扰等的影响。而特低电压配电系统的布线主要考虑用电安全。当特低电压配电回路与交流220V/380V低压配电回路敷设在同一金属槽盒内时，应全程采用可靠的带接地的金属隔离措施，且金属隔离全程中不能断开。

低电压配电回路的线缆选用铜芯导体，除应满足最小截面面积和机械强度的基本要求外，其具体截面面积还应根据导体的实际载流量、敷设方式、环境条件、电压损失、动稳定、热稳定等条件来确定。

按照特低电压系统布线的机械强度要求，对于交流回路的相导本和直流回路带电导体的最小截面面积可按《低压电气装置 第552部分：电气设备的选择和安装布线系统》GB/T16895.6-2014表52.2进行选取。其值不应小于 1.5mm^2 。

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您的问题

根据《建筑电气与智能化通用规范》GB55024-2022第4.4.2条，第3款，当采用金属隔板时，其接地做法如何要求？是否参照金属电缆桥架接地做法？

个人观点

《建筑电气与智能化通用规范》GB55024-2022 第8.7.1条

电缆桥架本体之间的连接应牢固可靠，金属电缆桥架与保护导体的连接应符合下列规定：

- 1 电缆桥架全长不大于30m时，不应少于2处与保护导体可靠连接；全长大于30m时，每隔20m~30m应增加一个连接点，起始端和终端端均应可靠接地；
- 2 非锁锌电缆桥架本体之间连接板的两端应跨接保护联结导体，保护联结导体的截面面积应符合设计要求；
- 3 镀锌电缆桥架本体之间不跨接保护联结导体时，连接板每端不应少于2个有防松螺帽或防松垫圈的定螺栓。

4.4.3 采用安全特低电压 (SELV) 供电的照明回路应设置**过负荷**和**短路**保护。

【条文说明】

使用安全特低电压 (SELV) 的照明回路，由于存在着灯具更换以及容量、数量增加的可能性，具有潜在的过负荷和短路的安全隐患，必须设置过负荷和短路保护，以保证人身安全和配电系统的正常运行。

**安全特低电压
SELV**

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您的问题

应急照明集中电源供电回路上是否必须按消防设施考虑，设置单磁脱扣器？如果必须设，是否和《建筑电气与智能化通用规范》GB 51024-2022 中第4.4.3条 SELV 供电的照明回路上应设置过载保护相违背？

个人观点

应急照明集中电源供电回路上应按消防设施考虑，设置单磁脱扣器。消防疏散指示照明末端采用熔断器保护，熔断器只能在大电流时快速切断回路，起短路保护作用，通过1.25倍的额定电流，熔体的熔断时间是 ∞ ，通过1.6倍的额定电流，熔体的额定动作时间是3600s，通过1.8倍的电流，额定动作时间是1200s，熔断器不可能起到过载保护作用。

4.5.1 建筑物应设置照明供配电系统。照明配电终端回路应设短路保护、过负荷保护和接地故障保护，室外照明配电终端回路还应设置剩余电流动作保护器作为附加防护。

【条文说明】

低压配电设计一般要求配电干线回路设置短路保护和过负荷保护。在实际工程中，终端回路过长，容易忽视因发生接地故障未切断电源而引起的火灾事故，所以本条款规定照明配电终端回路除应设短路保护和过负荷保护外，还应设置接地故障保护。

接地故障保护并不一定要采用剩余电流动作保护电器(RCD)，断路器在其接地故障允许保护线路最大长度内是可以将短保护，过负荷保护和接地故障保护功能兼用的。如果断路器保护线路长度大于其接地故障允许的最大长度，应校验断路器接地故障保护的灵敏度，灵敏度不够时，可采用RCD作接地故障保护。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 513024-2022第4.5.1条，首层室外雨棚及屋顶层设备机房室外门头上方照明是否按照此条执行？

个人观点

首层室外雨棚及屋顶层设备机房室外门头上方照明应设置剩余电流动作保护器作为附加防护。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51303-2022第4.5.1条，建筑物入口处雨棚下的灯具是否也要设置剩余电流动作保护器？

个人观点

建筑物入口处雨棚下的灯具（安装高度大于2.5m）不需要设置剩余电流动作保护器。

《建筑电气与智能化通用规范》
GB 55024-2022
General code for building electricity
and intelligence

4.5.3 室外灯具防护等级不应低于IP54，埋地灯具防护等级不应低于IP67，水下灯具的防护等级不应低于IP68。

【条文说明】

室外照明灯具及接线盒防护等级对用电安全至关重要，所以本条对室外不同场所灯具防护等级作出规定。



QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 5024-2022第4.5.3条，室外连廊、雨篷处等建筑物上固定安装的灯具，是否采用防护等级不应低于IP54的灯具。当设计中未注明灯具防护等级时，是否违反强条？

个人观点

室外连廊、雨篷处等建筑物上固定安装的灯具，采用防护等级不应低于IP54的灯具。当设计中未注明灯具防护等级时，**违反**强条。

4.5.4 当正常照明灯具安装在**2.5m**及以下，且灯具采用交流低压供电时，应设置**剩余电流动作保护器**作为附加防护。疏散照明和疏散指示标志灯安装在**2.5m**及以下，应采用安全特低电压供电。

【条文说明】

距地面**2.5m**及以下的高度，为正常情况下**人体可能接触到的高度范围**，即“伸臂范围”。为防电击危险，提高安全性，在伸臂范围内安装的正常照明灯具，当采用交流低压配电时，需要加装**剩余电流动作保护电器**作附加防护。

疏散照明和疏散指示标志灯，在火灾发生时，自动喷水灭火系统、消火栓系统等水灭火系统产生的水灭火介质很容易导致灯具的外壳发生导电现象，为了避免人员在疏散及灭火救援过程中触及灯具外壳而发生电击事故，灯具安装在伸臂范围**2.5m**以下时，采用非安全电压供电，火灾时对逃生人员和救援人员容易造成触电危险，如果采用满足潮湿场所的安全特低电压（SELV）供电，如电压不超过交流**25V**，直流供电电压不大于**60V**时，满足特殊场所的安全供电要求，安全更有保障。疏散照明灯和疏散指示标志灯采用安全特低电压供电，技术已经成熟，对逃生人员和救援人员安全有很大保障。

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovations. To live is to learn, to learn is not to live. Our cause is to learn, to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

按《建筑设计防火规范》GB 50016第10.3.6条，保持视觉连续的疏散指示标志是否可以选择蓄光疏散指示标志？

个人观点

不行。《消防应急照明和疏散指示系统技术标准》GB 51309 第3.2.1条，第2款规定“不应采用蓄光型指示标志替代消防应急标志灯具”；《民用建筑设计标准》GB 51348 第13.2.3条第3款规定“当设置蓄光疏散标志时，只能作为灯光疏散指示标志的补充”。因此，蓄光型疏散指示标志不能替代地面灯光疏散指示标志。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51302-2022第4.5.4条，安装高度在2.5m及以下采用交流低压供电的消防备用照明，是否应设置剩余电流动作保护电器作为附加防护？

个人观点

消防备用照明安装高度在2.5m时间，应采用安全特低电压供电，不应设置剩余电流动作保护电器作为附加防护。

4.5.5 疏散照明及疏散指示标志灯具的供配电设计应符合下列规定：

- 1 灯具应由**主电源和蓄电池**电源供电。蓄电池组正常情况下应保持充电状态，火灾情况下应保证蓄电池组的供电时间满足安全疏散要求。
- 2 **集中控制型系统，其主电源应由消防电源供电。**

【条文说明】

本条明确了灯具供电的双电源由主电源和蓄电池电源组成，主电源可为城市电网电源或柴油发电机自备电源，蓄电池电源是火灾时最可靠的电源。平时保持城市电网给蓄电池充电状态不断开充电电源，如果采用安全特低电压供电的疏散照明及疏散指示标志灯，火灾时，可以不切断城市电网供电电源，当接收到断开主电源的信号时，才切断主电源由蓄电池供电，以保障疏散和消防救援人员的安全。蓄电池供电时间应满足防火疏散要求。

灯具采用集中控制时，灯具主电源为消防电源，火灾时电源可由消防控制室控制；灯具采用非集中控制时，灯具主电源采用的正常电源应在灭火水系统启动之前切除，由蓄电池供电，可以保证疏散和消防救援人员的安全。疏散照明与疏散指示标志对安全疏散十分重要，所以设为强制性条文。

QUESTION & ANSWER

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您的问题

消防应急照明和疏散指示系统已有蓄电池作为备用电源，是否还要双回路末端切换，主电源是否需要采用消防电源？

个人观点

集中控制型消防应急照明和疏散指示系统供电应是消防电源。疏散照明由主电源和蓄电池组供电，当疏散照明为**二级负荷及以上**时，主电源应由双电源自动转换箱供电，蓄电池组可分区集中设置，也可分散附设于灯具内。为疏散照明供电的双电源自动转换箱应安装于本防火分区的配电小间内或电气竖井内。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

公共建筑疏散照明采用集中电源供电，楼梯间疏散照明可否兼作平时照明？

个人观点

公共建筑**不可以**将楼梯间疏散照明可否兼作平时照明。《消防应急照明和疏散指示系统技术标准》GB 51309 第3.1.6 条，只允许住宅建筑中，当灯具采用自带蓄电池供电方式时，消防应急照明可以兼用日常照明。

QUESTION & ANSWER

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您的问题

出屋面楼梯间的门是否设置出口标志灯？如需设置，是设疏散出口指示灯，还是安全出口指示灯？

个人观点

应设置疏散出口指示标志。

QUESTION & ANSWER

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您的问题

强弱电井、配电小间是否需要设置备用电源？

个人观点

不需要，强弱电井、配电小间属于无人值守，火灾时也不需要继续工作的场所。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovations. To live is to learn, to learn is not to live. Our cause is to learn, to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

汽车库、商场等大空间场所疏散指示标志是否可吊装？

个人观点

低处不能安装的条件下，汽车库的疏散指示灯，可设置于疏散通道上方；当可以低处安装时，在侧面墙、柱上设置时，应避开被车位遮挡视线的部位，距地面高度1m以下。商场等大空间场所当疏散通道有墙或柱，且没有遮挡时，疏散指示灯应设置在墙或柱上，距地面高度1m以下；当疏散通道虽有墙或柱，但1m以下被遮挡或应安装疏散指示灯位处无墙或柱时，疏散指示标志可吊装。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

防火分区内设置消防双电源自动转换箱为本防火分区的消防风机、防火卷帘、消防排水泵供电，本防火分区的应急照明能否从该配电箱供电？

个人观点

应急照明可以从本防火分区的消防双电源自动转换箱供电。

4.5.6 消防应急照明回路严禁接入消防应急照明系统以外的开关装置、插座及其他负载。

【条文说明】

本条规定了消防应急照明配电箱或集中电源的输入及输出回路中不应接入消防应急照明系统以外的开关装置、电源插座及其他负载。在火灾等紧急情况下，为了保障消防应急照明发挥应有的消防功能，接入消防应急照明系统以外的开关装置、电源插座及其他负载，会导致消防应急照明不能正常工作。消防应急照明及疏散指示系统属于建筑消防系统范畴，系统供配电线路的选型和施工要求均严于其他非消防用电设备。

本条是保障消防应急照明系统运行稳定性和应急启动可靠性的基本要求，因此将该条定为强制性条文，必须严格执行。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第4.5.6条，消防应急回路，是否包括消防应急照明配电箱的输出回路？

个人观点

消防应急回路，包括消防应急照明配电箱的输出回路。

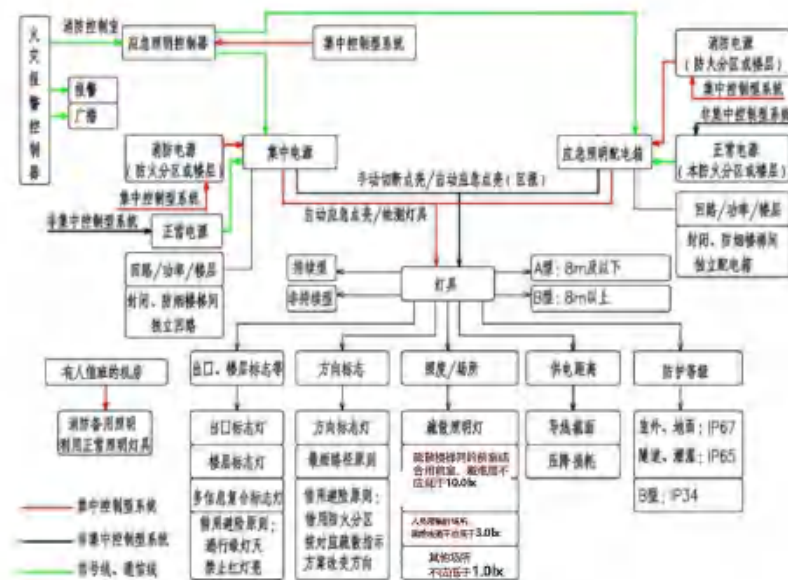
《建筑电气与智能化通用规范》 GB 55024-2022 General code for building electricity and intelligence

4.5.7 设有消防控制室的公共建筑，消防疏散照明和疏散指示系统

应能在消防控制室**集中控制**和状态监视。

【条文说明】

消防控制室内设置的消防设施包含消防应急照明和疏散指示系统控制装置。消防应急照明分为消防疏散照明和备用照明。设有消防控制室的公共建筑，一般规模较大、功能复杂，要求消防疏散照明与疏散指示系统在消防控制室集中监控，技术成熟，有利于消防应急照明和疏散指示系统的可靠运行。对于一个消防控制室控制范围内的所有公共建筑内的消防疏散照明与疏散指示系统均应在此消防控制室集中控制和状态监视。



QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB55024-2022第4.5.7条，消防应急回路，设有消防控制室的园区内，不需要设火灾自动报警系统的公共建筑，没法检测报警信号和联动应急照明设备，该公共建筑的应急照明系统还需要在消防控制室集中控制和状态监视吗？（该强制性条文是否能和《应急照明与疏散系统》要求的那样，只对设了火灾自动报警系统的建筑内的应急照明系统实行监测）

个人观点

同意。

4.5.8 人员密集场所的公共大厅和主要走道的一般照明应采取下列措施之

一：

- 1 采用感应控制；
- 2 采用集中或区域集中控制，当集中或区域集中采用自动控制时，应具

备手动控制功能。

【条文说明】

人员密集场所是指公共聚集场所，医院的门诊楼、病房楼，学校的教学楼、图书馆、食堂和集体宿舍，养老院、福利院，托儿所，幼儿园，公共图书馆的阅览室，公共展览馆、博物馆的展示厅，劳动密集型企业的生产加工车间和员工集体宿舍旅游、宗教活动场所等。人员密集场所的公共大厅和主要走道的一般照明，**应有集中控制或者分区集中控制**，以便由工作人员专管或兼管，采用自动方式开关灯，不仅可以节能，也有利于安全和管理。如果有条件的场所，采用分组开关方式或调光方式控制，可按需要降低照度，更有利于节能。如果采用自动控制系统，为确保安全，要求自动控制系统故障时仍可手动控制照明自动控制系统如果出现故障而不能手动控制，会引起恐慌，一般自动控制模块上设有手动开关，能够实现手动控制功能。公共场所照明控制如果采用感应控制方式，一般每个灯都自带感应器，感应器损坏也是分散的，不会导致全部灭灯引起恐慌。因此，如果采用感应控制时，不要求集中控制，也不存在手动控制。此条涉及安全和节能，故定为强制性条文。

If learning only in the institutions, as we usually have access, there will be the technology, master new technology, be good at learning, must be good at thinking. The key is to learn, to learn is not to think. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human progress lies in this. Success is not an important thing, it is an important effort. Not to find an answer for future, only to find a way to success. The secret of success is the persistent pursuit of the goal. May I be stubborn, energetic and persevering. (May I ever keep a promise given)

您的问题

根据《建筑电气与智能化通用规范》GB55024-2022第4.5.8条，采用单灯就地控制是否可以？《建筑节能与可再生能源利用通用规范》GB55015-2021第3.3.8条：建筑的走廊、楼梯间、门厅、电梯厅及停车库照明应能够根据需求进行节能控制。该条的要求与GB 55024-2022第4.5.8条有何不同？

个人观点

就地控制应该是在当地应有照明控制器，是出于如果出现故障而不能手动控制，避免引起恐慌，在自动控制模块上设有手动开关。《建筑节能与可再生能源利用通用规范》GB55015-2021第3.3.8条，强调的是节能要求，《建筑电气与智能化通用规范》GB 55024-2022第4.5.8条，明确提出可以采用感应控制要求和手动控制功能。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn, to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第4.5.8条，怎样做才算是满足了“手动控制功能”？现场的翘板开关是否可作为手动控制措施？

个人观点

人员密集场所的公共大厅和主要走道的一般照明，应有集中控制或者分区集中控制。如果有条件的场所，采用分组开关方式或调光方式控制，可按需要降低照度，更有利于节能。

“手动控制功能”是指在采用集中或区域集中自动控制时的一种状态，要在自动控制模块上设有手动开关。

4.6.2 当电气设备采用保护电器自动切断电源作为低压电击故障防护措施时，对于**线对地**标称电压为交流**220V**的**TN**系统和**TT**系统，额定电流不超过**63A**的**电源插座回路**及额定电流不超过**32A****固定连接**的固定电气设备的**终端回路**，切断电源的最长时间应符合下列规定：

- 1 **TN**系统切断电源的最长时间应为**0.4s**。
- 2 **TT**系统切断电源的最长时间应为**0.2s**；当**TT**系统采用过电流保护电器切断电源，且采取保护等电位联结措施时，其切断电源的最长时间应为**0.4s**。

【条文说明】

国家标准《标准电压》GB/T156-2017规定了我国交流低压系统线对地标称电压为220V，即交流220V/380V系统，且自动切断电源是电击防护应用最广泛、最有效的防护措施。本条是根据《低压电气装置第4-41部分：安全防护电击防护》GB/T16895.21-2020/IEC60364-4-41:2017第411.3.2.2条规定的电源插座回路、固定连接电气设备的终端回路最长切断电源的时间编制而成，以保障广大人民群众人身安全。

2 所述的TT系统，由于采用了保护等电位联结，该系统接地故障保护最长切断电源的时间可采用TN系统最长的切断电源时间。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 50344-2022第4.6.2条，“固定连接的电气设备的终端回路”应如何理解？

个人观点

“固定连接的电气设备的终端回路”不是需要靠插座连接电气设备。

4.6.4 当电气分隔采用一台隔离变压器为一台用电设备供电时，应符合下列规定：

- 1 隔离变压器**不应功能接地**；
- 2 用电设备**外露可导电部分应接地**；
- 3 被分隔回路不应与地或其他回路保护导体及外露可导电部分连接。

【条文说明】

《电击防护装置和设备的通用部分》GB/T17045-2020/IEC61140:2016定义了相关术语，见表5。

术语	条款号	定义
电气分隔	3.25	将危险的带电部分与所有的其他电气回路和电气部件绝缘以及与局部地绝缘，并防止一切接触的防护措施。
简单分隔	3.26	利用基本绝缘在电气回路之间或电气回路与局部地之间进行分隔。
防护分隔	3.24	借助于下列方法将一个电气回路与另一电气回路分隔： ——双重绝缘；或 ——基本绝缘和电气保护屏蔽；或 ——加强绝缘， 其中电气保护屏蔽是用与保护等电位联结系统连接的电气保护屏蔽体将电气回路和/或导体与危险带电部分隔开，并提供电击防护。

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您的问题

根据《建筑电气与智能化通用规范》GB 55024-2022第4.6.4条，第2款、第3款与GB 55024-2022第7.2.3条：IT接地系统电气设备的外露可导电部分应直接接地。请问：这两条是否自相矛盾？

个人观点

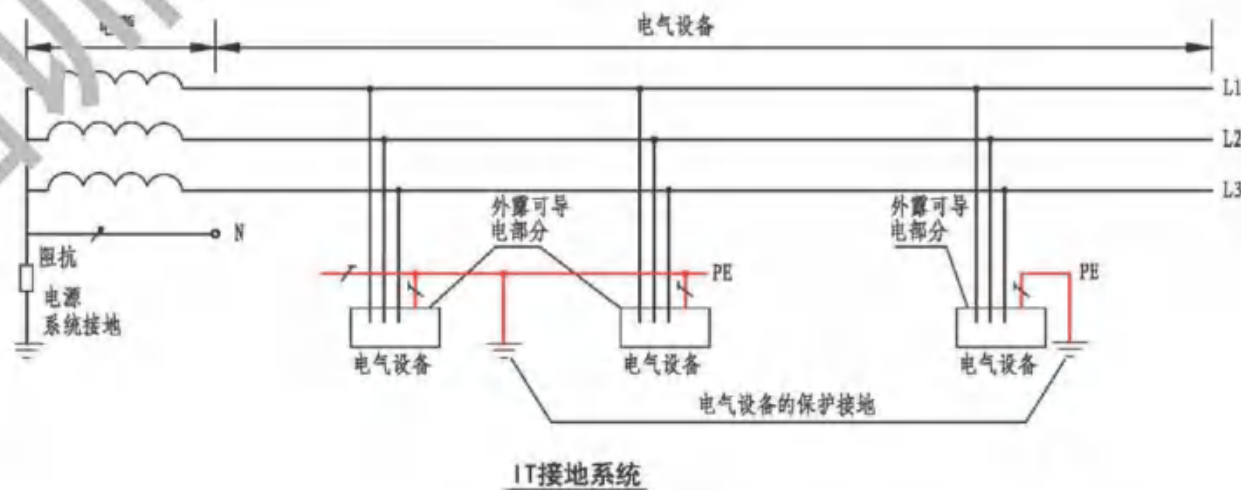
不矛盾。IT接地系统采用隔离变压器与供电系统的接地系统完全分开，其系统中电源侧的任何带电部分（包括中性导体）严禁直接接地。

7.2.3 IT接地系统

电源侧所有带电部分应与地隔离或某一点通过高阻抗接地，电气设备的外露可导电部分直接接地。

【条文说明】

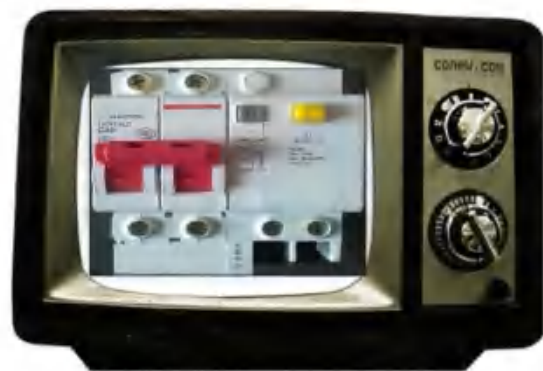
IT接地系统采用隔离变压器与供电系统的接地系统完全分开，所以其系统中电源侧的任何带电部分(包括中性导体)严禁直接接地。单点对地的第一次故障，可不切断电源，但不应长时间保持故障状态，应进行故障报警，以避免发生人体同时接触不同电位的外露可导电部分而发生电击危险。



注：所有外露可导电部分可分组接地或独立接地。

4.6.5 当采用剩余电流动作保护器作为**电击防护附加防护**措施时，应符合下列规定：

- 1 额定剩余电流动作值不应大于**30mA**；
- 2 额定电流不超过32A的下列回路应装设剩余电流动作保护器：
 - 1) 供**一般人员使用**的电源插座回路；
 - 2) 室内**移动**电气设备；
 - 3) 人员**可触及的室外**电气设备。
- 3 剩余电流动作保护器不应作为唯一的保护措施；
- 4 采用剩余电流动作保护器时应装设保护接地导体（PE）。



QUESTION & ANSWER

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您的问题

《建筑电气与智能化通用规范》GB 55024-2022第4.6.5条第2款第3项中“人员可触及的室外电气设备”，是否指32A及以下的室外移动设备和本条条文解释中表6所列15项的特殊装置或场所？不包括如建筑物屋顶室外的多联机、风机、水泵等设备？

个人观点

是的。屋顶室外的多联机、风机、水泵等设备额定电流不超过32A的回路应装设剩余电流动作保护电器(消防设备除外)，超过32A的回路应做辅助等电位联结和物理隔离措施。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB55024-2022第4.6.5条，GB51348-2019第9.2.12条：水泵房中的生活水泵电动机应加装灵敏度为300mA的剩余电流动作保护器做接地故障保护。二者矛盾，如何执行？

个人观点

《建筑电气与智能化通用规范》GB55024-2022第4.6.5条采用剩余电流动作保护器是作为电击防护附加防护措施，水泵房中的生活水泵电动机应加装灵敏度为300mA的剩余电流动作保护器是做接地故障保护。

4.6.10 加热电缆辐射供暖设备、公共厨房用电设备、电辅助加热的太阳能热水器、升降停车设备、人员可触及的室外金属电动门等用电设备的电击防护应设置附加防护，并符合下列规定：

- 1 应采用额定剩余电流动作值不大于**30mA**的剩余电流动作保护器；
- 2 应设置**辅助等电位联结**。

【条文说明】

加热电缆辐射供暖设备、公共厨房用电设备、电辅助加热的太阳能热水器、升降停车设备、人员可触及的室外金属电动门等特殊装置或场所的用电设备，相比于普通用电设备或场所，人易接触，其电击危险性大，因此除采取基本防护，故障防护的电击防护措施外，尚应采用附加防护措施，且要求采用剩余电流动作保护电器和辅助等电位联结二者兼有的附加防护措施。

本条不适用于无人值守的智能厨房和无人值守的智能车库的相关设备，这些场所的智能设备正常是无需人员操作，人员不易接触，故不将附加防护作为强制要求。这类场所的电气设备，除按规定采取电击防护措施外，运行和维护时，还需做好维护人员的防护。

QUESTION & ANSWER

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您的问题

消防电伴热采用消防电源供电，能否设置剩余电流保护装置？外审要求跳闸，不能只反馈信号。

个人观点

消防电伴热采用消防电源供电，可以采用剩余电流保护装置，应是报警信号，不应跳闸。某外审要求跳闸是不合理的。当出现漏电应及时处理，如果简单跳闸，可能会使消防水管冻裂，影响消防设施工作。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51303-2022第4.6.10条，请问家用太阳能热水器如何做辅助等电位联结？

个人观点

家用太阳能热水器在电辅助加热处2.5m之内做辅助等电位联结。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第4.6.10条，室外空调是否执行此条？

个人观点

人员可触及的室外空调设备应采用额定剩余电流动作值不大于30mA的剩余电流动作保护器，并应设置辅助等电位联结。

5.1.2 建筑物应设置**信息网络系统**。信息网络系统应满足建筑使用功能、业务需求及信息传输的要求，并应配置**信息安全**保障设备及网络安全管理系统。

【条文说明】

《绿色建筑评价标准》GB/T 50378-2019第6.1.6条控制项规定，建筑物应设置信息网络系统，在信息时代，作为数据应用支撑的信息网络系统，已是现代建筑必要的基础设施。建筑内的信息网络系统一般分为业务信息网和智能化设施信息网，由物理线缆层、网络交换层、安全及安全管理系统、运行维护管理系统等组成，支持建筑内语音、数据、图像等多种类信息的传输。系统和信息的安全，是系统正常运行的前提，一定要保证。建筑内信息网络系统与建筑物外其他信息网互联时，必须采取信息安全防护措施，确保信息网络系统安全、稳定和可靠。

现代业务的运行、运营及管理等信息系统的安全密切相关，如果信息系统受到破坏，将会带来巨大的损失。而对于政府、金融等建筑，政务办公、金融业务运行更加依赖于信息化系统。因此，加强网络安全建设关系到政府办公的信息安全、国家和人民的金融秩序等，对此应高度重视及严格管理。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第5.1.2条，哪些建筑物应设信息网络系统？工业厂房、仓库、独立建造的公共卫生间等是否需要设信息网络系统？

个人观点

在信息时代，作为数据应用支撑的信息网络系统，已是现代建筑必要的基础设施。建筑内的信息网络系统一般分为业务信息网和智能化设施信息网，由物理线缆层、网络交换层、安全及安全管理系统、运行维护管理系统等组成，支持建筑内语音、数据、图像等多种类信息的传输。

5.1.3 通信系统设计应符合下列规定：

- 1 公共建筑应配套建设与通信规划相适宜的公共通信设施；
- 2 公共移动通信信号应覆盖建筑物的**地下公共空间、客梯轿厢内。**

【条文说明】

2013年8月，国务院发布“宽带中国”战略及实施方案，明确宽带网络是我国经济社会发展的“战略性公共基础设施”。目前通信已经成为与水、电、气、暖等具有相同地位的建筑基本功能，属于建筑的公共基础设施。建筑内通信系统包括用户电话交换系统、光纤宽带通信系统和移动通信系统等，支持建筑内语音、数据、图像等多种类信息的传输。在有公众通信需求的民用建筑，需要满足用户公共通信的基本权益，配套建设公共通信系统。对于用户电话交换系统和光纤宽带通信系统，在建筑工程建设中应配套建设通信设备间、通信管道、配线箱、配线模块、用户光缆等通信设施，以满足大众对于公众通信服务的需求；对于移动通信系统，应按照通信基础设施专项规划的要求配套建设公共移动通信基站，来满足用户的公共移动通信需求，但对于公共移动通信基站信号无法覆盖的高层民用建筑、公共建筑地下公共空间，需要配套建设公共移动通信室内信号覆盖系统，对于有多家移动通信运营企业建设需求的，应当予以满足，以保证大众对于公共移动通信的需求。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第5.1.3条，施工图中，设计深度怎么要求？目前施工图基本都没有设计，只在说明中提出要求，二次深化设计完成？

个人观点

可以按《建筑工程设计文件编制深度规定》（2016年）完成。

5.1.5 公共广播系统设计应符合下列规定：

- 1 公共广播系统应具有实时发布语音广播的功能。当公共广播系统具有多种语音广播用途时，应有一个广播传声器处于最高广播优先级。
- 2 紧急广播应具有最高级别的优先权，紧急广播系统备用电源的连续供电时间应与消防疏散指示标志照明备用电源的连续供电时间一致。
- 3 公共广播系统应能在手动或警报信号触发的10s内，向相关广播区播放警示信号（含警笛）、警报语音或实时指挥语音。
- 4 以现场环境噪声为基准，紧急广播的信噪比应等于或大于12dB。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51024-2022第5.1.5条，第4款，紧急广播的信噪比应等于或大于12dB，条文说明讲，紧急广播与消防应急广播共用时，信噪比应按消防应急广播指标取值大于或等于15dB，如何理解？

个人观点

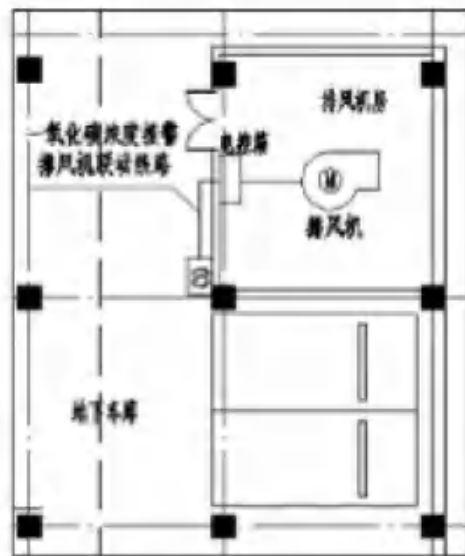
紧急广播的信噪比应等于或大于12dB，消防应急广播的信噪比应等于或大于15dB。

5.2.2 设有建筑设备管理系统的地下机动车库应设置与排风设备联动的一氧化碳浓度监测装置。

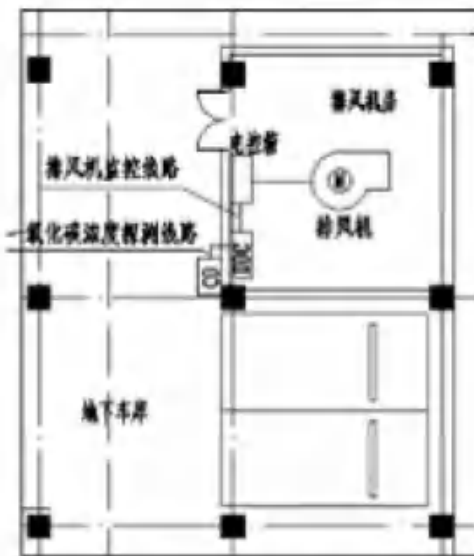
【条文说明】

本条是根据《绿色建筑评价标准》GB/T50378-2019第5.1.9条控制项提出的要求，目的是利用已设有建筑设备管理系统，监管地下机动车库的空气质量。

地下机动车库空气流通不好，容易导致有害气体浓度对人体造成伤害，设有建筑设备管理系统并设置地下机动车库的建筑，在地下机动车库设置与排风设备联动的一氧化碳检测装置，超过一定的量值时即报警并启动排风系统。



无建筑设备监控系统的联动平面



有建筑设备监控系统的联动平面

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第5.2.2条，能否明确一下一氧化碳浓度监测探头的位置及数量？

个人观点

一氧化碳浓度监测探头的位置应接近回风口处，安装高度大约距离地面1.5m-2m左右，探测器的检测范围为 200m^2 - 300m^2 。

CO含量	吸入时间	危害
50ppm	-	成年人置身其最大临界值
200ppm	2-3h	轻微头痛、头晕、恶心
400ppm	2h	前额痛
	3h	有生命危险
800ppm	45min	头痛、恶心
	2-3h	死亡知乎

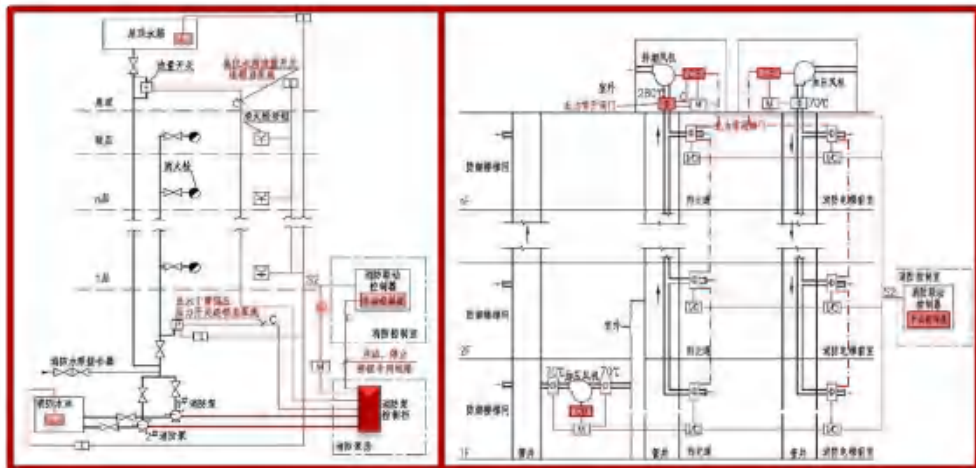
5.3.1 消防水泵、防烟和排烟风机应采用**联动/连锁控制**

制方式，还应在**消防控制室设置手动控制消防水泵启动装置**。

【条文说明】

消防水泵、防烟和排烟风机是火灾时最需要保障运行的消防设备，应根据其特性采取相应的可靠的、有效的控制方式，达到安全疏散、快速灭火的目的。

1) 消防水泵应由消防联动控制器按照预设逻辑和时序联动控制启动，或由消防水泵控制装置(《消防联动控制系统》GB16806-2006中的消防水泵控制装置)连锁控制启动。



QUESTION & ANSWER

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您的问题

依据《建筑电气与智能化通用规范》GB 55034-2022第5.3.1条，消防水泵、消防风机还需要消防控制室硬线启动吗？

个人观点

在消防控制室需要设置手动直接（硬线）控制消防水泵启动装置。**消防风机不必采用硬线在消防控制室进行控制**，通过用在消防控制室联动控制上手动启动的方式也是符合GB 55036 第11.1.5 条规定的。

QUESTION & ANSWER

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您的问题

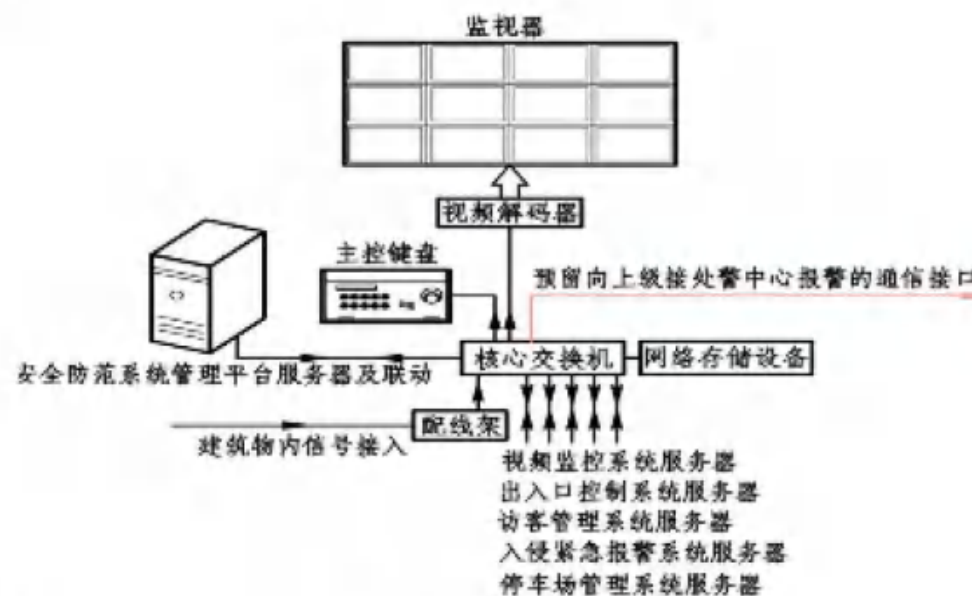
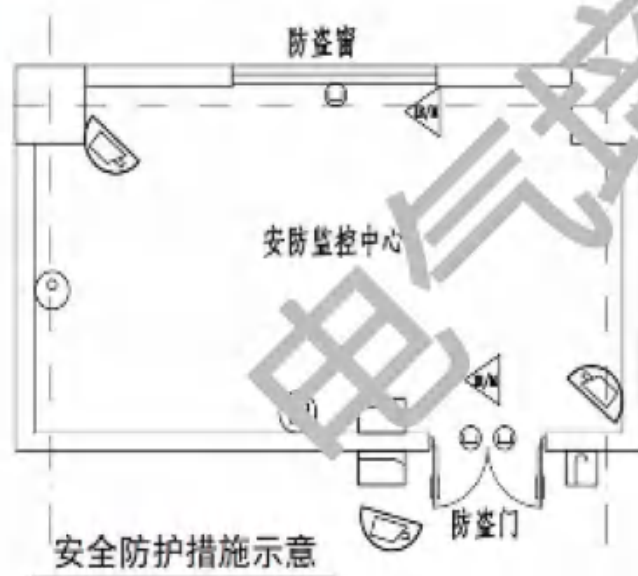
按消防验收的要求，风机、水泵需设置24V手动直启动按钮。设计中如何把握，是否有统一的规定和做法？

个人观点

消防水泵直启动按钮应是24V。

5.3.3 安防监控中心应具有防止非正常进入的安全防护

措施及对外的通信功能，且应预留向上级接处警中心报警的通信接口。



向上级报警预留接口示意

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 50241-2022第5.3.3条，该通信接口是否可以
为手机电话，还是专用电话且必须预留与上级中心的通信管管线？

个人观点

通信接口应是固定通信设施且必须预留与上级中心的通信管管线，不可以为手机电话。

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您的问题

根据《建筑电气与智能化通用规范》GB55024-2022第5.3.3条，安防监控中心应具有防止非正常进入的安全防护措施及对外的通信功能……问：安防监控中心是否指GB55029-2022第3.1.8条的“监控中心”？还是所有的监控室都叫“监控中心”？

个人观点

安防监控中心就是指GB55029-2022第3.1.8条的“监控中心”。不是所有的监控室都叫“监控中心”。

5.3.4 安防监控中心应采用**专用回路供电**，安全防范系统应按其负荷等级供电。

【条文说明】

安全防范系统是项目安全的保障之一，故安防监控中心供电电源和安全防范系统电源应尽量保证。

尽管安防监控中心经常与其他机房合用，但安防监控中心设备的供电**还是应该独立且不受其他负载故障的影响**，故要求专用回路。安防监控中心的专用回路指从变电所低压配电柜或低压进户的**第一级**配电柜提供电源。

不同项目的安全防范系统负荷等级不同，故需参照其他相关规定。

安全防范系统从系统的重要性考虑，一般都配置有蓄电池电源作后备电源，容量需根据项目的需要设置。蓄电池电源供电时间，主要是依据各个行业的要求而定。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第5.3.4条，当消防控制室与安防监控中心合用机房时，供电电源是否可以合用配电箱？

个人观点

消防控制室与安防监控中心合用机房时，供电电源是**不可以**合用配电箱。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第5.3.4条，安防监控中心电源箱由变电所低压配电柜放射式供电，安防监控中心的照明、维修插座、空调电源是否可以取自本电源箱？

个人观点

安防监控中心的维修插座、空调电源**不宜**取自本电源箱。

5.3.6 出入口控制系统、停车库（场）管理系统应

能接收消防联动控制信号，并应具有**解除门禁控制**的功能。

【条文说明】

本条是保证消防疏散的要求。任何时候系统都必须保证火灾时人员的安全疏散。

发生火灾时，应及时打开疏散通道上的门和庭院的电动门，有助于人员及时疏散。停车库（场）管理系统的**出入口档杆**的子启，主要是确保消防人员及装备进出火灾现场。**解除火灾疏散通道上的门禁控制**，需要在主机所在的机房集中解锁也需要在现场解锁。

出入口控制系统必须满足紧急逃生疏散的需要。内部现场手动直接解锁，指**不需要借助工具**就能解除，要求当发生火警或需紧急疏散时，人员应**不用凭证识读操作**即可通过疏散通道。



QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 513024-2022第5.3.6条，小区或厂区的电动伸缩门是否需要火灾联动打开？如果需要，电动门是否按消防电源供电？

个人观点

小区或厂区的电动伸缩门**需要**火灾联动打开，并应配置消防电源供电。

5.3.8 公共建筑自动扶梯上下端口处，应设视频监控摄像机。

【条文说明】

公共建筑自动扶梯是经常发生故障的设备，加强监控可以及时发现问题并及时疏导。

自动扶梯一般位于人员密集处，安全隐患较多，设置视频监控摄像机可以及时发现并处理问题，做到事件留痕。



QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第5.3.8条，指每层的上下端口，还是最底层和最高层的端口？

个人观点

公共建筑自动扶梯上下端口处，应在每层的上下端口设视频监控摄像机。

6.1.1 电力线缆、控制线缆和智能化线缆敷设应符合下列规定：

1 不同电压等级的电力线缆不应共用同一导管或电缆

桥架布线；

2 电力线缆和智能化线缆不应共用同一导管或电缆桥架布线。

3 在有可燃物闷顶和吊顶内敷设电力线缆时，应采用不燃

材料的导管或电缆槽盒保护。



If learning only in the imitation, as we wouldn't have sciences, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To know is to learn, to learn is not to know. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to succeed. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering. I may I ever keep a promise given!

您的问题

《建筑电气与智能化通用规范》GB 55024-2022第6.1.1条中“在有可燃物闷顶和吊顶内敷设电力线缆时，应采用不燃材料的导管或电缆槽盒保护。”配电线路能否采用T架敷设？

个人观点

有可燃物的闷顶和封闭吊顶这些封闭空间内的配电线路一旦发生火灾,不易被发现,容易造成火灾蔓延。此外可燃物包括:木结构、木吊顶板、PV吊顶板、泡沫吸声板、PC聚碳酸酯板和膜材等。因此,要求在这些密闭空间内应采用金属导管和金属槽盒布线方式,这是为了保证防火安全采取的措施。阻燃耐火性能为**A级**配电线路**可以采用T架**敷设。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51303-2022第6.1.1条，24V的监控电源线能否与视频线共管敷设？采用24V的消防广播，能否与报警线路共桥架敷设？

个人观点

24V的监控电源线不能与视频线共管敷设。采用24V的消防广播，如果采用屏蔽线可以与报警线路共桥架敷设。

6.1.2 导管和电缆槽盒内配电电线的总截面积不应超过导管或电缆槽盒内截面积的**40%**；电缆槽盒内**控制**线缆的总截面积不应超过电缆槽盒内截面积的**50%**。

【条文说明】

制定本条的目的是保障电气系统的安全，避免电线散热不良绝缘水平降低而导致的安全隐患。

线缆的总截面积包括其外护层。本条规定了线缆在导管和电缆槽盒内设时，其总截面积与导管和电缆槽盒内截面面积比值的最低要求，电力线级需考虑通电以后的散热问题，本条只对配电电线总截面积作出了**不应超过导管或电缆槽盒内截面面积40%**的规定；**控制、信号线路不可视为主载流导体**，可忽略因散热不良而损坏电线绝缘问题，**规定其总截面积不应超过电缆槽盒内截面面积的50%**。另外，还应满足施工时抻拉或维修更换线缆时，不损坏线缆及其绝缘等要求。

控制电缆在托盘上可无间距敷设。**智能化线缆参照控制线缆的指标，其线缆的总截面积不应超过电缆槽盒内截面面积的50%**。当电缆槽盒内同时敷设配电线缆和控制线缆时，按配电电线的比值要求确定电缆槽盒规格。

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

根据《建筑电气与智能化通用规范》GB 51303-2022第6.1.2条，只针对电线和控制电缆，强电低压电力电缆是不是也适用于本条？

个人观点

导管和电缆槽盒内**配电电线**的总截面积不应超过导管或电缆槽盒内截面积的40%；电缆槽盒内**控制线缆或弱电线**的总截面积不应超过电缆槽盒内截面积的50%。

If learning only in the institutions, as we usually have access, there will be the technology, master new technology, be good learning must be good education. The key is to learn to learn is not to know. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human progress lies in this. Success is not an important thing, it is an important effort. Not to find an easier way to do it, only to find a way to do it. The secret of success is the persistent pursuit of the goal. May I be strenuous, energetic and persevering. (Wang Jie's letter is a promise given)

您的问题

《建筑设计防火规范》GB 50016 第10.1.10 条 第3款：电缆沟是否包括变电所电缆沟？若变电所在室外，埋地引入单体配电间，此段是否需要用矿物绝缘电缆？消防配电线路采用燃烧性能A 级耐火电缆时，是否必须与非消防线路分别敷设在电缆沟的两侧？

个人观点

- 1 电缆沟不包括设置在建筑物内部的变电所电缆沟；
- 2 若变电所在室外，埋地引入单体配电间，消防配电线路应从建筑物内总配电间算起，室外埋地敷设的电缆可采用普通电力电缆；
- 3 如受条件限制，无法敷设在电缆沟两侧时，可在同一侧，但应分层敷设，且消防配电线路应敷设在非消防配电线路的下方，并应保持300mm 及以上的净间距。

6.1.4 在隧道、管廊、竖井、夹层等**封闭式电缆通道**中，**不得布置热力管道和有可燃气体或可燃液体管道。**

【条文说明】

为避免热力管道发生泄漏事故对电力和智能化系统线路造成的危害，或电缆发生火灾时明火迅速燃烧，引发可燃气体可燃液体发生爆炸事故，对电缆构筑物内设施及人员构成严重的安全威胁，制定本条款。



QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第6.1.4条，此条所提及的管廊是否有具体范围，是否包括市政综合管廊？

个人观点

此条所提及的管廊包括市政综合管廊。

6.2.1 室内干燥场所的线缆采用导管布线时，应符合下列规定：

- 1 采用**金属导管布线**时，其**壁厚不应小于1.5mm**；
- 2 采用**塑料导管暗敷布线**时，应选用**不低于中型**的导管。

【条文说明】

本条规定了室内干燥场所明敷和暗敷选用的金属导管和塑料导管最小壁厚值，目的是保障线路安全，也是为了限制偷工减料、以次充好现象。规定导管最小壁厚值便于现场施工监管。

在工程中，室内干燥场所明敷和暗敷选用的导管最小壁厚值，金属导管可用薄壁镀锌钢导管，但壁厚不应小于1.5mm刚性塑料导管壁厚不应低于中型导管的壁厚。



QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51324-2022第6.2.1条，中型导管的壁厚是多少？

个人观点

中型公称外径分别为： $\Phi 16$ 、 $\Phi 20$ 、 $\Phi 25$ 、 $\Phi 32$ 、 $\Phi 40$ 的产品厚度如下：1.20（允许差+0.3）；1.25（允许差+0.3）；1.50（允许差+0.3）；1.80（允许差+0.3）；1.80（允许差+0.3）。

6.2.2 室内潮湿场所的线缆明敷时应符合下列规定：

- 1 应采用防潮防腐材料制造的导管或电缆桥架；
- 2 当采取金属导管或电缆桥架时，应采取防潮防腐措施，且金属导管壁厚不应小于2.0mm；
- 3 当采用可弯曲金属导管时，应选用防水重型的导管。

【条文说明】

本条要求室内潮湿场所明敷的导管、电缆桥架必须采用防潮防腐材料制造或做防潮防腐处理。一旦导管或电缆桥架被腐蚀，将大大削弱其支撑和机械防护的能力，对供电安全有很大影响，因此需要对其防潮防腐要求进行明确。

1 室内潮湿场所明敷导管或电缆桥架，原则上优先选用防潮防腐材料制造的导管或电缆桥架，如不锈钢导管、不锈钢电缆桥架、燃烧性能分级为B₁级的刚性塑料导管或高分子合金电缆桥架，晶须改性塑料电缆桥架或不锈钢电缆桥架。

2 室内潮湿场所采用普通镀锌和钢制电缆桥架明敷时，需要采取防潮防腐措施，如采用防潮防腐漆做涂刷处理，且涂刷不少于3次。且钢管的壁厚不应小于2.0mm，钢制电缆桥架板厚不应小于1.5mm。

3 可弯曲金属导管根据其产品标准要求，需要选用防水重型的导管。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51303-2022第6.2.2条，“室内潮湿场所”有哪些？有无术语说明？

个人观点

室内潮湿场所如浴室、卫生间、游泳池、戏水池、厨房等。

6.2.3 建筑物底层及地面层以下外墙内的线缆采用导管暗敷布

线时，应符合下列规定：

- 1 采用金属导管布线时，其壁厚不应小于2.0mm；
- 2 采用可弯曲金属导管暗敷布线时，应选用防水重型的导管；
- 3 采用塑料导管布线时，应选用重型的导管。

【条文说明】

由于±0.00及以下建筑楼板、结构柱和外墙湿度较大金属导管敷设会受到不同程度的腐蚀，为保障线路安全，本条对暗敷于建筑物最底层楼板及地面层以下外墙、结构柱内的导管性能提出了要求。采用镀锌钢导管布线时，其壁厚不应小于2.0mm；采用可弯曲金属导管或刚性塑料导管布线时，应选用重型的导管。由于中型刚性塑料导管耐压强度低，易变形，不利于穿线，故在此种情况下不能采用。



QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51303-2022第6.2.3条，“外墙”具体指的什么位置，一层外墙安装的插座配电回路是不是都不能采用JDG管保护？

个人观点

建筑物外墙。一层外墙安装的插座配电回路是不是**不能采用JDG管**保护。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第6.2.3条，是否 ± 0 以下的区域，均按此条执行？

个人观点

± 0 以下的区域采用金属导管布线时，其壁厚不应小于2.0mm。

6.2.8 电气及智能化竖井的位置和数量应根据建筑物高度、建筑物变形缝位置、防火分区、系统要求、供电回路半径等因素确定，并应符合下列规定：

- 1 不应和电梯井、其他专业管道井共用同一竖井；
- 2 不应贴临热烟道、热力管道及其他散热量大的场所。

【条文说明】

电气智能竖井的数量和位置选择，应保证系统运行的可靠性，布线距离合理，减少电能损耗。

1 因为电梯井道有活动的轿厢和电梯专用电缆，一旦发生故障会殃及共井里的布线电缆。管道井指非电气及智能化专业使用的井道，不允许水、暖专业的管道井与电气及智能化竖井共用，避免水管及阀门等跑、冒、滴、漏，水喷四溅危及共井里的布线电线和设备。

2 电气及智能化竖井不介许贴邻烟道(包括：厨房、柴油发电机房、锅炉房等烟道)、热力管道及其他散热量大或潮湿的设施设置，也是从安全运行考虑，电气竖井本身不易散热，再与烟道，热力管道贴邻，电缆长期受热将会降低绝缘强度，易发生电气火灾。

贴邻时做夹墙是一种可采取的措施，但需要达到隔热的效果。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第6.2.8条，电气及智能化竖井能否贴邻热力管井？电气设备用房和智能化设备用房的外墙能否嵌入式安装消防栓？

个人观点

电气及智能化竖井不能直接贴邻热力管井。电气设备用房和智能化设备用房的外墙不能直接嵌入式安装消防栓。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第6.2.8条，建筑内电气竖井能否贴邻水暖管井布置？

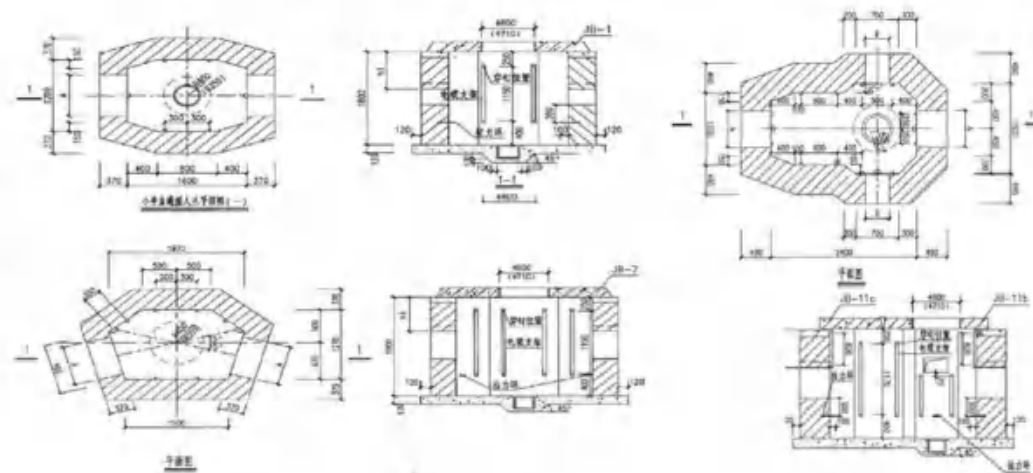
个人观点

可以，建筑内电气竖井贴邻水暖管井布置时**应做好防水**措施。

6.3.2 当采用电缆排管布线时，在线路**转角、分支以及变更敷**方式处，应设**电缆人（手）孔井**，**电缆人（手）孔井不应设置在建筑物散水内。**

【条文说明】

设电缆人（手）孔井是为了便于检查和设电缆，穿入或冲出电缆时的拉力不超过电缆的允许值。规定电缆人（手）孔井不应设置在建筑物散水内，是防止雨水沿孔井渗入到建筑基础。



QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第6.3.2条，当采用电缆排管布线时，强弱电线路是否必须分开设置室外电缆井？

个人观点

当采用电缆排管布线时，**强弱电线路必须分开设置室外电缆井。**

7.1.1 各类防雷建筑物应设**接闪器、引下线、接地装置**，并应采取**防闪电电涌侵入**的措施。建筑物的雷电防护分类应符合下列规定：

1 符合下列条件之一的建筑物应划为第三类防雷建筑物：

1) 高度超过20m，且不高于100m的建筑物；

2) 预计雷击次数大于或等于 0.05 次/a，且小于或等于 0.25 次/a的建筑物；

3) 在平均雷暴日大于 15 d/a的地区，高度在15m及以上的烟囱、水塔等孤立的高耸建筑物；在平均雷暴日小于或等于 15 d/a的地区，高度在20m及以上的烟囱、水塔等孤立的高耸建筑物。

2 符合下列条件之一的建筑物应划为第二类防雷建筑物：

1) 高度超过100m的建筑物；

2) 预计雷击次数大于 0.25 次/a的建筑物。

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您的问题

《建筑电气与智能化通用规范》GB55024-2022第7.1.1条，当建筑物高度小于20m且预计雷击次数小于0.05次/a的一般民用建筑，是否可以不做防直击雷设计？

个人观点

除宿舍、旅馆建筑外，如果没有项目规范或专项标准另外要求，可以不做防直击雷设计。

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您的问题

《建筑电气与智能化通用规范》GB55021-2022第7.1.1条，未提及人员密集场所的防雷规定，人员密集场所的规定是否参照《民规》11.2.3条及11.2.4条强条规定？

个人观点

消防法（09版）第三十三条：（四）人员密集场所，是指公众聚集场所，医院的门诊楼、病房楼，学校的教学楼、图书馆、食堂和集体宿舍，养老院，福利院，托儿所，幼儿园，公共图书馆的阅览室，公共展览馆、博物馆的展示厅，劳动密集型企业的生产加工车间和员工集体宿舍，旅游、宗教活动场所等。

7.1.2 第三类防雷建筑物的雷电防护措施应符合下列规定：

- 1 当采用接闪网格法保护时，接闪网格不应大于**20m×20m**或**24m×16m**；当采用滚球法保护时，滚球法保护半径不应大于60m。
- 2 专用线下线和专设引下线的平均间距不应大于**25m**。
- 3 建筑物外墙内侧和外侧垂直敷设的金属管道及类似金属物应在顶端和底端与防雷装置连接。
- 4 结构圈梁中的钢筋应在地下一层或地面层、顶层和每间隔不超过20m的楼层连成闭合环路，闭合环路应与本楼层结构钢筋和所有专用引下线连接。
- 5 应将**60m**及以上外墙上的栏杆、门窗等较大金属物直接或通过预埋件与防雷装置相连，**60m**及以上水平突出的墙体应设置接闪器并与防雷装置相连。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51303-2022第7.1.2条，第3款，有人认为：单层民用建筑物内的垂直敷设的金属管道也应执行该做法，是否有此必要？

个人观点

建筑物外墙内侧和外侧垂直敷设的金属管道及类似金属物应在顶端和底端与防雷装置连接。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51303-2022第7.1.2条，第5款，第三类防雷建筑物高度不超60m时，是否不考虑防侧击雷？

个人观点

第三类防雷建筑物高度不超60m时，可以不考虑防侧击雷。

7.1.4 高度超过**250m**或雷击次数大于0.42次/a的第二类防雷建筑物的雷电防护措施应符合下列规定：

- 1 当采用接闪网格法保护时，接闪网格不应大于**5m×5m**或**6m×4m**；当采用滚球法保护时，滚球法保护半径不应大于**30m**；
- 2 专用线下线的间距不应大于**12m**；
- 3 建筑物外墙内侧和外侧垂直敷设的金属管道及类似金属物应在顶端和底端与防雷装置连接，在250m以上区域与防雷装置应按每间隔不超过**20m**连接一处，在**100m~250m**区域应按每间隔不超过50m连接一处，**0~100m**区域内应在**100m**附近楼层与防雷装置连接；
- 4 **250m及以上区域应每层连成闭合环路**，闭合环路应与本楼层结构钢筋和所有专用引下线连接；250m以下区域应符合本规范第7.1.2条第4款的规定。
- 5 应将30m及以上外墙上的栏杆、门窗等较大金属物直接或通过预埋件与防雷装置相连，30m及以上水平突出的墙体应设置接闪器并与防雷装置相连。

7.1.5 各类防雷建筑物除应符合本规范第7.1.2~7.1.4条的规定外，尚应符合下列规定：

1 在建筑物的地下一层或地面层处，**下列物体应与防雷装置**

做防雷等电位连接。

- 1) 建筑物结构钢筋及金属构件；
- 2) 进出建筑物处的金属管道和线路。

2 当建筑物的电气与智能化系统需要做防雷击电磁脉冲时，应在设计时将建筑物的金属支撑物、金属框架或结构钢筋等自然构件、金属管道、配电的保护接地系统等与防雷装置组成一个接地系统。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 513024-2022第7.1.5条，此条规定地下一层或地面层处设置防雷等电位连接，包括建筑物结构钢筋及金属构件、进出建筑物处的金属管道和线路。想要问具体连接方式可采取哪些？是否可按土建施工方法、卡箍连接、焊接？

个人观点

金属构件、进出建筑物处的金属管道和线路采用卡箍连接。建筑物结构钢筋采用焊接。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn, to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

根据《建筑电气与智能化通用规范》GB55024-2022第7.1.5条，变配电室设在大底盘车库内，为多栋建筑供电。进出各建筑物处线路，是否必须在各栋单体的地下一层或地面层处，与防雷装置做防雷等电位连接？对于防雷接地系统是否按整体考虑即可？

个人观点

变配电室设在大底盘车库内，为多栋建筑供电。进出各建筑物处线路，应在在进线处附近处，与防雷装置做防雷等电位连接。对于防雷接地系统可以按整体考虑。

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

根据《建筑电气与智能化通用规范》GB 50344-2022第7.1.6条，室外明敷设的线路是否不包含穿管或穿桥架的线路？按条文说明进出建筑物的电源电涌保护器应配置后备保护，建筑物内的其他电涌保护器可以不配置后备保护？

个人观点

室外明敷设的线路**包含**穿管或穿桥架的线路。

进出建筑物的电源电涌保护器**应配置**后备保护，建筑物内的其他电涌保护器也要配置后备保护。

7.1.8 防雷建筑物的**防雷引下线**应符合下列规定：

- 1 建筑物易受雷击的部位应设专用引下线或专设引下线，且不应少于2根。专用引下线或专设引下线应沿建筑物外墙均匀设置；
- 2 建筑物应利用其结构钢筋或钢结构柱作为专用引下线，当无结构钢筋或钢结构柱可利用时，应设置专设引下线；
- 3 单根钢筋或圆钢作专用引下线或专设引下线时，其直径不应小于10mm；
- 4 专用引下线和专设引下线，上端应与接闪器可靠连接，下端应与防雷接地装置可靠连接；
- 5 建筑物外的引下线敷设在人员可停留或经过的区域时，应采用下列一种或两种方法，防止跨步电压、接触电压和旁侧闪络电压对人员造成伤害：
 - 1) 外露引下线在高2.7m以下部分应穿能耐受100kV冲击电压(1.2/50 μ s波形)的绝缘保护管。
 - 2) 应设立阻止人员进入的带警示牌的护栏，护栏与引下线水平距离不应小于3m。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第7.1.8条，第5款，第1项，外露引下线在高2.7m以下部分应穿能耐受100kV冲击电压(1.2/50 μ s波形)的绝缘保护管。请问保护管进入地下部分长度是否有要求？

个人观点

暗敷的保护管进入地下部分长度不需要有此要求。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第7.1.8条，第6款，请问柱内单根 $\text{Ø}10$ 钢筋是否可做专用引下线？

个人观点

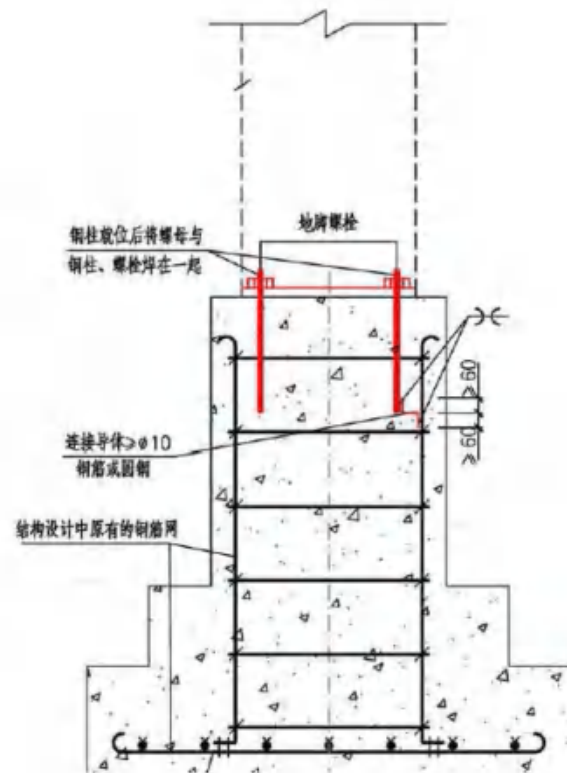
可以。

7.1.9 防雷建筑物防雷的**接地装置**应符合下列规定：

符合下列规定：

1 当利用敷设在混凝土中的**单根钢筋或圆钢**作为防雷接地装置时，**钢筋或圆钢的直径**不应小于10mm；

2 当基础材料及周围土壤达到泄放雷电流要求时，应利用基础内**钢筋网**作为防雷接地装置。



7.2.6 除本规范第7.2.4条的规定外，智能化系统的接地应符合下列规定：

1 当智能化系统由TN交流配电系统供电时，应采用TN-S或TN-C-S接地系统；

2 智能化系统及机房内电气设备和智能化设备的外露可导电部分、外界可导电部分、建筑物金属结构应**等电位联结并接地；**

3 智能化系统单独设置的接地线应采用截面积不小于 **25mm²** 的铜材。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51304-2022第7.2.6条，第1款，请问此条只针对智能化交流配电系统？其他动力、照明等配电可以不执行？

个人观点

当智能化系统用电采用TN交流配电系统时，应采用TN-S或TN-C-S接地系统。其他动力、照明等配电也要执行。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

根据《建筑电气与智能化通用规范》GB55024-2022第7.2.6条，第3款，智能化系统单独设置的接地线是否包含如光纤入户系统的电信间、设备间等所有弱电系统的机房、管井？

个人观点

根据《建筑电气与智能化通用规范》GB55024-2022第7.2.6条，第3款，智能化系统单独设置的接地线是指智能化机房。

7.2.8 接地装置应符合下列规定：

- 1 当利用混凝土中的单根钢筋或圆钢作为接地装置时，钢筋或圆钢的直径不应小于10mm；
- 2 总接地端子连接接地极或接地网的接地导体，不应少于两根且分别连接在接地极或接地网的不同点上；
- 3 不得利用输送可燃液体、可燃气体或爆炸性气体的金属管道作为电气设备的保护接地导体（PE）和接地极；
- 4 接地装置采用不同材料时，应考虑电化学腐蚀的影响；
- 5 铝导体不应作为埋设于土壤中的接地极、接地导体和连接导体。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑电气与智能化通用规范》GB 55024-2022第7.2.8条第4款，地下最底层从利用建筑物基础至等电位端子箱这段属于接地外接导体，也应采用铜质材料或不锈钢材料，是否这样执行？

个人观点

地下最底层从利用建筑物基础至等电位端子箱这段导体直接埋在土壤里，需要采用铜质材料或不锈钢材料。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

根据《建筑电气与智能化通用规范》GB 50221-2022第7.2.8条，总接地端子是否包含所有从接地体或接地网的引上的接地导体？如电梯、弱电机房等？

个人观点

总接地端子就是从接地体或接地网的引上的接地导体。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51303-2022第7.2.8条，工业厂区的联合接地体室外部分是否均应采用不锈钢材料？

个人观点

只要利用建筑物基础作为接地装置，接地体室外部分均应采用不锈钢材料。

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您的问题

根据《建筑电气与智能化通用规范》GB 51303-2022第7.2.8条，第4款，MEB箱接地线是否还能用40×4镀锌扁钢？如不能用能否采用直径为12mm的镀锌圆钢？

个人观点

可以采用应不少于两根且分别连接在接地极或接地网的不同点上。

7.2.11 变电所接地装置的接触电压和跨步电压不应超过允许值。

【条文说明】

对于高压供配电系统中性点为高电阻接地方式或谐振接地方式，发生单相接地故障后，未迅速切除故障时，变电所接地装置的接触电位差和跨步电位差不应超过下列数值：

$$U_t = 50 + 0.05 \rho_s C_s$$

$$U_s = 50 + 0.2 \rho_s C_s$$

对于高压供配电系统中性点为低电阻接地系统发生单相接地或同点两相接地时，变电所接地装置的接触电位差和跨步电位差不应超过下列数值：

$$U_t = \frac{174 + 0.17 \rho_s C_s}{\sqrt{t}}$$

$$U_s = \frac{174 + 0.7 \rho_s C_s}{\sqrt{t}}$$

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB 51303-2022第7.2.11条，变电所接地装置的接触电压和跨步电压不应超过允许值，这条在设计中该如何考虑？

个人观点

对于高压供配电系统中性点为高电阻接地方式或谐振接地方式，发生单相接地故障后，当不迅速切除故障时，此时变电所接地装置的接触电位差和跨步电位差不应超过经过计算的允许值。

7.3.2 接到总接地端子的保护联结导体的截面积，其最小值应符合表7.3.2的规定；由等电位箱接至电气装置单独敷设的保护联结导体最小截面积应符合本规范第7.2.10条的规定。

表 7.3.2 保护联结导体截面积的最小值 (mm²)

导体材料	铜	铝	钢
最小值	6	16	50

【条文说明】

保护联结导体的截面面积应考虑机械强度和热稳定的要求，为保证接地的可靠，保护联结导体截面面积的最小值应符合表7.3.2的规定，当保护联结导体采用铝合金导体时，参照铝导体执行。

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您的问题

《建筑电气与智能化通用规范》GB55024-2022第8.5节、8.6节为用电设备安装，电气设计图纸的设计说明中是否需要把规范要求都写入，不写入的话算不算违反强条？

个人观点

《建筑电气与智能化通用规范》GB55024-2022第8.5，8.6章节为用电设备安装，需要设计表述的是**规范与设计相关要求**。与设计无关可不写入。

8.7.1 电缆桥架本体之间的连接应牢固可靠，金属电缆桥架与保护导体的连接应符合下列规定：

1 电缆桥架全长不大于**30m**时，不应少于**2处**与保护导体可靠连接；全长大于30m时，每隔**20m ~ 30m**应增加一个连接点，起始端和终端端均应可靠接地。

2 **非镀锌电缆桥架**本体之间连接板的**两端应跨接保护联结导体**，保护联结导体的截面积应符合设计要求。

3 **镀锌电缆桥架**本体之间不跨接保护联结导体时，连接板每端**不应少于2个有防松螺帽或防松垫圈**的连接固定螺栓。

QUESTION & ANSWER

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您的问题

根据《建筑电气与智能化通用规范》GB55024-2022第8.7.1条，第1款，对金属桥架接地的要求，本条是在该规范第8章施工章节中，如各通用规范中施工、使用和维护章节中内容，在设计、审查中是否执行？

个人观点

在设计文件中按《建筑电气与智能化通用规范》GB55024-2022第8.7.1条提出要求。

8.7.2 室外的电缆桥架进入室内或配电箱（柜）时应有防雨水进入的措施，电缆槽盒底部应有泄水孔。

【条文说明】

当电缆通过室外安装的电缆桥架进入室内或配电箱（柜）时，为防止雨雪天气雨水沿着电缆桥架或电缆进入室内或配电箱（柜）而发生安全事故，提出了防雨水的措施，这些措施包括：电缆桥架与墙体或配电箱（柜）接口处设置“乙”字弯或电缆桥架坡向室外并做防水封堵等，当使用电缆槽盒时其底部尚应有泄水孔。



QUESTION & ANSWER

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您的问题

变配电房、发电机房、消防控制室、消防水泵房、消防风机房、消防电梯机房等内为设备用房服务的照明、插座、空调、风机等设备电源是否可接入该设备房内的配电箱？

个人观点

变配电房、发电机房内设置的插座、空调、风机，应引自负荷性质相同配电箱。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

当消防电梯集水坑设在楼梯间内时，排水泵控制箱可以设在封闭或防烟楼梯间内吗？

个人观点

不能。消防电梯集水坑尽量不设在封闭或防烟楼梯间内，当无法避免时，封闭或防烟楼梯间内不应设置控制箱，以免电气火灾产生的烟气影响疏散通道安全，可把控制箱安装在附近地下车库或配电间内，排水泵现场设置就地控制和解除远方控制的措施。

Analysis of Difficult Problems in Electrical Design of
Mandatory Engineering Construction Codes

PART 04

《消防设施通用规范》 GB55036-2022

相关电气问题



电气实训教材

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您的问题

《消防设施通用规范》GB55036-2022尚未对既有建筑改造提出明确要求？

个人观点

第1.0.2条 建设工程中消防设施的设计、施工、验收、使用和维护必须执行本规范。规定了GB55036的适用范围。本规范规定了建设工程中消防设施的设计、施工、验收、**使用和维护的控制性**底线要求和关键技术措施，新建、扩建和改建的建设工程中设置的消防设施和既有建筑的消防设施改造的设计、施工、验收、使用和维护均应符合本规范。

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您的问题

《消防设施通用规范》GB55036-2022中取消《火灾自动报警系统设计规范》GB50116-2013 第4.1.4条 消防水泵...应在消防控制室设置手动直接控制装置。通用规范中未有描述，是否可以理解成消防水泵、防排烟风机等无需手动直接控制，只做联动即可？

个人观点

消防水泵做火灾自动报警联动还应在消防控制室设置手动直接控制装置。防排烟风机做火灾自动报警联动和消防控制室通过消防联动控制器手动控制即可。

2.0.4 消防给水与灭火设施中位于**爆炸危险性环境**的**供水管道**及其他**灭火介质输送管道**和组件，应采取**静电防护措施**。

【条文说明】

本条规定了消防给水与灭火设施中位于爆炸危险环境的供水管道及其他灭火剂输送管道和组件的静电防护要求，以防止静电火花而引起燃烧或爆炸事故。



QUESTION & ANSWER

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您的问题

《消防设施通用规范》GB55036-2022第2.0.4条，应由那个专业设计图纸来体现，具体设计时如何执行？

个人观点

电气专业设计图纸来体现，做好等电位和接地措施。

2.0.10 消防设施上或附近应设置区别于环境的**明显标识**，说

明文字应准确、清楚且易于识别，颜色、符号或标志应规范。手动操作按钮等装置处应采取防止误操作或被损坏的防护措施。

【条文说明】

本条规定了在各类消防设施的管道、组件等外表或附近应设置明显的标志，以便平时维护保养和检查系统组件的设置状态，如控制阀门的启闭状态，并在火灾时能够及时、准确找到相应设施和组件并进行应急操作，确保及时启动消防设施。。

QUESTION & ANSWER

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您的问题

《消防设施通用规范》GB55036-2022第2.0.10条，本规范和条文说明并没有明确哪些消防设施需要有标识，这条执行的时候是所有消防设施都要设置标识还是条文说明和相关规范提到要做标识的消防设施才做：如果全部消防设施都要做标识的话，火灾探测器、消防广播等消防设施是否也需要标识？

个人观点

各类消防设施的管道、组件等外表或附近应设置明显的标志。火警电话、火灾报警按钮、火灾警报器、应急指示灯等消防设施需要标识。火灾探测器、消防广播等消防设施不需要标识。

QUESTION & ANSWER

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您的问题

消防电梯是否可以增加梯控（刷卡乘梯到达指定楼层）控制，连接消防联动，着火断掉梯控识？

个人观点

消防电梯可设置梯控系统。消防电梯梯控系统应具备消防联动接口，火灾时通过联动控制模块解除梯控状态，转换成消防状态。。

3.0.8 消防水池应符合下列规定:

4 消防水池的水位应能就地和在消防控制室显示, 消防水池应设置**高低水位报警装置**;

【条文说明】

本条规定了消防水池设置的基本要求。为保证消防给水系统和水灭火系统在扑救火灾时有足够的水量并确保可靠用水, 消防水池应储存火灾延续时间内所需的全部消防用水量, 消防水池的有效容积和有效水位是确保消防水源充足和具有持续供水能力的重要指标, 出水管的设置是消防水泵连续、安全运行的基本保障, 必须保证。

QUESTION & ANSWER

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您的问题

《消防设施通用规范》GB 55036-2023第3.1.8条规定，水池高低液位报警功能如何实现，液位计加输入模块是否可以实现？

个人观点

消防水池(水箱)高水位、低水位需要通过**液位计**实现。

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您的问题

《消防设施通用规范》GB 55036-2023第5.0.8条规定，消防水池的水位应能就地和在消防控制室显示，消防水池应设置高低水位报警装置，消防水池(水箱)液位显示装置如何设置？

个人观点

首先，水位标尺上应有溢流水位、最高水位、最低有效水位、报警水位等标识牌。其次，消防控制中心或值班室应设液位显示装置，显示消防水池(水箱)高水位、低水位。再者，应在设计文件中（水专业）标注或说明(从高到低)：溢流水位、溢流报警水位、最高水位、低报警水位、最低报警水位、最低有效水位等。

3.0.11 消防水泵应符合下列规定:

- 1 消防水泵应确保在火灾时能**及时启动**;停泵应由**人工控制**,
不应自动停泵。

【条文说明】

本条规定了消防水泵的基本性能要求。消防水泵是在火灾延续时间内向消防给水系统和水灭火系统提供所需流量和压力的关键设备,应确保其在火灾状态下持续运行和安全可靠,流量、压力、功率、吸水方式等关键参数应满足实际运行的需要,并在零流量、小流量、额定流量以及过载流量等工况下不会发生损坏和故障。**消防水泵不得设置自动停泵功能,否则会显著削弱系统灭火能力,严重者会导致人员伤亡或更大的火灾事故,其停止方式应根据火灾扑救和消防水源等情况由具有管理权限的人员确定。**

3.0.12 消防水泵控制柜应位于消防水泵控制室或消防水泵房内，其性能应符合下列规定：

- 1 消防水泵控制柜位于**消防水泵控制室内**时，其防护等级不应低于**IP30**；位于**消防水泵房内**时，其防护等级不应低于**IP55**。
- 2 消防水泵控制柜在**平时**应使**消防水泵**处于**自动启泵状态**。
- 3 消防水泵控制柜应具有**机械应急启泵**功能，且机械应急启泵时，消防水泵应能在**接受火警后5min**内进入正常运行状态。

【条文说明】

本条规定了消防水泵控制柜的基本性能要求。消防水泵控制柜是保证消防给水系统可靠运行的关键部件，在准工作状态下的防水、防尘等性能和在火灾状态下的启动性能必须得到保障，**避免贻误因灭火时机而影响火灾扑救效果，甚至失败。**

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您的问题

《消防设施通用规范》GB55036-2022第3.0.12条，消防水泵控制柜应具有机械应急启泵功能，主泵和备用泵都需要设置机械应急启泵功能吗？

个人观点

当消防水泵备用泵自动投入启泵失败，同时消防控制室远程手动启泵失效时，由被授权的管理人员操作机械应急启动装置，通过金属传动机构在接触器上施加外力，将主泵接触器强行闭合启泵。柴油发电机容量应满足消防水泵机械应急直接启动要求。由于消防主、备泵不是唯一的，所以，**主泵和备用泵都需要设置机械应急启泵功能。**

QUESTION & ANSWER

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您的问题

如果建筑物内未设置火灾自动报警系统，但设置了室内消火栓系统，此时消火栓按钮是否可以直接启泵？

个人观点

消火栓按钮不宜作为直接启动消防水泵的开关，但可作为发出报警信号的开关或启动干式消火栓系统的快速启闭装置等。

5.0.8 对于**中倍数或高倍数泡沫灭火系统**，全淹没系统应具有**自动控制、手动控制和机械应急操作**的启动方式，自动控制的固定式局部应用系统应具有手动和机械应急操作的启动方式，手动控制的固定式局部应用系统应具有机械应急操作的启动方式。

【条文说明】

对于中倍数或高倍数泡沫灭火系统，全淹没系统应具有自动控制、手动控制和机械应急操作的启动方式，自动控制的固定式局部应用系统应具有手动和机械应急操作的启动方式，手动控制的固定式局部应用系统应具有机械应急操作的启动方式。

6.0.4 自动控制的水喷雾灭火系统和细水雾灭火系

统应具有**自动控制、手动控制和机械应急操作**的启动方式。

【条文说明】

为确保紧急报警事件能准确及时处置，监控中心值班人员在接到紧急报警后，还需对接入公安机关的紧急报警信息进行人工复核。

7.0.11 自动跟踪定位射流灭火系统应符合下列规定：

3 系统应具有**自动控制**、**消防控制室手动控制**和现场手动控制的启动方式。消防控制室手动控制和现场手动控制相对于自动控制应具有优先权。

【条文说明】

本条规定了自动跟踪定位射流灭火系统的基本功能、性能要求和重要技术参数。自动消防炮灭火系统主要用于扑救建筑内高大空间场所的固体物质火灾。自动消防炮系统的流量和系统中每台炮的流量是保证系统消防水量和灭火强度的关键，对于系统灭火的可靠性、安全性至关重要。系统的持续喷水时间是提高系统灭火效果、确保火灾不复燃的关键。

系统应同时具有自动控制和手动控制功能，以保证系统操作与控制的可靠性。现场确认火灾后必须立即启动系统，要求现场手动控制相对于自动控制具有优先权；消防控制室手动控制和现场手动控制具有同等优先权。

在系统自动控制状态下，要求自动消防炮灭火系统和喷射型自动射流灭火系统至少有2台灭火装置同时启动扫描、定位火源并实施射流灭火，是一种安全冗余设置要求。

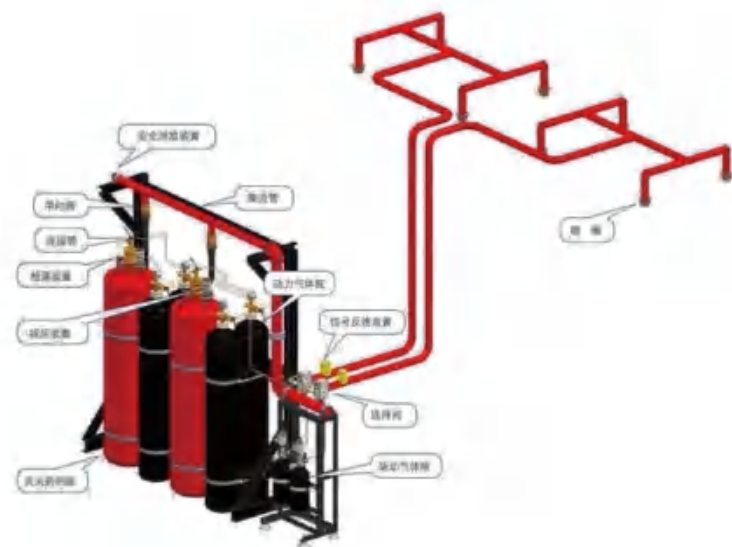
根据喷洒型自动射流灭火系统的特点，探测装置不具备对火源距离信息的反馈功能，喷洒型自动射流灭火系统发现火源的探测装置需要关联对应的灭火装置同时开启射流灭火，并要保证至少有一组灭火装置的射流喷洒到火源，以保证系统有效灭火。

8.0.10 管网式气体灭火系统应具有自动控制、手动控制

和机械应急操作的启动方式。预制式气体灭火系统应具有自动控制和手动控制的启动方式

【条文说明】

根据气体灭火系统的特点设置合理的系统启动方式，是提高系统自动可靠性的关键。本条规定了气体灭火系统的基本启动功能要求，以确保系统在火灾时能够及时启动、喷放灭火剂。



9.0.8 用于经常有人停留场所的局部应用**干粉灭火系统**应具有**手动控制和机械应急操作的启动方式**，其他情况的全淹没和局部应用干粉灭火系统均应具有**自动控制、手动控制和机械应急操作的启动方式**。

【条文说明】

本条规定了干粉灭火系统应具备的基本启动功能。合理的启动方式是确保干粉灭火系统在火灾时能够可靠启动并实施灭火的必要条件。系统的操作与控制方式需结合保护对象和灭火方式、在正常工作模式和自动模式失效等不同工况下的启动要求综合确定。



QUESTION & ANSWER

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您的问题

自动喷淋系统的水流指示器信号，本单元没有火灾自动报警系统怎么办？

个人观点

原则上设置自动喷淋系统，应该设置火灾自动报警系统。

QUESTION & ANSWER

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您的问题

没有火灾自动报警系统且暂时无法找到消防泵房的单体，水专业设置的消火栓按钮怎么处理？

个人观点

消火栓按钮后发请求信号报到消防水泵房……。

7.0.1 固定消防炮、自动跟踪定位射流灭火系统的类型和灭火剂应满足扑灭和控制保护对象火灾的要求，水剂灭火系统、泡沫炮灭火系统和自动跟踪定位射流灭火系统不应用于扑救遇水发生化学反应会引起燃烧或爆炸等物质的火灾。

【条文说明】

本条规定了固定消防炮、自动跟踪定位射流灭火系统的基本设置要求。固定消防炮、自动跟踪定位射流灭火系统按喷射介质、控制方式，灭火装置流量大小及射流方式等可以分为不同的系统类型。系统的选型和灭火剂的选用应满足系统的相应防护目标要求，并保证系统安全、可靠运行，不会给应用场所或保护对象带来次生损失。在兼顾系统保护对象的建筑特征、环境条件、可燃物类型、数量、分布等因素的基础上，选择合理类型的系统及灭火剂，使系统特性与保护场所的特征和火灾特点等影响因素相互匹配，才能充分发挥系统的灭火、冷却等功效，实现系统的防护目标。

QUESTION & ANSWER

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您的问题

《消防设施通用规范》GB55036-2022第5.0.1条,第3款, 现场手动控制是在一层设置, 还是在消防炮附近就近设置?

个人观点

现场手动控制设置在消防炮附近就近设置。

11.1.5 加压送风机、排烟风机、补风机应具有现场**手动**启动、与**火灾自动报警系统**联动启动和在**消防控制室手动启动**的功能。当系统中任一常闭加压送风口开启时，相应的加压风机均应能联动启动；当任一排烟阀或排烟口开启时，相应的排烟风机、补风机均应能联动启动。

【条文说明】

本条规定了加压送风机、排烟风机、补风机的基本启动功能要求。风机是机械加压送风系统、排烟系统、补风系统的核心组件，需要保证其能在火灾时可靠启动。系统同时具有现场手动启动、与火灾自动报警系统联动启动和在消防控制室手动启动的功能，是保证系统及时可靠启动的基本要求。常闭加压送风口、排烟阀开启时，表明已有火灾发生，应能及时联动相应的风机启动。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《消防设施通用规范》GB55036-2022第4.1.5条，此处的现场手动启动，是否是风机配电箱箱面按钮操作，有暖通要求在风机房门口设置专门的控制按钮，是否有必要？

个人观点

风机配电箱箱面设置按钮操作即可，**不必**在风机房门口设置专门的控制按钮。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovations. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

根据《消防设施通用规范》GB 55036-2022第11.1.5条：当任一排烟阀或排烟口开启时，相应的排烟风机、补风机均应能联动启动。设备专业要求任一排烟阀开启直接联锁控制风机，是否正确？

个人观点

要求正确。根据《火灾自动报警系统设计规范》GB 50116-2013第4.5.2条第2款：应由排烟口、排烟窗或排烟阀开启的动作信号，作为排烟风机启动的联动触发信号，**并应由消防联动控制器联动控制排烟风机的启动。**

11.3.5 下列部位应设置排烟防火阀，**排烟防火阀**应具有在**280℃**时自行关闭和联锁**关闭**相应**排烟风机**、**补风机**的功能：

- 1 垂直主排烟管道与每层水平排烟管道连接处的水平管段上；
- 2 一个排烟系统负担多个防烟分区的排烟支管上；
- 3 排烟风机入口处；
- 4 排烟管道穿越防火分区处。



【条文说明】

本条规定了排烟防火阀的设置部位和功能要求，以阻止带火烟气或高温烟气进入排烟管道系统，保护排烟风机和排烟管道，防止火灾向其他区域蔓延。排烟防火阀平时呈开启状态，火灾时当排烟管道内烟气温度达到**280℃**时自动关闭，在一定时间内能满足漏烟量和耐火完整性要求，起到隔烟阻火作用。

QUESTION & ANSWER

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您的问题

《消防设施通用规范》GB55036-2022 第11.3.5条, 当任一280℃排烟防火阀(烟气流经管路上的所有280C防火阀)自行关闭时, 应联锁关闭相应排烟风机补风机, 是否所有280℃排烟防火阀都需要硬拉线与消防风机联锁?还是以《火灾自动报警系统设计规范》GB50116-2013为准, 即对于排烟风机入口处的总管上设置的280℃排烟防火阀, 应采用直拉线连接风机配电箱联锁关闭相应排烟风机, 对于其它部位设置的280℃排烟防火阀可采用通过消控室联动控制器实现联锁。

个人观点
建议采用硬线连锁。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《消防设施通用规范》GB55036-2022 第4.1.3.5条，请问：所有的280°防火阀都需要手控线联动风机吗？

个人观点

建议采用硬线连锁。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《消防设施通用规范》GB55036-2022第11.3.5条, 请问: 此处的: “联锁” 关闭是指必须硬线联锁吗? 仅通过火灾自动报警系统“联动” 控制是否可以?

个人观点

《消防设施通用规范》GB55036-2022 第11.3.5条的 “联锁” 关闭是可以硬线连锁, 也可通过火灾自动报警系统 “联动” 控制, **建议硬线连锁**, 控制更加直接可靠。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《消防设施通用规范》GB55036-2022第11.3.5条，请问：当执行第1.2款时，如果排烟支管上的280℃排烟防火阀均联锁关闭排烟风机，会影响风机所带主管道上的所有排烟分区的排烟，本条明显不合理，如何执行？

个人观点

当执行第1.2款时，如果排烟支管上的280℃排烟防火阀均联锁关闭排烟风机，会影响风机所带主管道上的所有排烟分区的排烟，也要联动关闭排烟风机。

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《消防设施通用规范》GB55036-2022中，第4.3.5条规定了排烟防火阀的设置部位，并对其全部提出在280°C连锁关闭相应排烟风机及补风机的要求，可能存在以下情形：发生爆燃型火灾时，导致某个位置280°C阀关闭动作时，立刻关闭排烟风机，烟气无法排放可能影响人员疏散。针对此类情形是否仍维持连锁关闭排烟风机及补风机？

个人观点

280°C阀关闭动作说明排烟通道中已经存在280°C火，这时如果不停相应的排烟风机及补风机，会对助火作用，对人员的疏散会更不利，因此只要是排烟通道上一个280°C阀关闭动作，就应该连锁关闭排烟风机及补风机。

12.0.1 火灾自动报警系统应设置**自动和手动触发报警装置**，系统应具有火灾自动探测报警或人工辅助报警、控制相关系统设备应急启动并接收其动作反馈信号的功能。

【条文说明】

本条规定了火灾自动报警系统报警触发器件的基本设置要求和系统的基本功能要求。火灾自动报警系统是以实现火灾早期探测和报警、向各类消防设备发出控制信号并接收设备反馈信号，实现预定消防功能为基本任务的一种自动消防设施，火灾探测报警和消防联动控制是其最基本的功能。对于火灾探测报警功能，同时设置自动触发器件和手动触发器件是保证系统及时发出报警的基本要求。

QUESTION & ANSWER

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您的问题

设有火灾自动报警系统的一、二类高层居住建筑住宅门厅是否必须设置区域报警控制器？

个人观点

设有火灾自动报警系统的一、二类高层居住建筑住宅门厅需要设置区域报警控制器，不能放在首层电井内。在首层设置了区域报警器，不需要设置火灾显示盘。

12.0.4 火灾自动报警系统总线上应设置总线短路隔离器，每只总线短路隔离器保护的火灾探测器、手动火灾报警按钮和模块等设备的总数不应大于**32点**。**总线在穿越防火分区处应设置总线短路隔离器。**

【条文说明】

本条规定了火灾报警控制器和消防联动控制器回路总线上短路隔离器的设置要求，以**减少系统设备或回路总线短路故障的影响范围**，有效降低系统的故障风险。设置短路隔离器是保证系统整体功能不受故障部件影响的关键，一旦某个现场部件出现故障，短路隔离器即可有效隔离故障部件，能够最大限度地保障系统的整体功能不受故障部件的影响。



QUESTION & ANSWER

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您的问题

《消防设施通用规范》GB55036-2022第8.0.4条，排烟系统由同一防烟分区内的两个火灾探测器报警信号作为联动触发信号，在火灾报警平面图中隔离模块所带报警设备是否不宜跨越防烟分区？

个人观点

排烟系统由同一防烟分区内的两个火灾探测器报警信号作为联动触发信号，在火灾报警平面图中隔离模块所带报警设备只要火灾探测器、手动火灾报警按钮和模块等设备的总数不应大于32点，**不要跨越防烟分区。**

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《消防设施通用规范》GB55036-2022第20.4条，图纸中如何体现该要求？短路隔离器要全部画在平面图中吗？还是在系统图或设计说明中注明该要求？

个人观点

图纸中应在火灾探测器、手动火灾报警按钮和模块等设备的总数不应大于32点的火灾自动报警系统总线（或者总线穿越防火分区时，设置总线短路隔离器。**短路隔离器要全部画在平面图和系统图中**，并在**设计说明**中注明该要求。

12.0.5 火灾自动报警系统应设置火灾声、光警报器，火灾声、光警报器应符合下列规定：

- 1 火灾声、光警报器的设置应满足人员及时接受火警信号的要求，**每个报警区域内的火灾警报器的声压级应高于背景噪声15dB**，且不应低于30dB；
- 2 在确认火灾后，系统应能启动所有火灾声、光警报器；
- 3 系统应同时启动、停止所有火灾声警报器工作；
- 4 具有语音提示功能的火灾声警报器应具有语音同步的功能。

【条文说明】

本条规定了火灾声、光警报装置的设置和控制的基本要求。火灾自动报警系统在火灾确认后启动火灾警报器发出火灾信号是系统的基本功能之一。火灾自动报警系统均需要设置火灾声、光警报器，使之能够在建筑发生火灾时及时向人员发出警报，警示人员迅速疏散，对保障人员的安全疏散具有重要作用。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

背景噪声值的大小，设计人员在设计阶段不容易把握确定，如何判定是否遵守规范？

个人观点

设计人员根据设置火灾声、光警报器设置场所确定。

12.0.5 火灾自动报警系统应设置火灾声、光警报器，火灾声、光警报器应符合下列规定：

- 1 火灾声、光警报器的设置应满足人员及时接受火警信号的要求，每个报警区域内的火灾警报器的声压级应高于背景噪声15dB，且不应低于60dB；
- 2 在确认火灾后，系统应能启动所有火灾声、光警报器；
- 3 系统应同时启动、停止所有火灾声警报器工作；
- 4 具有语音提示功能的火灾声警报器应具有语音同步的功能。

【条文说明】

本条规定了火灾声、光警报装置的设置和控制的基本要求。火灾自动报警系统在火灾确认后启动火灾警报器发出火灾信号是系统的基本功能之一。火灾自动报警系统均需要设置火灾声、光警报器，使之能够在建筑发生火灾时及时向人员发出警报，警示人员迅速疏散，对保障人员的安全疏散具有重要作用。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn, to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! (My I ever keep a promise given)

您的问题

变配电室是否每个出入口内外侧都必须设置声光报警器，是否满足声压级要求即可？单独营造的变配电室设置火灾自动报警系统是否必须设置消防应急广播？

个人观点

变配电室有气体灭火时间，变配电室每个出入口内外侧都必须设置声光报警器。单独营造的变配电室设置火灾自动报警系统集中报警系统或控制中心报警系统，应设置消防应急广播。

12.0.6 火灾探测器的选择应满足设置场所**火灾初期特征参数**的探测报警要求。

【条文说明】

本条规定了火灾探测器选型的基本要求。火灾探测器是火灾自动报警系统的基本组成部分,其合理选型是确保火灾探测器对设置场所初起火灾及时、准确探测报警的前提。在选择火灾探测器种类时,要综合探测区域内可能发生的火灾初期的形成和发展特征、空间几何特征、环境条件、联动控制要求、可能引起误报的原因等因素确定。



QUESTION & ANSWER

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您的问题

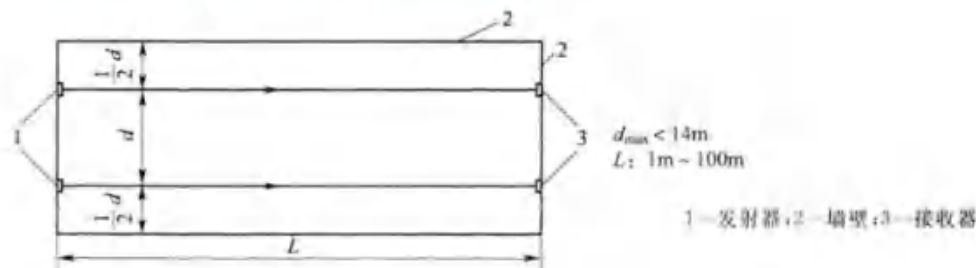
高度大于12米钢结构建筑的空间的红外光束探测器是安装在屋面板下1米以内，还是檩条下1米以内？

个人观点

檩条下1米以内。

6.2.15 线型光束感烟火灾探测器的设置应符合下列规定:

- 1 探测器的光束轴线至顶棚的垂直距离宜为0.3m~1.0m, 距地高度不宜超过20m。
- 2 相邻两组探测器的水平距离不应大于14m, 探测器至侧墙水平距离不应大于7m, 且不应小于0.5m, 探测器的发射器和接收器之间的距离不宜超过100m。
- 3 探测器应设置在固定结构上。
- 4 探测器的设置应保证其接收端避开目光和人工光源直接照射。
- 5 选择反射式探测器时, 应保证在反射板与探测器间任何部位进行模拟试验时, 探测器均能正确响应。



QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

现在市面火灾自动报警设备均为报警总线 and 电源总线合二为一即二线制，设计时是否可以按此设计，这样即节省时间也可以节省投资？

个人观点

火灾自动报警设备选择符合国家标准产品。

QUESTION & ANSWER

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您的问题

超过 12 m 的高大空间场所设置火灾自动报警系统，宜选用两种及其以上火灾探测器，除了设置线型光束感烟探测器外，最好再设置何种探测器？

个人观点

火灾初期产生大量烟的场所，应选择线型光束感烟火灾探测器、管路吸气式感烟火灾探测器或图像型感烟火灾探测器。

12.0.7 手动报警按钮的设置应满足人员快速报警的要求，每个防火分区或楼层应至少设置**1个手动火灾报警按钮**。

【条文说明】

本条规定了手动火灾报警按钮的设置原则。手动火灾报警按钮以手动方式产生火灾报警信号，是火灾探测报警系统的基本触发器件和必要组成部分。合理设置手动火灾报警按钮，有利于人员在发现火灾时及时向消防控制室报告火警，为火灾处置和人员安全疏散赢得时间。



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您的问题

《消防设施通用规范》GB 55036-2022第12.0.7条，手动报警按钮只有个数的要求，没有距离的要求，今后设计中是否满足12.0.7条要求即可？

个人观点

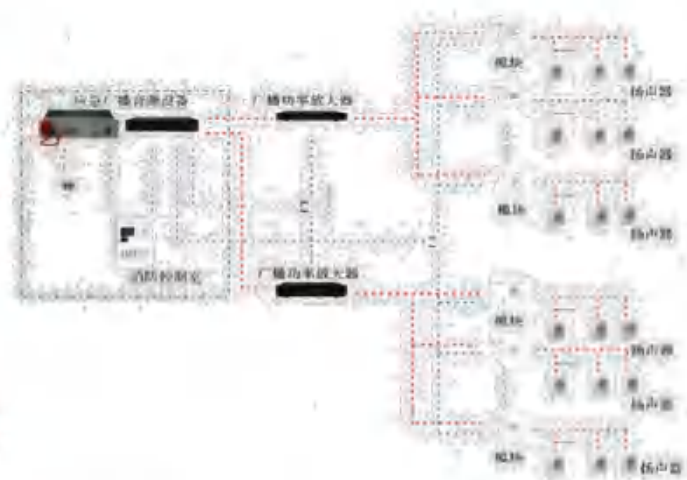
按《火灾自动报警系统设计规范》GB50116-2013第6.3.1条执行。即：每个防火分区应至少设置一只手动火灾报警按钮。**从一个防火分区内的任何位置到最邻近的手动火灾报警按钮的步行距离不应大于30m。**

12.0.9 集中报警系统和控制中心报警系统应设置消防

应急广播。具有消防应急广播功能的多用途公共广播系统，应具有**强制切入消防应急广播功能。**

【条文说明】

本条规定了消防应急广播系统的设置原则和合用广播系统强制启动的功能要求。消防应急广播系统是集中报警系统和控制中心报警系统的基本组成部分，采用集中报警系统和控制中心报警系统的保护对象多为高层建筑或大型民用建筑。这些建筑内人员集中又较多，火灾时影响范围大，为了便于火灾时统一指挥人员有序疏散，要求在集中报警系统和控制中心报警系统中设置消防应急广播系统。



消防应急广播系统构成示意图

QUESTION & ANSWER

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您的问题

消防应急广播系统馈线电压采用何种电压级别比较合适?110V还是 24V, 是否必须全程独立穿管或独立槽盒?

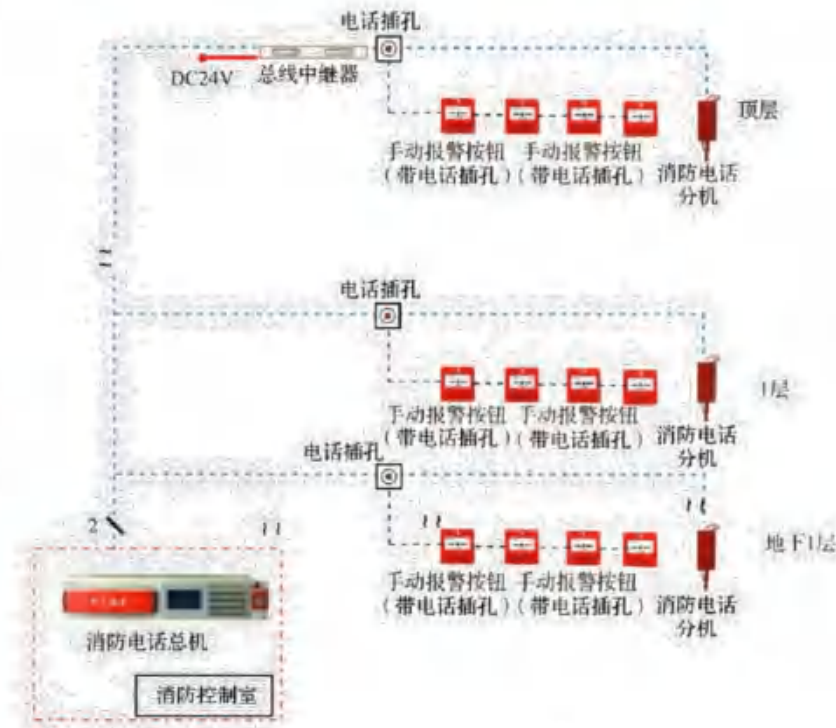
个人观点

消防应急广播系统与其他广播合用, 可采用110V 定压输出, 线路独立穿管或独立槽盒。如果消防应急广播系统专用网络时, 宜采用24V安全电压, 线路可与其他消防报警线路共槽盒敷设。

12.0.10 消防控制室内应设置消防专用电话总机和可直接报火警的外线电话，消防专用电话网络应为独立的消防通信系统。

【条文说明】

本条规定了消防控制室消防专用电话和外线电话系统的基本设置要求，以确保火灾时消防控制室和建筑内部重点部位及与消防救援机构消防通信的可靠性。将消防专用电话网络设置为独立的消防通信系统是确保火灾时专用电话线路安全可靠的基本措施。



QUESTION & ANSWER

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您的问题

《消防设施通用规范》GB 55036-2022第 20.10条，独立的消防通信系统，能否是总线制的电话系统？

个人观点

消防通信系统不建议采用总线制的电话系统。

电气培训教材

QUESTION & ANSWER

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您的问题

《消防设施通用规范》GB 55036-2022第 20.10条，“直接报火警的外线电话”，其管线引自项目内的通讯网络机房还是项目红线外的市政电话接线箱？

个人观点

直接报火警的外线直拨电话引自项目内的通讯网络机房。

12.0.11 消防联动控制应符合下列规定:

- 1 需要火灾自动报警系统**联动控制**的消防设备,其联动触发信号应为**两个独立的报警触发装置报警信号的“与”**逻辑组合;
- 2 消防联动控制器应能按设定的控制逻辑向各相关受控设备发出联动控制信号,并接受其**联动反馈信号**;
- 3 受控设备接口的特性参数应与消防联动控制器发出的联动控制信号匹配。

【条文说明】

本条规定了系统联动控制设计的基本功能和性能要求,以保障消防联动控制的可靠性。消防联动控制在发生火灾时按照预设的逻辑和时序实现对受控系统设备的联动控制功能,是火灾自动报警系统的基本功能之一。其可靠与否直接关系到受控消防设备能否及时动作,对初期的火灾控制和人员疏散至关重要。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

高层居住建筑是否每栋楼下的弱电室都需要设置消防电话分机?只在小区弱电总机房设置电话分机是否也满足规范要求?

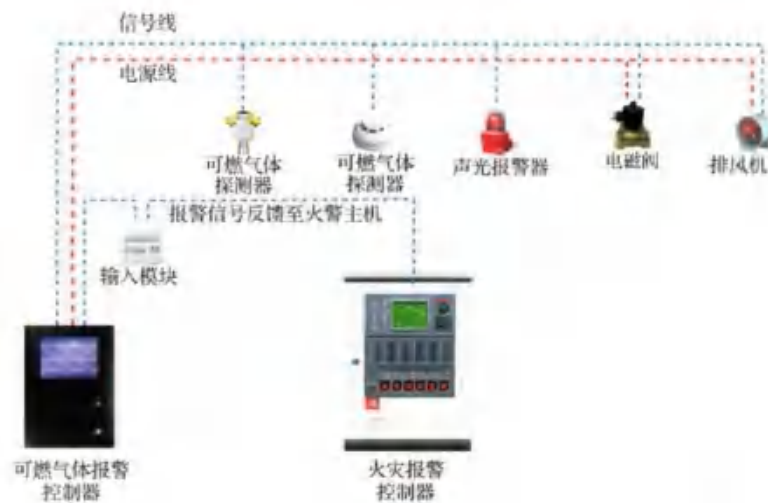
个人观点

高层居住建筑如果设置消防电话分机,宜设置在有人值班地方或公共区,小区弱电总机房应设置电话分机。

12.0.13 可燃气体探测报警系统应独立组成，可燃气体探测器**不应直接接入火灾报警控制器的报警总线。**

【条文说明】

可燃气体探测报警系统是火灾自动报警系统的子系统，属于**火灾预警系统**，可燃气体探测器在功耗、使用寿命和推护管理等方面和火灾探测器均不同。本条规定了可燃气体探测报警系统设置的基本要求，以确保可燃气体探测报警系统和火灾探测报警系统运行的稳定性和可靠性。



可燃气体探测报警系统构成示意图

QUESTION & ANSWER

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您的问题

《消防设施通用规范》GB55036-2022 第12.0.13条规定，可燃气体探测器不应直接接入火灾报警控制器的报警总线。条文说明解释：可燃气体探测报警系统是火灾自动报警系统的子系统。请问可燃气体探测报警系统与火灾自动报警系统如何建立联系？

个人观点

可燃气体探测报警系统是火灾自动报警系统的子系统，通过**火灾报警控制器和图形显示装置**与火灾自动报警系统如何建立联系。

12.0.14 电气火灾监控系统应独立组成，电气火灾监控探测器的设置不应影响所在场所供配电系统的正常工作。

【条文说明】

电气火灾监控系统属于火灾预警系统和供配电的保障系统，本条规定了电气火灾监控系统设置的基本要求。为保障系统运行的稳定性，电气火灾监控设备要直接配接电气火灾监控探测器组成独立的系统，且系统设置不应降低供配电系统的工作连续性和可靠性要求。



电气火灾监控系统构成示意图

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《消防设施通用规范》GB55036-2022 第2.0.14条规定，电气火灾监控探测器的设置不应影响所在场所供配电系统的正常工作，如何理解？

个人观点

首先电气火灾监控探测器的设置**不能影响供配电系统供电可靠性**，其次电气火灾监控探测器的设置**不应总有误报**，报警后**应便于排查**。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

老年人照料设施是否需要设置电气火灾监控系统？除了老年人照料设施外，还有哪些民用建筑或场所应设置电气火灾监控系统？

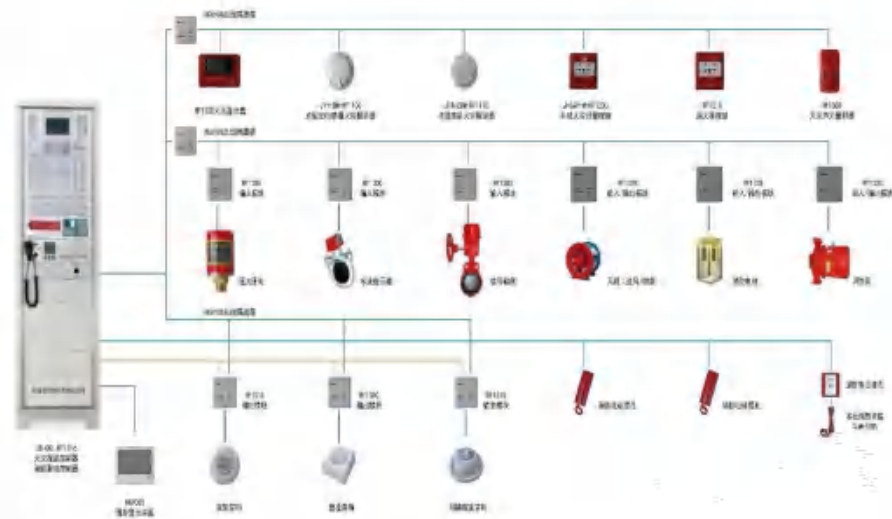
个人观点

老年人照料设施的非消防用电负荷应设置电气火灾监控系统。《民用建筑电气设计标准》GB 51348-2019第13.2.2条规定民用建筑或场所应设置电气火灾监控系统。

12.0.15 火灾自动报警系统应单独布线，相同用途的导线颜色应一致，且系统内不同电压等级、不同电流类别的线路应敷设在不同线管内或同一线槽的不同槽孔内。

【条文说明】

本条规定了火灾自动报警系统布线的基本要求。火灾自动报警系统属于独立的建筑消防电气系统，单独布线是其基本要求。本条规定一是为确保系统火灾探测器、模块等弱电设备运行等的稳定性和可靠性，二是便于系统的施工、维护与保养。



QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

超过 12 m 的高大空间场所设置火灾自动报警系统，宜选用两种及其以上火灾探测器，除了设置线型光束感烟探测器外，最好再设置何种探测器？

个人观点

火灾初期产生大量烟的场所，应选择**线型光束感烟**火灾探测器、**吸气式**感烟火灾探测器或**图像型**感烟火灾探测器。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

设有火灾自动报警系统的厂房，当设有自动跟踪定位射流灭火系统时，高度大于 12m 的高大空间场所是否还需要同时选择两种或以上火灾参数的火灾探测器？

个人观点

虽然自动跟踪定位射流灭火系统火灾探测采用复合探测方式，已达到火灾探测报警功能，且控制主机具有与火灾自动报警系统和其他联动控制设备的通信接口，考虑自动跟踪定位射流灭火系统维护时，缺少一种探测器，故在设有自动跟踪定位射流灭火系统时，高度大于 12m 的高大空间场所火灾自动报警系统还是要选择两种火灾参数的火灾探测器。

12.0.16 火灾自动报警系统的供电线路、消防联动控制线路应采用燃烧性能不低于B₁级的耐火铜芯电线电缆，报警总线、消防应急广播和消防专用电话等传输线路应采用燃烧性能不低于B₁级的铜芯电线电缆。

【条文说明】

本条规定了火灾自动报警系统的供电线路、控制线路及传输线路选型的基本要求。系统线路的选型是系统布线设计的关键环节，线路的防火性能直接影响系统在火灾工况下的安全性和运行可靠性。系统的供电线路、消防联动控制线路需要在火灾时继续工作，应具有相应的耐火性能，其他传输线路等要求具有一定的阻燃性，以避免在火灾中发生延燃。

燃烧性能分级	说明
A	不燃电缆
B ₁	阻燃1级电缆
B ₂	阻燃2级电缆
B ₃	普通电缆

QUESTION & ANSWER

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您的问题

《消防设施通用规范》GB55036-2022第12.0.16条，仅火灾自动报警系统的供电线路、消防联动控制线路需要采用耐热线缆。其他线路无耐火阻燃要求？

个人观点

报警总线、消防应急广播和消防专用电话等传输线路应采用燃烧性能不低于B₂级的铜芯电线电缆。工程中其他线路耐火阻燃要求见相关项目规范和技术标准。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

消防报警、应急照明等改造敷设管线是否可以穿金属管明敷设？

个人观点

可以。报警总线、消防应急广播和消防专用电话等传输线路应采用燃烧性能不低于B2级的铜芯电线电缆。工程中其他线路耐火阻燃要求见相关项目规范和技术标准。

12.0.18 火灾自动报警系统设备的防护等级应满足在设置场所环境条件下正常工作的要求。

【条文说明】

本条规定了火灾自动报警系统设备 IP 防护等级选择的原则要求。IP 防护等级是表征电器产品防尘、防潮或防水能力的指标。火灾自动报警系统设备的防护等级选择是确保系统设备在不同环境，尤其是潮湿、多尘等恶劣环境条件下稳定、可靠运行的前提，在工程中必须根据设备设置场所的环境条件合理确定设备的 IP 防护等级。

组成 代码字母	数字或字母 IP	对设备防护的含义	对人员防护的含义
第一位 特征数字	0 1 2 3 4 5 6	防止固体异物进入 无防护 ≥直径50mm ≥直径12.5mm ≥直径2.5mm ≥直径1.0mm 防尘 尘密	防止接近危险部件 无防护 手背 手指 工具 金属线 金属线 金属线
第二位 特征数字	1 2 3 4 5 6 7 8	防止进水造成有害影响 无防护 垂直滴水 15°滴水 淋水 溅水 喷水 猛烈喷水 短时间浸水 连续浸水	—

IP 等级的划分要求

QUESTION & ANSWER

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您的问题

《消防设施通用规范》GB55036-2022第2.0.18条，潮湿场所报警系统探测器如何选择？经咨询厂家，“抗湿能力强，可适用不同气候环境的要求”；如果要满足IP45要求，则要加防护罩或者防爆的产品才可满足？

个人观点

潮湿环境内的消防电气设备，对于城市综合管廊及其他潮湿环境，不应低于IP45，如果需要加防护罩就应增加。

Analysis of Difficult Problems in Electrical Design of
Mandatory Engineering Construction Codes

PART 05

《建筑防火通用规范》 GB 55037-2022

相关电气问题



2.2.4 设置机械加压送风系统并靠外墙或可直通屋面的封闭楼梯间、防烟楼梯间，在楼梯间的顶部或最上一层外墙上应设置常闭式应急排烟窗，且该应急排烟窗应具有手动和联动开启功能。

【条文说明】

本条规定了楼梯间设置应急排烟窗的基本要求，以防止烟气在楼梯间内积聚，保证消防救援人员的安全。满足自然通风排烟条件的楼梯间可以利用既有外窗，不需要设置专门的应急排烟窗。应急排烟窗的开口大小等技术要求，可以按照相应消防技术标准的要求确定。



QUESTION & ANSWER

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您的问题

GB 55037-2022第2.2.4条，应急排烟窗替代GB 51251-2017的固定窗，应急排烟窗的联动如何设计？

个人观点

应急排烟窗可以通过测量烟和温度的传感器进行联动。

QUESTION & ANSWER

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您的问题

《消防设施通用规范》GB55037-2022第3.4条，联动开启功能如何实现？是否需要增加手动控制线至消防控制室（消防验收部门要求）？

个人观点

设置了应急排烟窗，可以增设火灾自动报警系统，也可以根据区域内确认的火灾报警信号联动。增加手动控制线至消防控制室不是强制要求，需要视建筑中火灾自动报警系统的设置情况和建筑规模或需要开启的应急排烟窗的数量等具体情况确定。

2.2.5 除有特殊功能、性能要求或火灾发展缓慢的场所可不在外墙或屋顶设置应急排烟排热设施外，下列无可开启外窗的地上建筑或部位均应在其每层外墙和（或）屋顶上设置应急排烟排热设施，且该**应急排烟排热设施**应具有**手动、联动**或依靠烟气温度等方式自动开启的功能：

- 1 任一层建筑面积大于 2500m^2 的丙类厂房；
- 2 任一层建筑面积大于 2500m^2 的丙类仓库；
- 3 任一层建筑面积大于 2500m^2 的商店营业厅、展览厅、会议厅、多功能厅、宴会厅，以及这些建筑中长度大于 60m 的走道；
- 4 总建筑面积大于 1000m^2 的歌舞娱乐放映游艺场所中的房间和走道；
- 5 靠外墙或贯通至建筑屋顶的中庭。

【条文说明】

本条规定了建筑设置应急排烟排热设施的基本范围，以保证建筑内的排烟系统在失效情况下能及时排出火灾的烟气和热，便于消防救援行动。对于一些特殊的建筑，可以不设置应急排烟排热设施。

QUESTION & ANSWER

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您的问题

《建筑防火通用规范》GB55037-2022第2.2.4条、第2.2.5条，请问这种联动功能具体设计如何实现？因为此联动需要专业配合实现，如果出现设计缺漏或者提资失误，算暖通、建筑、电气哪个专业违反强条？

个人观点

可以通过手动报警器和楼梯间的顶部感烟探测器的“与”信号联动应急排烟窗。

可以通过手动报警器和楼梯间的顶部感烟探测器的“与”信号或者依靠烟气温度联动应急排烟排烟设施。

如果出现设计缺漏或者提资失误，算设计团队违反强条，提资失误应属于暖通、建筑专业违反强条，缺漏属于电气哪个专业违反强条。

2.2.7 埋深大于**15m**的地铁车站公共区应设置**消防专用通道**。

【条文说明】

本条规定了地铁车站公共区有关消防救援通道的基本设置要求。有关通道或出入口的技术要求，可以按照相应的工程建设技术标准确定。

消防专用通道或应急出入口是供消防救援人员迅速进入建筑，特别是进入地下建筑进行消防救援的专用通道，应满足在灭火救援过程中便于消防救援人员在背负救援装备的情况下快速、安全进出的要求，并具有一定的防烟、防火性能，如应急出入口的直径（或边长）不小于1.0m，出入地面的盖板等便于消防救援人员开启。



QUESTION & ANSWER

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您的问题

《建筑防火通用规范》GB55037-2022第2.2.7条，消防专用通道的疏散照明设计中，其疏散方向如何指示？

个人观点

消防专用通道的消防应急照明和疏散指示系统设计中，**仅作消防应急照明**即可，其疏散方向不做要求。

2.2.10 消防电梯应符合下列规定：

3 电梯的动力和控制线缆与控制面板的连接处、控制面板的外壳防水性能等级不应低于IPX5；

4 在消防电梯的首层入口处，应设置明显的标识和供消防救援人员专用的操作按钮；

6 电梯轿厢内部应设置专用消防对讲电话和视频监控系统的终端设备。

【条文说明】

本条规定了消防电梯为满足救援需要应具备的基本性能。

消防电梯应能满足一个消防战斗班全员配备装备后使用电梯的需要，并能由消防救援人员的控制，具有足够的防火、防水等性能，能够在发生火灾时正常、安全运行。多种功能组合的建筑可以根据不同部位的防火要求，按照实际所需服务的区域确定电梯的停靠楼层，一般应每层停靠。



QUESTION & ANSWER

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您的问题

《建筑防火通用规范》GB55037-2022第4.2.10条，第4款，在消防电梯的首层入口处，应设置明显的标识和供消防救援人员专用的操作按钮；请问此处标识是否要求为照明灯具？

个人观点

在消防电梯的首层入口处，应设置明显的标识，**没有对设置照明灯具提出要求。**

QUESTION & ANSWER

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您的问题

由于消防电梯轿厢内部的消防对讲电话信号通过电梯随行电缆传输，而随行电缆无法达到消防管线的防火性能要求。请问这种做法是否符合规范要求？

个人观点

消防电梯轿厢内部的消防对讲电话信号随行电缆应达到消防管线的防火性能要求。

2.2.12 屋顶直升机停机坪的尺寸和面积应满足直升机安全起降和救助的要求，并应符合下列规定：

3 停机坪四周应设置航空障碍灯和应急照明装置；

【条文说明】

本条规定了屋顶直升机停机坪的基本设置要求。屋顶直升机停机坪属于静态高架直升机场。屋顶直升机停机坪可以直接设置在屋面上，也可以在屋顶采用架空的平台。为保障直升机安全起降，其场地大小应根据当地空中救援力量或其规划的直升机机型确定，场地周围应设置保障直升机安全起降、灭火与防护的设施。



QUESTION & ANSWER

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您的问题

停机坪四周应设置航空障碍灯和应急照明装置。请问这里应急照明装置是指的疏散照明还是备用照明？照度多少？需要设置疏散指示标志灯吗？

个人观点

停机坪四周应设置应急照明备用照明。**照度满足消防救援**即可。不需要设置疏散指示标志灯。

2.2.16 消防通信指挥系统的运行安全应符合下列规定：

4 火警电话呼入线路或设备出现故障时，应能切换到**火警应急接**

警电话线路或设备接警。

【条文说明】

本条规定了保证消防通信指挥系统运行安全的基本要求。

消防通信指挥系统应具有必要的故障应急措施，保证火警受理、调度指挥通信不间断。如出现故障将丧失其基本功能，不能达到其主要性能要求，因此需要其中某个子系统瘫痪的设备或设备的核心部件作备份。用于支持火警受理、调度指挥、现场指挥的计算机通信网、有线通信网、无线通信网、卫星通信网等消防指挥通信网络应相对独立，与非消防指挥通信网络之间连接应有边界安全措施。消防通信指挥系统与其他应用系统共用通信网络时，应保证必需的通信线路（信道）和信息传输速率，指挥通信网络必须保证常年畅通。



4.1.5 附设在建筑内的燃油或燃气锅炉房、**柴油发电机房**，除应符合本规范第4.1.4条的规定外，尚应符合下列规定：

2 建筑内**单间储油间**的燃油储量不应大于**1m³**。油箱的通气管设置应满足防火要求，**油箱的下部应设置防止油品流散的设施**。储油间应采用耐火极限不低于**3.00h**的防火隔墙与发电机间、锅炉间分隔。

3 柴油机的排气管、柴油机房的通风管、**与储油间无关的电气线路等**，不应穿过储油间。

4 **燃油或燃气管道**在设备间内及进入建筑物前，应分别设置具有**自动和手动关闭功能的切断阀**。

QUESTION & ANSWER

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您的问题

《建筑防火通用规范》GB55037-2022第4.1.5条第2款，油箱的通气管怎样设置才能满足防火要求，油箱的下部应设置怎样的防止油品流散的设施？

个人观点

由动力专业完成相关工作。

QUESTION & ANSWER

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您的问题

《建筑防火通用规范》GB55037-2022第4.4.4-4.4.1.6条条文说明：“...干式或充装其他非可燃液体的变压器火灾危险性小，但在运行时易升温，仍存在一定的火灾危险性，应设置在专用房间内，并使之具有良好的通风条件或采取相应的散热措施...”，请问干式变压器是否和油浸变压器一样，需要设置在专用房间内吗？

个人观点

干式变压器不需要设置在专用房间，从节能角度考虑干式变压器建议设置在专用房间。

4.1.8 消防控制室的布置和防火分隔应符合下列规定：

- 1 单独建造的消防控制室，**耐火等级不应低于二级**；
- 2 附设在建筑内的消防控制室应采用防火门、防火窗、耐火极限不低于2.00h的防火隔墙和耐火极限不低于1.50h的楼板与其他部位分隔；
- 3 消防控制室应位于建筑的**首层或地下一层**，疏散门应直通室外或安全出口；
- 4 消防控制室的环境条件不应干扰或影响消防控制室内火灾报警与控制设备的正常运行；
- 5 消防控制室内**不应敷设或穿过**与消防控制室无关的管线；
- 6 消防控制室应采取**防水淹、防潮、防啮齿动物**等的措施。

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您的问题

《建筑防火通用规范》GB55037-2022第4.1.8条，消防控制室开向室外的门是否需要防水淹？

个人观点

消防控制室防水淹的目的是防止消防救援灭火用水进入房间影响设备正常工作，因此开向建筑内的门需要设不小于 150mm 高的门槛或其它措施防水。消防控制室对外的门利用建筑室内外高差的防水淹措施即可，但当外门地面低于室外地面时，需设置不小于 150mm 高的门槛或截水沟防水淹。

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您的问题

GB55036-2022《消防设施通用规范》中废止了GB50116-2013《火灾自动报警系统设计规范》第3.4.6条：“消防控制室内严禁穿过与消防设施无关的电气线路及管路。”而在GB55036-2022《消防设施通用规范》的第12章火灾自动报警系统中，并未提及相关内容。

GB550系列规范发布公告中废止了其他GB规范中的强条内容，但在对应的GB550规范中并未提及相关内容。原规范如何执行？完全作废不再执行，还是降级为非强条，仍然执行？

个人观点

《建筑电气与智能化通用规范》GB 55024-2022第2.0.3条第3款：无关的管道和线路不得穿越。

QUESTION & ANSWER

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您的问题

《建筑防火通用规范》GB55037-2022第4.1.3条，消防控制室位于地下一层，控制室门直接开向地下一层走廊是否可以？是否还有相离要求？

个人观点

消防控制室位于地下一层时，消防控制室距疏散口的距离不应大于15m。

6.4.1 防火门、防火窗应具有自动关闭的功能，在关闭后应具有烟密闭的性能。宿舍的居室、老年人照料设施的老年人居室、旅馆建筑的客房开向公共内走廊或封闭式外走廊的疏散门，应在关闭后具有烟密闭的性能。**宿舍的居室、旅馆建筑的客房的疏散门，应具有自动关闭的功能。**

【条文说明】

防火门尽管具有防火密封条，但该密封条需要达到较高的温度才会膨胀将门缝封堵。在温度较低情况下不能有效阻止烟气透过。普通门没有严格的烟密闭性能要求，在火灾条件下难以保证宿舍、公寓、老年人照料设施、旅馆建筑中居室内人员的安全。本条规定了防火门、防火窗的基本功能和性能要求，以及居住建筑等具有住宿功能的房间门在正常情况下关闭后的防烟性能，以确保防火分隔的有效性，减少烟气对人员的危害。建筑内门、窗在正常使用时的启闭状态可以根据使用需要确定。



QUESTION & ANSWER

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您的问题

公共建筑内的疏散通道、防火分区上的防火门常开还是常闭如何选型？

个人观点

由建筑防火专业确定。

QUESTION & ANSWER

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您的问题

居住类项目设有常开防火门，是否常开常闭防火门都必须设置防火门监控系统？其居住类项目内没有常开防火门时，常闭防火门是否还必须设置防火门监控系统？公建类项目是否常开常闭防火门都必须设置防火门监控系统？

个人观点

建筑设置火灾自动报警系统，应设置防火门监控系统，只监测常开防火门，常闭防火门可选择性监控。建筑没有设置火灾自动报警系统可不设置防火门监控系统。

6.4.2 下列部位的门应为甲级防火门：

- 1 设置在防火墙上的门、疏散走道在防火分区处设置的门；
- 2 设置在耐火极限要求不低于3.00h的防火隔墙上的门；
- 3 电梯间、疏散楼梯间与汽车库连通的门；
- 4 室内开向避难走道前室的门、避难间的疏散门；
- 5 多层乙类仓库和地下、半地下及多、高层丙类仓库中从库房通向疏散走道或疏散楼梯间的门。

【条文说明】

这条规定了建筑内应采用甲级或乙级防火门的通用要求，以确保相应防火分隔部位的分隔有效性，有效阻止火势蔓延。除本条规定外，本规范其他条文对设置甲级防火门的部位还有具体规定。

疏散楼梯间是火灾时人员从建筑内疏散到室外的疏散安全区，消防电梯的前室对于保障消防救援行动安全具有重要作用。这些区域均需要具有较高的防火、防烟性能，楼梯间分隔墙体的耐火极限一般都要求不低于2.00h。因此，楼梯间及其前室、消防电梯间的前室或合用前室的门均要求为耐火性能不低于乙级的防火门。

仓库建筑内的疏散走道和楼梯间的设置与其他建筑有所区别。一般仓库中的库房通过疏散走道将建筑楼梯层上疏散楼梯间连通，不在库房内直接设置疏散楼梯间，以提高疏散楼梯的安全性能。

QUESTION & ANSWER

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您的问题

根据《建筑防火通用规范》GB55037-2022第6.4.2条，疏散走道在防火分区处设置的门为甲级防火门，不再要求为常开甲级防火门，如果建筑专业不定义，电气专业是否可以认为其为常闭甲级防火门？

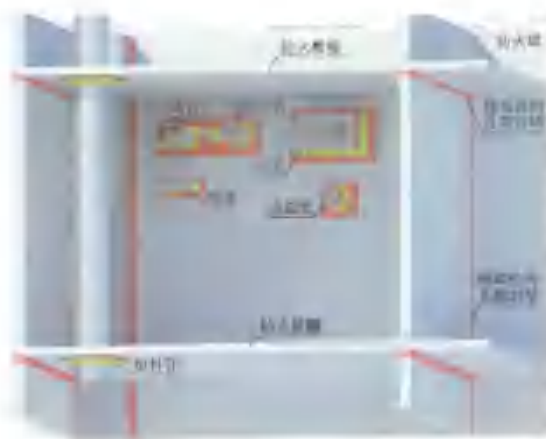
个人观点

建筑专业应当确定。

6.3.4 电气线路和各类管道穿过防火墙、防火隔墙、竖井井壁、建筑变形缝处和楼板处的孔隙应**采取防火封堵措施**。防火封堵组件的耐火性能不应低于防火分隔部位的耐火性能要求。

【条文说明】

本条规定了电线电缆、电气槽盒等和各类管道（如给排水管道、输送可燃气体或可燃液体的管道、除尘管道及其他工艺管线、各类通风和防排烟管道）在建筑内穿越防火分隔处的防火封堵要求。各类建筑内敷设的各类管线在穿越防火墙、防火隔墙、防火楼板处及其他防火分隔部位处的孔洞和缝隙，均需要采用防火封堵组件封堵，以确保防火分隔的有效性。各类缝隙和孔洞封堵的技术措施及要求，可以按照现行国家标准《建筑防火封堵应用技术标准》GB/T 51410的规定确定。



QUESTION & ANSWER

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您的问题

根据《建筑防火通用规范》GB55037-2022第6.3.4条，要求电气线路和各类管道应采取防火封堵措施的场所，请问当采用电缆桥架从该处穿过时，电缆桥架内部是否也需封堵？

个人观点

采用电缆桥架从穿过防火墙、防火隔墙、竖井井壁、建筑变形缝处和楼板处的孔隙穿过时，电缆桥架**内部需要封堵**。

7.1.5 在疏散通道、疏散走道、疏散出口处，不应有任何影响人员疏散的物体，并应在**疏散通道、疏散走道、疏散出口的明显位置设置明显的指示标志**。疏散通道、疏散走道、疏散出口的净高度均不应小于2.1m。疏散走道在**防火分区分隔处应设置疏散门**。

【条文说明】

这条规定了建筑内疏散出口、疏散楼梯、疏散走道的最小净宽度和最小净高度等的基本要求，以满足人员安全疏散和消防救援的需要。

本规范规定的疏散出口门为设置在建筑内各房间直接通向疏散走道的门或安全出口的门，包括疏散楼梯间、电梯间或防烟楼梯间的前室或合用前室的门等。

在疏散楼梯等的中间加设中间扶手且设置栏杆扶手，可以保证通行宽度不至过宽，防止人群疏散时因失稳跌倒而发生踩踏等意外情况。

合理设置疏散指示标志有利于人员快速、安全地疏散。建筑内所设置的疏散指示标志要便于人们辨认，并符合人行走时的行为习惯，能起到引导作用，但要避免被建筑构配件和火灾烟气遮挡。

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您的问题

《建筑防火通用规范》GB55037-2022第7.1.5条，是否可理解为疏散通道上不再设置卷帘门，卷帘门由所在防火分区内任两只独立的火灾探测器的报警信号，作为防火卷帘下降的联动触发信号，联动控制防火卷帘一步下降到楼板面？

个人观点

疏散通道上不应设置卷帘门，卷帘门由所在防火分区内任两只独立的火灾探测器的报警信号，作为防火卷帘下降的联动触发信号，联动控制防火卷帘一步下降到楼板面。

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022第7.1.5条 符合本规范第10.1.8条的建筑物处按负荷等级要求设计配电即可，但若不在本规范第10.1.8条范围内的建筑物，此条要求的部位处设置的指示标志需要配电吗？

个人观点

设置的疏散指示标志应采用灯光型标志灯。集中控制型疏散指示标志系统电源应是消防电源。

7.1.8 室内疏散楼梯间应符合下列规定：

5 除疏散楼梯间及其前室的出入口、外窗和送风口，住宅建筑疏散楼梯间前室或合用前室内的管道井检查门外，疏散楼梯间及其前室或合用前室的墙上不应设置其他门、窗等开口。

疏散楼梯间



【条文说明】

疏散楼梯间是建筑内人员疏散和消防救援的主要竖向通道，应防止在楼梯间内发生火灾或火灾通过楼梯间蔓延。凡可能引发火灾或影响人员安全疏散的设施均不应设置在楼梯间内。在住宅建筑的楼梯间中允许设置水表、电表、气表、可燃气体管道等，但应采取防止管道意外损伤发生泄漏的措施，设置位置不应影响人员疏散和正常通行。楼梯间应采用防火隔墙、耐火楼板等与相邻区域分隔，使之具有良好的防火性能，并通过设置外窗、机械加压送风系统等，使之具有良好的防烟性能。

除住宅建筑受平面布置限制需要将电缆井和管道井的检查门设置在前室或合用前室外，在其他建筑的防烟楼梯间前室或合用前室内，不允许开设除疏散门和排烟窗以外的其他开口和管道井的检查门。

QUESTION & ANSWER

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您的问题

疏散楼梯间及其前室或合用前室内的墙,不应设置其他门、窗等开口是否包含管线穿越的洞口? 如不包含哪些管线能穿越楼梯间及其前室?

个人观点

原则上电气金属槽和明敷电气金属不能穿过疏散楼梯间及其前室或合用前室。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

电气金属线槽或电气金属管能否穿过疏散楼梯间及其前室或合用前室？能否在疏散楼梯间及其前室或合用前室内竖向敷设？

个人观点

原则上电气金属线槽和明敷电气金属管能否穿过疏散楼梯间及其前室或合用前室。电气金属线槽和明敷电气金属管也不能疏散楼梯间及其前室或合用前室内竖向敷设。确有困难时，应做防火措施。

7.1.16 避难间应符合下列规定：

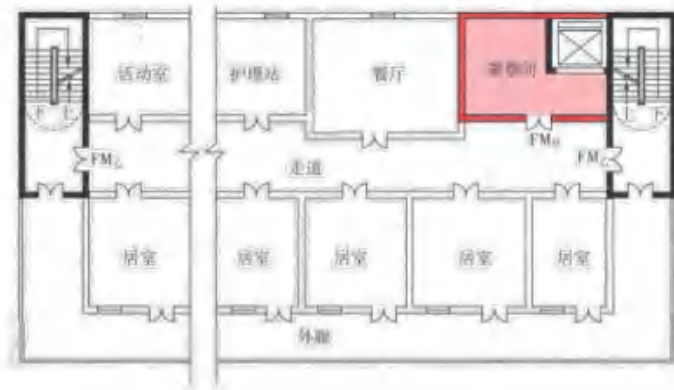
3 避难间应靠近疏散楼梯间，不应在可燃物库房、锅炉房、发电机房、变配电站等火灾危险性大的场所的正下方、正上方或贴邻；

7 避难间内应设置消防软管卷盘、灭火器、**消防专线电话**和**应急广播**；

8 在避难间**入口**处的明显位置应**设置标示避难间的灯光指示标识**。

【条文说明】

规定了避难间的基本性能和关键防火要求。



QUESTION & ANSWER

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您的问题

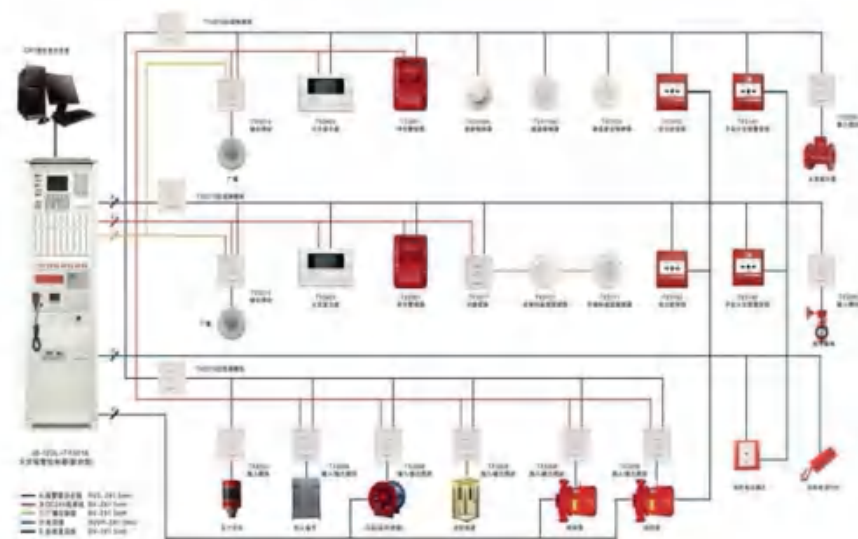
《建筑防火通用规范》GB55037-2022 第7.1.16条，请问住宅户内避难间是否设置火灾报警电话、火灾广播？

个人观点

避难间应设置火灾报警电话、火灾广播。

8.3.1 除散装粮食仓库、原煤仓库可不设置火灾自动报警系统外，下列**工业建筑或场所**应设置火灾自动报警系统：

- 1 丙类高层厂房；
- 2 地下、半地下且建筑面积大于 1000m^2 的丙类生产场所；
- 3 地下、半地下且建筑面积大于 1000m^2 的丙类仓库；
- 4 丙类高层仓库或丙类高架仓库。



QUESTION & ANSWER

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您的问题

《建筑防火通用规范》GB55037-2022 第8.1.1条，建筑面积大于1000m²的地上多层丙类厂房是否需要设置火灾报警？

个人观点

建筑面积大于1000m²的地上多层丙类厂房没有对设置火灾报警提出要求。

QUESTION & ANSWER

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您的问题

《建筑防火通用规范》GB55037-2022第5.3.1条，是否所有丙类单多层地上厂房、仓库均不设置火灾自动系统？

个人观点

如果规范和专业标准没有相应的规定，可以不设置火灾自动系统。

8.3.2 下列**民用建筑或场所**应设置火灾自动报警系统:

- 1 商店建筑、展览建筑、财贸金融建筑、客运和货运建筑等类似用途的建筑;
- 2 旅馆建筑;
- 3 建筑高度大于100m的住宅建筑;
- 4 图书或文物的珍藏库,每座藏书超过50万册的图书馆,重要的档案馆;
- 5 地市级及以上广播电视建筑、邮政建筑、电信建筑,城市或区域性电力、交通和防灾等指挥调度建筑;
- 6 特等、甲等剧场,座位数超过1500个的其他等级的剧场或电影院,座位数超过2000个的会堂或礼堂,座位数超过3000个的体育馆;
- 7 疗养院的病房楼,床位数不少于100张的医院的门诊楼、病房楼、手术部等;
- 8 托儿所、幼儿园,老年人照料设施,任一层建筑面积大于500m²或总建筑面积大于1000m²的其他儿童活动场所;
- 9 歌舞娱乐放映游艺场所;
- 10 其他二类高层公共建筑内建筑面积大于50m²的可燃物品库房和建筑面积大于500m²的商店营业厅,以及其他一类高层公共建筑。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

根据《建筑防火通用规范》GB55037-2022第8.3.2条，规范描述商店建筑应设置火灾自动报警，条文解释描述不包括商业网点，实施指南描述包括建筑面积大于100m²的商业网点，两者冲突，该如何执行此条？

个人观点

商店建筑包括建筑面积大于100m²的商业网点。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

设置了机械排烟设施的应设置火灾自动报警系统。但是《建筑防火通用规范》GB55037-2022取消这一条，见网上编制组回复文件，此强条废除，此条是否还继续执行？

个人观点

设置了机械排烟设施的应设置火灾自动报警系统，可以还继续执行，但不是强制性要求。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

根据《建筑防火通用规范》GB55037-2022第8.3.2条，对于需要消防联动的场所设置火灾报警系统是否不再强制要求？

个人观点

需要消防联动的场所设置火灾报警系统不再强制要求。

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022第8.3.2条，旅馆建筑，条文解释为不包括出租客房数量少于15间的旅馆建筑。如何理解？

个人观点

旅馆建筑，客房如果少于15间的可以不执行《建筑防火通用规范》GB55037-2022第8.3.2条的规定。

8.3.3 除住宅建筑的燃气用气部位外，建筑内可能散发可燃气体、可燃蒸气的场所应设置可燃气体探测报警装置。

【条文说明】

本条规定应设置可燃气体探测报警装置的场所，包括各类生产厂房、仓库中存在散发可燃气体或蒸气的场所，公共建筑中存在散发可燃气体、蒸气的场所等，不包括住宅建筑内的燃气用气部位。



QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022第8.2.2条，住宅建筑的燃气报警是否需要？该如何设计？

个人观点

100m以下住宅建筑的燃气报警可不设置可燃气体报警系统。**100m以上住宅建筑应设置可燃气体报警系统。**

9.3.3 排除有燃烧或爆炸危险性气体、蒸气或粉尘的排风

系统应符合下列规定：

1 应采取静电导除等**静电防护措施**；

2 排风设备不应设置在地下或半地下；

3 **排风管道应具有不易积聚静电的性能**，所排除的空气应直接通向室外安全地点。

【条文说明】

本条规定了用于排除可燃气体、蒸气、粉尘、纤维的通风系统的基本防火要求，以防止形成爆炸危险性条件。

本条规定既要求用于排除可燃气体、蒸气和粉尘、纤维的排风系统中的管道、设备等要采取静电接地等静电防护措施，也要求管道等要采用金属管道等导电性能好的材料消除静电。在设备布置上，不允许将排风设备布置在地下和半地下，避免将爆炸性物质引入通风条件差的场所。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022第9.3.3条，条文中所指排风系统是否可统一理解为事故风机，柴油发电机房储油间内不设风管，与柴油发电机房合用风机，为平时排风用的，风管是否可不设静电导除措施。

个人观点

柴油发电机房的储油间内风管可以不设静电导除措施。

If learning only in the institutions, as we usually have, success, there will be the technology, Master now technology, be good at learning, must be good at thinking. The key is to learn, to learn is not to know. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human progress lies in this. Success is not an important thing, it is an important effort. Not to find an answer for future, only to find a way to success. The secret of success is the persistent pursuit of the goal. May I be strenuous, energetic and persevering. (May I ever keep a promise given)

您的问题

在智能化系统设计中弱电系统接地及机房等弱电设备场所的防静电接地做法，常遇到施工反馈，如何能合理清晰的设计全面不遗漏，需要学习交流。

个人观点

防静电接地系统是一种用于排除静电并将其导入地面的系统，主要应用于需要防止静电积累的场所，其目的是防止静电对人员和设备造成危害，确保生产过程的安全和设备的正常运行。机房接地 机房内所有电子设备的接地线（UPS机壳接地线）都必须以机房接地线（交流屏）为总地，以保证电子设备的电位相同。不得在一个接地线中串接几个需要接地部分。机房接地线需要独立设置，接地装置可与其他接地装置共用，接地电阻值按最小值选取（防静电 $\leq 100\Omega$ ）。

10.1.1 建筑高度大于150m的工业与民用建筑的消防用电

应符合下列规定：

- 1 应按**特级负荷**供电；
- 2 应急电源的消防供电回路应采用**专用线路连接至专用母线段**；
- 3 **消防用电设备的供电电源干线应有两个路由。**

【条文说明】

本条规定了建筑高度大于150m的工业与民用建筑中消防用电设备的供电负荷等级和保障供电可靠性的基本要求。

特级负荷是指中断供电将发生中毒、爆炸和火灾等情况的负荷，以及特别重要场所中不允许中断供电的负荷，其供电电源要求应符合现行国家标准《建筑电气与智能化通用规范》GB 55024的规定。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022第10.1.1条第3款，消防用电设备的供电干线应有2个路由，是否需在2个电井内布线？

个人观点

《建筑防火通用规范》GB55037-2022第10.1.1条第3款，2个路由指的是两个竖井。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to succeed. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022第7.2.1条，专用母线段是指可以和其它非消防特级负荷共用的应急专用母线段，还是指应急电源的消防供电回路必须单独设置消防应急专用母线段？

个人观点

建筑高度大于150m，应急电源的消防供电回路必须单独设置消防应急专用母线段。

10.1.2 除筒仓、散装粮食仓库及工作塔外，下列建筑的消防用电负荷等级不应低于一级：

- 1 建筑高度大于50m的乙、丙类厂房；
- 2 建筑高度大于50m的丙类仓库；
- 3 一类高层民用建筑；
- 4 二层式、二层半式和多层式民用机场航站楼；
- 5 I类汽车库；
- 6 建筑面积大于5000m²且平时使用的人民防空工程；
- 7 地铁工程；
- 8 一、二类城市交通隧道。

【条文说明】

本条根据建筑火灾的扑救难度建筑的功能及其重要性、建筑发生火灾后可能的危害与损失、消防设施的用电情况，规定了建筑的消防用电设备应按照不低于一级负荷供电的基本范围，以保证这些建筑消防用电的可靠性。

本规范中的“消防用电负荷”包括消防控制室和消防水泵房的应急照明、消防水泵、消防电梯、防烟排烟设施、火灾探测与报警系统、需使用电源的自动灭火系统或装置、疏散照明和疏散指示标志以及电动的防火门窗、卷帘、阀门等设施、设备。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022第10.1.2条，建筑面积大于5000m²且平时使用的人民防空工程；该条是否包括平战结合建筑平时使用的消防负荷？

个人观点

建筑面积大于5000m²平战结合建筑使用的消防负荷等级不应低于一级。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022第10.1.2条，消防水管的电伴热、水箱间的空调和电伴热等平时保障消防设备正常运行的负荷是否属于消防用电负荷？

个人观点

消防水管的电伴热、水箱间的空调和电伴热等平时保障消防设备正常运行的负荷属于消防用电负荷。

10.1.3 下列建筑的消防用电负荷等级不应低于二级：

- 1 室外消防用水量大于30L/s的厂房；
- 2 室外消防用水量大于30L/s的仓库；
- 3 座位数大于1500个的电影院或剧场，座位数大于3000个的体育馆；
- 4 任一层建筑面积大于3000 m²的商店和展览建筑；
- 5 省（市）级及以上的广播电视、电信和财贸金融建筑；
- 6 总建筑面积大于3000 m²的地下、半地下商业设施；
- 7 民用机场航站楼；
- 8 II类、III类汽车库和I类修车库；
- 9 本条上述规定外的其他二类高层民用建筑；
- 10 本条上述规定外的室外消防用水量大于25L/s的其他公共建筑；
- 11 水利工程，水电工程；
- 12 三类城市交通隧道。

【条文说明】

本条规定了建筑的消防用电设备应按照不低于二级负荷供电的基本范围，以保证这些建筑消防用电的可靠性。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

在用电站点要求用电等级中，有些现场条件不具备双电源供电情况，有没有更经济可靠的备用供电方式，例如民规里换热站点需二级供电，而有些场景为室外换热机组，是否可以三级负荷。机组不属于换热站点，这界定和区分该怎么确定？

个人观点

二级负荷不能等同三级负荷。需要根据用户使用要求判定负荷供电措施。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

因安装高度太高而需要电动控制的排烟窗是否为消防电源，是否必须联动？

个人观点

高处排烟窗需要联动控制。

10.1.4 建筑内消防应急照明和灯光疏散指示标志的备用电源的连续供电时间应满足人员安全疏散的要求，且不应小于表10.1.4的规定值。

【条文说明】

本条规定了各类建筑内消防应急照明和疏散指示标志备用电源的最小连续供电时间，是确定相关备用电源的重要依据。为保证消防应急照明和灯光疏散指示标志用电安全可靠，要尽可能采用集中供电方式，且无论采用何种方式，均需要备用电源在主电源断电后能立即自动投入，并保持所需持续供电时间。

本规范中的“消防应急照明”包括火灾时的疏散照明和备用照明。

表 10.1.4 建筑内消防应急照明和灯光疏散指示标志的备用电源的连续供电时间

建筑类别		连续供电时间(h)
建筑高度大于100m的民用建筑		1.5
建筑高度不大于100m的医疗建筑、老年人照料设施、总建筑面积大于100000m ² 的其他公共建筑		1.0
水利工程、水电工程、总建筑面积大于20000m ² 的地下或半地下建筑		1.0
城市轨道交通工程	区间和地下车站	1.0
	地上车站、车辆基地	0.5
城市交通隧道	一、二类	1.5
	三类	1.0
城市综合管廊工程、平时使用的人民防空工程，除上述规定外的其他建筑		0.5

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您的问题

一、二类高层住宅消防应急照明集中电源的供电，是否应在设置集中电源的楼层设置自动切换装置，还是可以电井内设置一个总的双电源箱后放射至各楼层的应急照明集中电源？



个人观点

住宅建筑可以采用方案一，但沿电气竖井垂直方向为不同楼层的灯具供电时，应急照明配电箱的每个输出回路的供电范围不宜超过8层，在住宅建筑的总的双电源箱供电范围不宜超过18层。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

无功能房间的大空间建筑中，非集中电源的应急照明配电箱的安装位置？

个人观点

非集中电源的应急照明配电箱的安装位置应设置便于维护电气小间内。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

空间比较高的厂房疏散照明和疏散指示怎么做？（中间没有柱子）？

个人观点

疏散照明吊装，疏散指示在疏散通道低处安装。

10.1.5 建筑内的消防用电设备应采用专用的供电回路，当其中的生产、生活用电被切断时，应仍能保证消防用电设备的用电需要。除**三级消防用电负荷**外，消防用电设备的备用消防电源的**供电时间和容量**，应能满足该建筑**火灾延续时间内消防用电设备的持续用电要求**。不同建筑的设计火灾延续时间**不应小于表**

10.1.5的规定。

表 10.1.5 不同建筑的设计火灾延续时间

建筑类别	具体类型	设计火灾延续时间(h)
	甲、乙、丙类仓库	3.0
	丁、戊类仓库	2.0
厂房	甲、乙、丙类厂房	3.0
	丁、戊类厂房	2.0
公共建筑	一类高层建筑、建筑体积大于100000m ³ 的公共建筑	3.0
	其他公共建筑	2.0
住宅建筑	一类高层住宅建筑	2.0
	其他住宅建筑	1.0
平时使用的人民防空工程	总建筑面积不大于3000m ²	1.0
	总建筑面积大于3000m ²	2.0
城市轨道交通	一、二类	3.0
	三类	2.0
城市轨道交通工程	—	2.0

QUESTION & ANSWER

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您的问题

《建筑防火通用规范》GB55037-2022第10.1.5条，建筑的“设计火灾延续时间”是否由电气专业根据本条规定和其它现行相关标准进行确定？请问“其它现行相关标准”目前有哪些？

个人观点

火灾延续时间通常是指消防车到达火场开始出水时起，至火灾基本被扑灭止的这段时间。电气专业根据《建筑防火通用规范》GB55037-2022第10.1.5条规定和其它现行相关标准进行设计，包括《消防给水及消火栓系统技术规范》。

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022第10.1.5条，本条中的消防用电设备是否包括应急照明？

个人观点

集中控制型消防应急照明疏散指示系统应由消防电源供电。《建筑防火通用规范》

GB55037-2022第10.1.5条，**消防用电设备包括应急照明。**

10.1.6 除按照三级负荷供电的消防用电设备外，消防控制室、消防水泵房的消防用电设备及消防电梯等的供电，应在其配电线路的最末一级配电箱内设置自动切换装置。防烟和排烟风机房的消防用电设备的供电，应在其配电线路的最末一级配电箱内或所在防火分区的配电箱内设置自动切换装置。防火卷帘、电动排烟窗、消防潜污泵、消防应急照明和疏散指示标志等的供电，应在所在防火分区的配电箱内设置自动切换装置。

【条文说明】

本条规定了建筑中消防用电设备配电的基本要求，以避免配电干线故障影响消防用电设备的供电可靠性。

本条规定的**最末一级配电箱**，对于消防控制室、消防水泵房的消防用电设备及消防电梯等，为上述消防电梯和消防设备室处的**最末级配电箱**；对于其他消防用电设备，为这些用电设备所在防火分区的配电箱。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB 55037-2022第8.1.16条，消防应急照明和疏散指示系统的电源应取自所在防火分区的配电箱内设置自动切换装置。《应急照明设计与安装》19D702-7中，A型应急照明配电箱或A型集中电源采用消防专用应急回路沿电竖井树干式或放射式供电等同于同一防火分区的消防电源。依据此条设计是否满足《建筑防火通用规范》的要求？

个人观点

消防应急照明和疏散指示系统的电源应取自所在防火分区的配电箱内设置自动切换装置。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

没有火灾自动报警系统的建筑走廊内如果有防火卷帘或挡烟垂壁，是否可以直接选择带有探头的控制器？有这种产品吗？他的自带探测器如果达不到探测覆盖怎么办？

个人观点

可以。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB 55037-2022第10.1.6条，消防设备的末端互投的设置原则和位置？

个人观点

特级、一级、二级负荷的消防负荷需要双电源电源供电，其中消防控制室、消防水泵房、及消防电梯，应在其配电线路的最末一级配电箱处设置自动切换装置。防烟和排烟风机房、应急照明双电源自动切换装置可在本防火区域内集中设置。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022第11.1.6条，消火栓泵与喷淋泵设在同一空间时，是否可共用同一个双电源切换开关。

个人观点

可以，消火栓泵与喷淋泵设在同一空间时，可共用一组双电源切换装置，此做法满足最末一级配电箱处设置自动切换装置的要求。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022第10.1.6条，某排烟机房内有三台排烟风机（一级负荷），是否可以从防火分区的消防双电源箱内引一回配电线路至排烟机房内的消防排烟风机配电箱，然后从消防排烟风机配电箱再给各排烟风机配电？

个人观点

不可以。

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您的问题

《建筑防火通用规范》GB55037-2022第10.1.6条，请问防烟排烟风机双电源箱是否可与其他消防负荷（防火卷帘、消防潜污泵等）合用双电源箱？

个人观点

防烟排烟风机双电源箱可与**本防火分区**内的其他消防负荷（防火卷帘、消防潜污泵等）合用双电源箱。双电源箱不宜过大，**避免进线电缆并联。**

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022第10.1.6条，高层项目防火卷帘、电动挡烟垂壁、电动排烟窗、应急照明集中电源等消防设备的容量小且分散，每层几乎都有，是否可以集中几层在电井内设置消防双电源箱？

个人观点

不可以。以防火分区为单元，在同一防火分区防火卷帘、电动挡烟垂壁、电动排烟窗、应急照明集中电源等消防设备可设置一个消防双电源箱。

10.1.7 消防配电线路的设计和敷设，应满足在建筑的设计火灾延续时间内为消防用电设备连续供电的需要。

【条文说明】

本条规定了消防配电线路的基本防火性能要求。

消防配电线路的选型是否合理、线缆的耐火和防火性能高低、线路敷设是否安全，直接关系到消防用电设备在火灾时能否正常运行。消防配电线路应根据建筑工程不同位置的环境条件和可能的火灾环境，选择相应燃烧性能或阻燃性能和耐火性能的电线电缆，并根据不同敷设方式采取符合防火要求的保护措施，以保证消防配电线路在设计火灾延续时间内能够持续供电，具体设计和敷设方法和防护措施等可以按照国家相关技术标准的要求确定。



QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB 55037-2022第10.1.7条规定，消防配电线路应满足火灾延续内为消防配电设备连续供电的需求，引入建筑内的电源采用YJV₂₂电缆是否满足此要求？

个人观点

不满足。

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您的问题

当建筑设计延续时间为3小时时，燃烧性能为B级电缆无法满足消防时间要求，是否所有消防电线电缆都得选用燃烧性能为A级电线电缆？

个人观点

结合火灾时消防设备工作时间确定，参考GB51348。

表 13.7.16 消防用电设备在火灾发生期间的最少持续供电时间

消防用电设备名称	持续供电时间(min)
火灾自动报警装置	≥180(120)
消火栓、消防泵及水幕泵	≥180(120)
自动喷水系统	≥60
水喷雾和泡沫灭火系统	≥30
CO ₂ 灭火和干粉灭火系统	≥30
防、排烟设备	≥90、60、30
火灾应急广播	≥90、60、30
消防电梯	≥180(120)

注：1 防、排烟设备火灾时应大于等于疏散照明时间，不同场所的应急照明时间见本标准表 13.6.6。

2 表中 120min 为建筑火灾延续时间 2h 的参数。

QUESTION & ANSWER

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您的问题

《建筑防火通用规范》GB 55037-2022第10.1.7条规定，再结合表10.1.5，对于设计火灾延续时间长达3个小时的用电负荷，是不是只有矿物绝缘类电缆能满足设计要求？

个人观点

电缆按照标准《**电缆及光缆燃烧性能分级**》GB31247-2014

A类选择产品。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

通过室外穿管埋地引入消防控制室的电源线路，是否采用矿物绝缘类电缆，采用有机耐火电缆是否满足要求？

个人观点

室外穿管埋地引入消防控制室的电源线路可以采用有机耐火电缆。进入室内消防用电设备供电电缆应采用燃烧性能满足在建筑的设计火灾延续时间要求，为消防用电设备连续供电的需要。

10.1.8 除筒仓、散装粮食仓库和火灾发展缓慢的场所外，下列建筑应

设置灯光疏散指示标志，疏散指示标志及其设置间距、照度应保证

疏散路线指示明确、方向指示正确清晰、视觉连续：

- 1 甲、乙、丙类厂房，高层丁、戊类厂房；
- 2 丙类仓库，高层仓库；
- 3 公共建筑；
- 4 建筑高度大于27m的住宅建筑；
- 5 除室内无车道且无人员停留的汽车库外的其他车库和修车库；
- 6 平时使用的人民防空工程；
- 7 地铁工程中的车站、换乘通道或连接通道、车辆基地、地下区间内的纵向疏散平台；
- 8 城市交通隧道、城市综合管廊；
- 9 城市的地下人行通道；
- 10 其他地下或半地下建筑。

【条文说明】

本条规定了建筑应设置灯光疏散指示标志的基本范围和疏散指示标志设置的性能要求，以有利于人员安全、有序疏散。灯光疏散指示标志的性能要求和具体设置要求，可以按照国家现行相关技术标准的规定确定。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

带有门斗的出口，里面的门上应为哪种标志？

个人观点

里面的门上应疏散出口标志灯。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022中10.1.8 公共建筑应设置消防应急照明。以后所有公共建筑均设置？

个人观点

是，特别是公共建筑内的疏散走道。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022第10.1.8条，第3款要求，所有公共建筑无论规模都需要设置灯光疏散指示标志吗？

个人观点

是。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

三星级以下旅馆建筑，客房内是否需要设置应急照明灯？

个人观点

需要。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022第10.1.8条，第3条“公共建筑”，覆盖范围很广泛，条文解释中也未对其予以界定。例如，10多平米独立的门卫室也是公共建筑，是否也需要设置灯光疏散指示标志？

个人观点

10多平米独立的门卫室不是公共建筑，不需要需要设置灯光疏散指示标志。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

当最后一道密闭门与防火门不是同一个位置时，防火门与密闭门之间的应急照明灯具由哪个回路供电？（楼梯间应急照明回路还是普通应急照明回路，如果是普通应急照明回路供电，该灯具为防护区外是应该独立回路供电的，一个灯不应该单独回路供电吧）？

个人观点

专用回路供电。

10.1.9 除筒仓、散装粮食仓库和火灾发展缓慢的场所外，厂房、丙类仓库、民用建筑、平时使用的人民防空工程等建筑中的**下列部位应设置疏散照明**：

1 安全出口、疏散楼梯（间）、疏散楼梯间的前室或合用前室、避难走道及其前室、避难层、避难间、消防专用通道、操作人员疏散的天桥和连廊；

2 观众厅、展览厅、多功能厅及其疏散口；

3 建筑面积大于200 m²的营业厅、餐厅、演播室、售票厅、候车（机、船）厅等人员密集的场所及其疏散口；

4 建筑面积大于100 m²的地下或半地下公共活动场所；

5 地铁工程中的车站公共区，自动扶梯、自动人行道，楼梯，连接通道或换乘通道，车辆基地，地下区间内的纵向疏散平台；

6 城市交通隧道两侧，人行横通道或人行疏散通道；

7 城市综合管廊的人行道及人员出入口；

8 城市地下人行通道。

【条文说明】

本条规定了建筑应设置疏散照明的基本范围，使这些建筑内的人员在火灾时具有较好的疏散照明条件，便于快速疏散。

本条规定的**这些部位是建筑内人员在疏散时必须经过的主要路径和节点**，这些场所是建筑内同一时间可能聚集的人数较多、人员疏散时易出现混乱和拥堵等情况的区域。疏散照明的具体设置要求，可以按照国家现行相关技术标准的规定确定。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovations. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022第10.1.9条，建筑面积大于200m²的营业厅应设置疏散照明与《商店建筑电气设计(19D702-7)》一致。19D702-7《应急照明设计与安装》当商铺的面积<50m²时，可不设置出口标志灯。当商铺的面积>50m²时，应设置出口标志灯和疏散照明灯。

规范与图集冲突，请问不大于200m²的商铺(不含室内步行街)是否需要设置应急疏散照明？

个人观点

不大于200m²的商铺(不含室内步行街)，当商铺的面积<50m²时，不需要设置应急疏散照明，当商铺的面积>50m²时，应设置出口标志灯和疏散照明灯。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022第10.1.8条、第10.1.9条，民用建筑安全出口应设置疏散照明，是否适用于每户2层、面积不大于200m²的独立设置的沿街楼？

个人观点

每户2层、面积不大于200m²独立设置的沿街楼，属于公共建筑，每户安全出口**应设置**设置疏散照明。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022第10.1.8条、第10.1.9条，多层住宅的公共走道及楼梯间是否适用本条文？

个人观点

建筑高度小于27m的多层住宅建筑的公共走道及楼梯间**执行此条文。**

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022第10.1.8条、第10.1.9条，疏散指示标志灯除指向安全出口外，是否还指向避难间？

个人观点

避难间应设置疏散照明，使避难间内的人员在火灾时具有较好的疏散照明条件，便于快速疏散。疏散指示标志灯不需要指向避难间。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022第6.1.7条，消防控制室、消防水泵房、配电房、发电机房等场所设置了备用照明，是否应设置疏散照明和疏散指示标志？

个人观点

消防控制室、消防水泵房、配电房、发电机房等场所除设置备用照明外，还应增设疏散照明和疏散指示。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022第10.1.9条第1款：厂房的安全出口应设置疏散照明，是不是包括所有类型厂房？

个人观点

所有类型厂房的安全出口应设置疏散照明。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

“消防救援人员从地面进入建筑的通道”怎样理解？消防专用通道是不是不包含厂房、丙类仓库等其他的人员疏散走道？

个人观点

消防专用通道供消防救援人员使用，不包含其他的人员疏散走道。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《消防应急照明和疏散指示系统技术标准》GB 1309-2018第3.3.4条第1款对于封闭楼梯间、防烟楼梯间要求单独设应急照明回路。根据不同建筑物特点，比如人防地下车库等工程，由于疏散需要设有单独出地面的楼梯间且距离该防火分区的应急照明箱较远，这种封闭楼梯间的垂直疏散距离也比较短，很长很远的线路引来仅为此一两个灯具照明，是否可由临近应急照明灯具引接电源。

个人观点

封闭楼梯间、防烟楼梯间要求单独设应急照明回路。

10.1.10 建筑内疏散照明的地面最低水平照度应符合下列规定:

- 1 疏散楼梯间、疏散楼梯间的前室或合用前室、避难走道及其前室、避难层、避难间、消防专用通道, 不应低于**10.0lx**;
- 2 疏散走道、人员密集的场所, 不应低于**3.0lx**;
- 3 本条上述规定场所外的其他场所, 不应低于**1.0lx**。

【条文说明】

本条规定了建筑内疏散照明的基本照度要求。

建筑内疏散照明的照度值越高越有利于提高人员的疏散速度, 缩短疏散时间, 有利于提高人员疏散的安全性。不同建筑或建筑内的不同部位或区域应结合实际疏散环境、空间条件和使用人员的特性等, 尽量在本条规定值的基础上提高疏散照明的照度值。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

高层居住类建筑机房层出屋面楼梯间前室指示何种指示比较符合规范要求?

个人观点

疏散口灯。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022第10.1.10条，第2款规定：疏散走道、人员密集的场所，不应低于 $3.0lx$ ，是不是要求以后不论场所是否为人员密集场所，疏散走道上的照度要求最低就是 $3.0lx$ ？

个人观点

人员密集场所、疏散走道上的照度要求最低就是 $3.0lx$ 。

10.1.11 消防控制室、消防水泵房、自备发电机房、配电室、防排烟机房以及发生火灾时仍需正常工作的消防设备房应设置备用照明，其作业面的最低照度不应低于正常照明的照度。

【条文说明】

本条规定了建筑内应设置消防备用照明的场所及其基本照度要求，以满足在建筑发生火灾后仍需坚持工作的场所的操作要求。这些场所主要为在扑救建筑的火灾过程中需要人员坚守和进入并进行相应控制、操作等活动的房间，如消防控制室、消防水泵房、自备发电机房等。这些房间正常照明的照度值要求，可以按照国家现行相关技术标准的规定确定。

设置场所	参考平面及其高度/m	备用照明的照度标准值/lx
消防控制室	距地面0.75m高的水平面	300
消防水泵房	地面	100
自备发电机房	地面	200
配电室	距地面0.75m高的水平面	200
防排烟机房	地面	100

QUESTION & ANSWER

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您的问题

- 1 根据《建筑防火通用规范》GB55037-2022第10.1.11条，配电室有规模要求吗？楼层配电小间是否需要设置备用照明？
- 2 能否理解为只要配电室设置了备用照明就意味着火灾时会有人工作，则需要同时设置疏散标志灯？

个人观点

- 1 这里配电室通常室内配电柜相对较多，特别是有消防设备配电的配电室。楼层配电小间不属于配电室，可不设置备用照明。
- 2 配电室设置了备用照明不仅是可能火灾时会有人工作，平时也有可能需要。火灾时会有人工作配电室，一定设置疏散标志灯。

10.1.12 可能处于潮湿环境内的消防电气设备，外壳的防尘与防水等级应符合下列规定：

- 1 对于交通隧道，不应低于IP55；
- 2 对于城市综合管廊及其他潮湿环境，不应低于IP45。

【条文说明】

本条规定了设置各类潮湿环境下的消防电气设备的防护等级要求，以避免潮气或水侵入电器造成损坏，影响消防电气设备和相关消防设施运行的可靠性。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

有喷淋的排烟机房内，其控制箱或配电箱是否参照《建筑防火通用规范》GB55037-2022第10.1.12，外壳的防尘与防水按IP55设置？

个人观点

有喷淋的排烟机房内，其控制箱或配电箱**不需要**外壳的防尘与防水按IP55。

QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

如何确定室外疏散照明灯具的防护等级？

个人观点

室外疏散照明灯具的防护等级不应低于IP67。

10.2.3 电气线路的敷设应符合下列规定：

- 1 电气线路敷设应避开炉灶、烟囱等高温部位及其他可能受高温作业影响的部位，不应直接敷设在可燃物上；
- 2 室内明敷的电气线路，在有可燃物的吊顶或难燃性、可燃性墙体内敷设的电气线路，应具有相应的防火性能或防火保护措施；
- 3 **室外电缆沟或电缆隧道在进入建筑、工程或变电站处应采取防火分隔措施，防火分隔部位的耐火极限不应低于2.00h，门应采用甲级防火门。**

【条文说明】

本条规定了建筑内电气线路敷设的基本防火要求，以预防电气线路因敷设不当而引发火灾。建筑中的电气线路应根据供电电压等级、用电设备的功率、敷设环境条件和敷设方式等采取相应的防火保护措施，避免敷设不当导致线路老化、破损等引发火灾。

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to success. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《建筑防火通用规范》GB55037-2022第13.3条，第3款，要求室外电缆沟进入建筑处采取防火分隔措施，具体怎么做。

个人观点

室外电缆沟或电缆隧道在进入建筑、工程或变电站处应采取防火分隔措施，防火分隔部位的耐火极限不应低于2.00h，门应采用甲级防火门。

Analysis of Difficult Problems in Electrical Design of Mandatory Engineering Construction Codes

PART 06

其他强制性工程建设规范 相关电气问题



电气培训教材

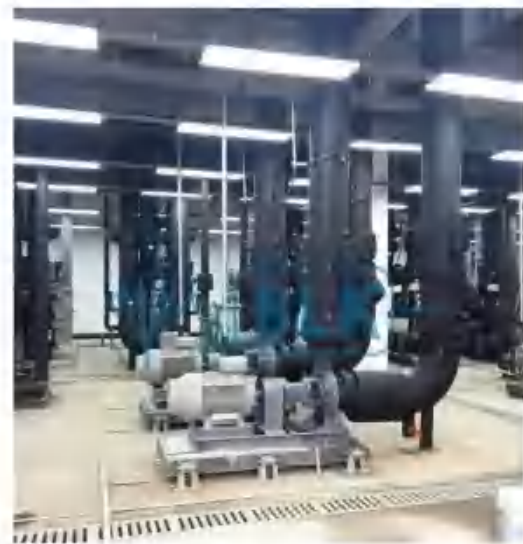


5.1.18 建筑附属机电设备的**基座或支架**，以及相关连接件和锚固件应具有足够的刚度和强度，应能将设备承受的**地震作用全部传递到建筑结构上**。

建筑结构中，用以固定建筑附属机电设备预埋件、锚固件的部位，应采取**加强措施**，以承受附属机电设备传给主体结构的地震作用。

【条文说明】

本条明确设备支架的基本构造要求。附属机电设备地震破坏的一个主要原因是基座或支架与主体结构连接不牢或固定不足造成设备移位或滑落，因此，对附属机电设备的基座或支架以及相关连接件和锚固件的抗震性能提出原则性要求是必要的。同时，结构体系中，用以固定建筑附属机电设备预埋件、锚固件的部位，也应采取加强措施，以承受附属机电设备传给主体结构的地震作用。



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您的问题

机电工程什么情况需设置抗震支吊架？

个人观点

- 1、抗震设防烈度6度及6度以上建筑机电工程抗震设计；
- 2、60mm及以上的电气配管，重力不小于150N/m电缆梯架和母线槽等需做抗震设防；
- 3、燃气、制冷、消防、热水DN65。

3.1.6 无无障碍服务设施内供使用者操控的照明、设备、设施的开关和调控面板应易于识别，距地面高度应为0.85m~1.10m。

【条文说明】

本条为功能性要求。无障碍厕所、无障碍客房和无障碍住房、居室等无障碍设施的内部，墙面上布置的控制照明、空调等设备设施的开关和调控面板，在选择产品时应优先选择通用设计的产品，安装高度应考虑乘轮椅者及身材矮小者的使用需要。本条在现行标准条文基础上进行了调整。

QUESTION & ANSWER

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您的问题

《建筑与市政工程无障碍通用规范》GB 5519-2021第3.1.6条，无障碍服务设施内供使用者操控的照明、设备、设施的开关和调控面板应易于识别，距地面高度应为0.85m~1.10m。是否所有无障碍服务设施都应符合此要求，供使用者操控如何确定？

个人观点

所有无障碍设施内部均应符合此要求。

3.1.8 无障碍坐便器应符合下列规定：

6 在坐便器附近应设置救助呼叫装置，并应满足坐在坐便器上和跌倒在地面的人均能够使用。

【条文说明】

第6款为厕所时更容易产生跌倒危险，所以在本规范第3.1.4条关于救助呼叫装置的原则性要求的基础上，本款强调了应在坐便器附近设置救助呼叫装置。可通过安装不同高度的救助呼叫按钮，或设置救助呼叫拉绳，满足坐在坐便器上和跌倒在地面的人均能够使用救助呼叫装置。

QUESTION & ANSWER

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您的问题

《建筑与市政工程无障碍通用规范》GB 55019-2021第3.1.8条第6款，呼叫按钮高度如何设置，是否可在0.5m高安装一个不带拉绳的按钮，或在0.8米高安装一个带拉绳的按钮？

个人观点

分别在0.85m~1.10m和0.5m高安装按钮满足坐在坐便器上和跌倒在地面的人均能够使用。或在0.85m~1.10m高安装一个带拉绳的按钮，拉绳低端不高于距地0.5m。

3.3.5 生活饮用水水箱间、给水泵房应设置**入侵报警系统**等技防、物防安全防范和监控措施。

【条文说明】

泵房的**监控措施**包括安全防护和设施数据的监控措施，对泵房配备门禁、摄像等安防措施或采用密码、指纹等身份识别安全技术以保障泵房安全，对水池水位、水泵启停或故障、水池水质等设施的运行状况进行远程实时监控，及时了解泵房内设施动态，发现设备故障、人为破坏等不利情况及早报警、处理。

QUESTION & ANSWER

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您的问题

设置入侵报警和视频监控系统是否已满足要求，是否还有其他措施？

个人观点

对泵房配备**门禁**、**摄像机**等安防措施或采用密码、指纹等身份识别安全技术以保障泵房安全。

5.1.2 既有建筑的改造，应根据检查或鉴定结果进行设计。

【条文说明】

本条规定的目的是保障改造的安全和质量。

5.4.6 既有建筑电气改造工程的设计，应在对既有建筑供配电系统、照明系统和防雷接地系统现场检查、评定的基础上，根据改造后建筑物的用电负荷情况和使用要求进行供配电系统、照明系统和防雷接地系统设计。

【条文说明】

本条规定了既有建筑电气工程改造的要求。既有建筑电气改造工程的设计，应依据国家现行有关标准，并结合既有建筑改造部分的实际需求进行设计。如仅进行建筑物局部改造，应考虑建筑物整体用电负荷是否满足改造后建筑物实际需求。既有建筑是否需重新进行防雷系统设计宜根据建筑物改造规模及建筑物周边建筑变化情况进行确定。

QUESTION & ANSWER

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您的问题

改建工程、改造工程施工图审查、消防改造项目审查，若利用原有供配电、照明系统及防雷接地系统，是否需出具检查或鉴定结果，此文件是否需第三方出具？

个人观点

改建工程、改造工程施工图审查、消防改造项目审查，若利用原有供配电、照明系统及防雷接地系统，需要出具**检查或鉴定**结果，此文件是需要具有检测资质机构出具。

2.0.5 宿舍、旅馆项目的结构应符合下列规定：

- 1 宿舍、旅馆项目的结构安全等级不应低于二级；
- 2 宿舍、旅馆项目的结构必须进行抗震设计，建筑抗震设防类别不应低于丙类，学校的学生宿舍建筑抗震设防类别应按国家相关规定执行；
- 3 新建的宿舍、旅馆项目的结构设计工作年限不应小于50年。

【条文说明】

本条规定了宿舍、旅馆建筑结构的安全等级及工作年限要求。

1 依据国家标准《工程结构通用规范》GB 55001-2021第2.2节结构安全等级划分的原则，宿舍、旅馆建筑不应低于二级结构安全等级。

2 依据国家标准《建筑与市政工程抗震通用规范》GB 55002-2021，大量的宿舍、旅馆属于标准设防类建筑，故本规范要求抗震设防类别不低于标准设防类，即丙类的设防要求。

QUESTION & ANSWER

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您的问题

《宿舍、旅馆建筑项目规范》GB 55025-2022第2.0.15条，要求“宿舍、旅馆项目应设置有线电视和信息网络系统”，在实际工程中存在上述系统是否需要的争议。如中、小学的午休宿舍，对于有线电视和信息网络系统是无需求的。类似这类具体项目如何把握，是否必须按照规范要求设置相关系统？

个人观点

宿舍项目应设置安全防范系统、有线电视系统和信息网络系统。宿舍应在门厅出入口设置视频监控装置。

3.5.1 入侵和紧急报警系统设计应根据需要防范的风险和现场环境条件等因素，选择相应的设备，设计安装位置和传输路由，具备对隐蔽进入、强行闯入以及撬、挖、凿等入侵行为的探测与报警功能，并应符合下列规定：

- 1 系统应准确、及时地探测入侵行为和紧急报警装置触发状态，发出报警信号；
- 2 入侵探测器和控制指示设备应具有防拆报警功能；
- 3 当报警信号传输线缆断路或短路、探测器电源线被切断时，控制指示设备应能发出报警信号；
- 4 系统应具有参数设置和用户权限设置功能；
- 5 系统应具有设防、撤防、旁路、胁迫报警等功能；
- 6 系统应能对入侵、紧急、防拆、故障等报警信号准确指示；
- 7 系统应能对操作、报警和警情处理等事件进行记录，且不可更改；
- 8 单控制器系统报警响应时间不应超过2s；
- 9 备用电源应能保证系统正常工作时间不少于8h。

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您的问题

《安全防范工程通用规范》GB55029-2022第3.5.1条，第9款，备用电源应能保证系统正常工作时间不少于8h。如何实施？

个人观点

实际工程中，入侵和紧急报警系统的备用电源规定能力在**最大同时使用量**正常工作时间不少于8h。

3.5.3 出入口控制系统设计应根据通行对象进出各受控区的安全管理要求,选择适当类型的识读、控制与执行设备,具备凭证识别查验、进出授权、控制与管理等功能,并应符合下列规定:

- 1 安装于受控区以外的部件应采取防拆保护措施;
- 2.疏散通道的出入口控制点应满足紧急情况下人员不经先证识读操作即可通行的要求;
- 3 断电开启的出入口控制点应配置备用电源,并确保执行装置正常工作时间不少于18h;
- 4 当系统与其他非安防业务系统共用凭证或凭证为“一卡通”应用模式时,出入口控制系统应独立管理;
- 5 执行装置的连接线缆位于该出入口的受控区以外的部分应封闭保护。

QUESTION & ANSWER

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您的问题

实际工程中，《安全防范工程通用规范》GB5039-2022第3款，如何确保此条规定的48h备用电源。具体实施措施是什么？是否必须设置UPS不间断电源且供电时间不少于48h？

个人观点

实际工程中，按断电开启的出入口控制点**最大同时使用量**确定，选择UPS不间断电源且供电时间要满足不少于48h的要求。

4.2.10 下列设备设施应设置在**住宅建筑公共空间**内:

- 1 给水总立管、消防立管、雨水立管(不包括设置在开敞式阳台的雨水立管)、供暖(空调)供回水总立管、**配电和弱电干线(管)等**;
- 2 公共管道阀门(必须设在套内的燃气引入管阀门除外)电气设备及用于总体调节和检修的部件(套内排水立管检修口除外);
- 3 室内供暖管沟和**电缆沟**的检查孔。

【条文说明】

本条规定了设置在住宅建筑公共空间的设备设施种类。住宅建筑的公共管道、设备、阀门等应布置在公共空间中，以便于检修、查看，减少对住户的干扰、占用套内空间面积以及影响套内空间的使用。

QUESTION & ANSWER

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您的问题

为什么《住宅项目规范》GB55038-2025 第4.2.10条，要求配电和弱电干管设在住宅建筑公共空间内，把干管暗敷在楼梯间墙内是否符合规范？电表箱暗敷设在楼梯间墙上是否可行？（没有电井）。住宅一层地下是否属于公共空间？配电干管暗敷住宅一层地下是否符合规范？（没有地下室）？

个人观点

在施工允许和不影响维护前提下，配电和弱电干管可以暗敷在楼梯间墙内。电表箱暗敷设在楼梯间墙上会影响楼梯防火性能。住宅一层地下属于公共空间。在施工允许和不影响维护前提下，配电干管可以暗敷住宅一层地下。

7.4.5 每套住宅的电源插座均采用**安全型插座**，卫生间设置的电源插座尚应加设**防止水溅**的措施。每套住宅**电源插座的设置要求和数量**应符合表7.4.5的规定，布置洗衣机、冰箱、排油烟机、排风机、电/燃气热水器、空调器处，尚应加设**1个专用单相三孔电源插座**。



【提示】

1. 加设防止水溅的措施。防护等级不低于IP54，需要专项产品标准及产品的支撑。
2. JGJ242-2011第8.5.1条（局部修订，报批稿）未封闭阳台及洗衣机应选用防护等级为IP54或具有IP54防护等级的电源插座。
3. JGJ242-2011第8.5.2条（局部修订，报批稿）对于洗衣机、冰箱、排油烟机、排风机、空调器、电热水器等单台单相家用电器，应根据其额定功率选用单相三孔10A及以上电源插座。

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您的问题

为什么《住宅项目规范》GB55038-2023第7.4.5条要增加厨房电源插座的数量？

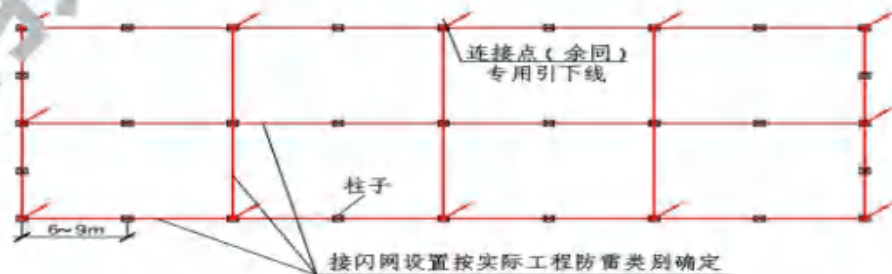
个人观点

《住宅项目规范》表7.4.5，规定了每套住宅电源插座的设置要求和数量，除对洗衣机、冰箱、排油烟机、排风机、电/燃气热水器、空调器等固定家用电器的电源插座设置做了规定外，每套住宅增加了厨房电源插座的数量，且表7.4.5规定的厨房电源插座的预留量不包括使用电炊具的。随着家居电炊具的应用推广，当设计家居做饭只采用电能源，没有燃气供应时，需要考虑厨房用电量及电源插座数量的增加，为用户提供方便。

7.4.6 年预计雷击次数大于0.25的住宅建筑应按不低于第二类防雷建筑物采取相应的防雷措施。其他可能发生地闪地区的住宅建筑，应按不低于第三类防雷建筑物采取相应的防雷措施。

【条文说明】

本条规定了住宅建筑雷电防护的要求。根据建筑高度和当地年预计雷击次数确定住宅建筑的防雷建筑物类别，合理采取相应的雷电防护措施。依据强制性工程建设国家标准《建筑电气与智能化通用规范》GB 55024—2022 第7.1.1条，对年预计雷击次数大于0.25的住宅建筑，需要按不低于第二类防雷建筑物采取相应的防雷措施。其他可能发生地闪地区（有直击雷发生的地区），年预计雷击次数小于或等于0.25的住宅建筑应按不低于第三类防雷建筑物采取相应的防雷措施，提高了住宅建筑雷电防护的要求。目的是避免雷击对住宅建筑造成损坏和保障居民的人身安全。



【条文说明】

屋顶的天线、金属烟囱、金属构筑物应与屋顶接闪器可靠连接且通过专用/专设引下线与接地装置进行连接。

If learning only in the imitation, as we would have sciences, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To know is to learn, to learn is not to know. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to succeed. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

《住宅项目规范》GB55038-2025 中住宅建筑防雷措施的提升是什么？

个人观点

地闪是指云层与大地之间发生的放电现象，地闪又称为直击雷，具有极大的破坏性。

《住宅项目规范》第7.4.6条规定了年预计雷击次数大于0.25的住宅建筑应按不低于第二类防雷建筑物采取相应的防雷措施。其他可能发生地闪地区的住宅建筑，也就是说只要有直击雷发生的地区，年预计雷击次数小于等于0.25的住宅建筑应按不低于第三类防雷建筑物采取相应的防雷措施。目的是避免雷击对住宅建筑造成损坏和保障居民的人身安全。防雷措施要按国家现行相关标准的规定执行。

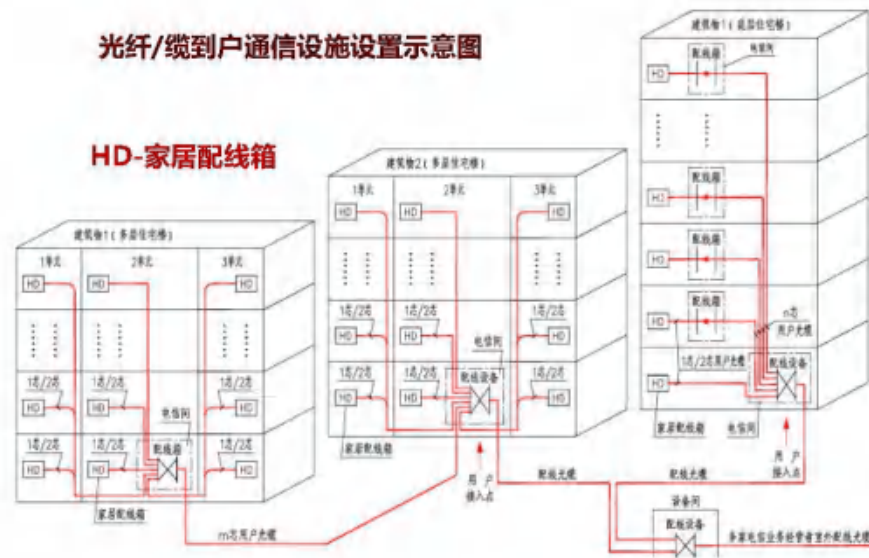
7.5.1 住宅建筑应设**通信系统**。在公用电信网络已实现光纤传输的地区，住宅建筑的通信设施应采用**光缆到户方式**。

【说明】

本条规定了住宅建筑通信系统设置的基本要求。光纤到户是构建信息基础设施的需要，也是实现智慧家庭通信接入技术发展的需要。

光纤为一种传输介质，光缆是由多根光纤、保护层和加强材料组成的复合结构式产品。光纤到户是将光缆敷设到家居配线箱。

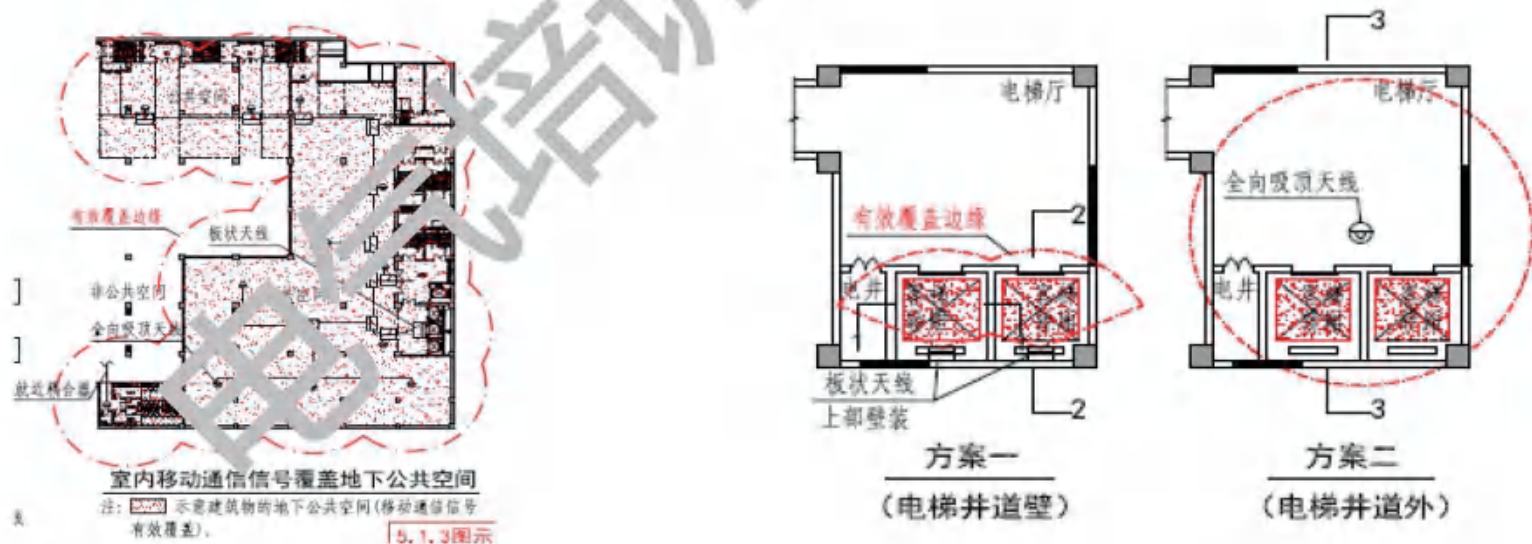
光纤/缆到户通信设施设置示意图



7.5.2 公共移动通信信号应能覆盖至住宅建筑的公共空间和电梯

轿厢内。

【条文说明】本条规定了住宅建筑公共移动通信信号设置的要求。本规范要求住宅建筑的地下和地上各层公共空间及电梯轿厢内，公共移动通信信号应全覆盖，保障手机信号畅通无阻。当有突发事件时，居民可及时对外联络，提升居民安全感。



QUESTION & ANSWER

If learning only in the imitation, so we wouldn't have science, there will be no technology. Master new technology, be good at learning, more must be good at innovation. To live is to learn, to learn is not to live. Our cause is to learn to learn, and strive to accumulate more knowledge, because of the knowledge, society will have great progress, the future of human happiness lies in this. Success is not an important thing, it is an important effort. Not to find an excuse for failure, only to find a way to succeed. The secret of success is the constant pursuit of the goal. May I be strenuous, energetic and persevering! May I ever keep a promise given!

您的问题

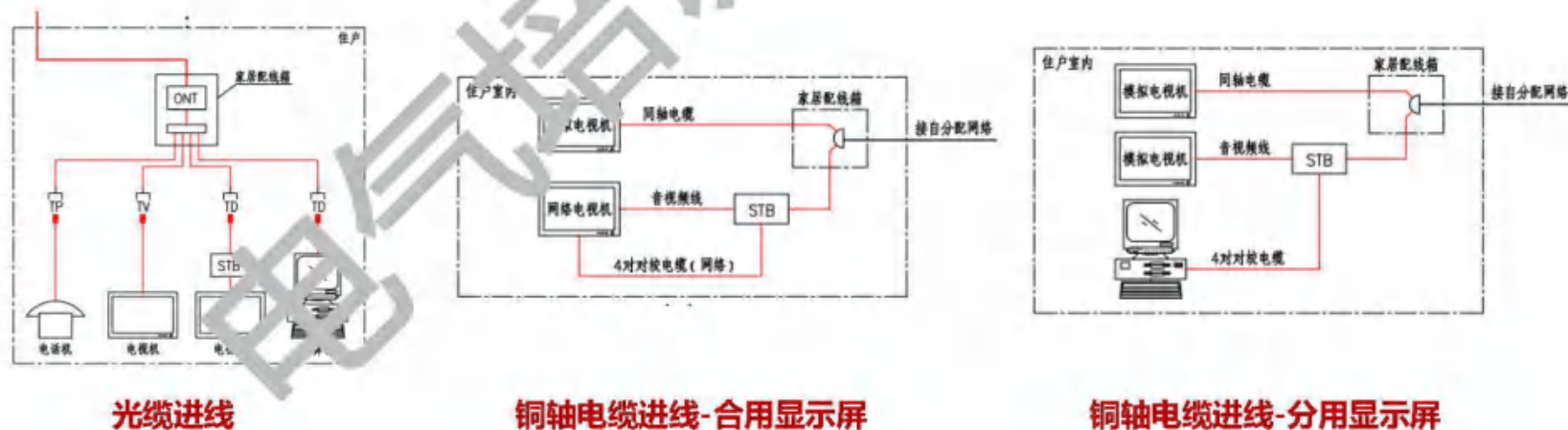
《住宅项目规范》GB55038-2025 第7.5.2条 为什么要求在住宅建筑的公共空间和电梯轿厢内能随时接听和拨打手机？

个人观点

《住宅项目规范》规范第7.5.2 条规定了住宅建筑公共移动通信信号设置的要求。要求住宅建筑的地下层和地上各层的公共空间及电梯轿厢内，公共移动通信信号应畅通无阻，当有突发事件时，可及时对外联络，提升住户安全感。

7.5.3 住宅建筑应设有有线电视系统。有线电视设施应采用**光缆**或**同轴电缆**以**独立专线**方式建设。

【条文说明】本条规定了住宅建筑有线电视系统设置的基本要求。根据《广播电视管理条例》（国务院令第228号）（2020年第三次修订）相关规定，广播电视传输覆盖网要确保广播电视节目传输质量和畅通，有线电视系统采用独立专线方式建设。



Analysis of Difficult Problems in Electrical Design of Mandatory Engineering Construction Codes

总结

- 1 电气设计问题分析应有**理论**的支撑
- 2 分析设计问题应注重**设计原则**和**角度**
- 3 对电气设计问题分析将会**不断更新**

电气设计教材



QA

电气培训教材

